



## **SRI LANKA FORUM OF UNIVERSITY ECONOMISTS**

**SRI LANKA ECONOMIC RESEARCH CONFERENCE (SLERC) 2020**

# **PROCEEDINGS**

## **Volume IX**

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## Message of the Vice Chancellor

### Uva Wellassa University of Sri Lanka



It is with great pleasure; I am sending this message on the occasion of the 9<sup>th</sup> International Research Conference of the Sri Lanka Forum of University Economists (SLFUE). Indeed, it is a very special occasion, and the Uva Wellassa University (UWU) is honoured to host this conference amidst the COVID-19 pandemic.

While the health professionals are trying their best to curb the pandemic, I do hope that this event would help the university economists to deliver their share in the economic recovery. I strongly feel that the theme of this year's conference, *Restoring Economic Growth and Prosperity of Sri Lanka: Options and Strategies*, is well matched with the current situation of the country. It is high time that we all get together and find the solutions for the socio-economic problems generated by the COVID-19 pandemic. Further, the theme of the panel discussion, *Post COVID Revival of MSME Sector of Sri Lanka*, is also a timely one and well suited to the Uva Wellassa region.

Undoubtedly, the presence of Deshamanya, Professor Emeritus W.D. Lakshaman, the Governor of the Central Bank as well as a renowned economist of the country, will brighten the conference. The launch of the Sri Lanka Journal of Economic Research Volume 8 (1) signifies that role of the SLFUE in disseminating economic research is not only limited to the conference.

I wish to express my sincere gratitude to the current Chairman and the members of the SLFUE, and all the members of UWU Family for their untiring efforts to make the 9<sup>th</sup> International Research Conference of the SLFUE a success. Finally, I wish all the participants and presenters to have a pleasant and productive experience during these two days at the UWU.

**Professor Jayantha Lal Ratnasekera**

Vice Chancellor

Uva Wellassa University

## **Message of the Chief Guest**

### **Sri Lanka Economic Research Conference (SLERC) 2020**



To witness the holding of the 9th International Research Conference of the Sri Lanka Forum of University Economists (SLFUE) is, for me, a greatly satisfying experience as I have been associated in numerous ways with the establishment and development of this Forum from its inception in 2012. After small beginnings it appears to have now expanded to encompass teachers in economics associated with the bulk of the university system in Sri Lanka. Pressing issues, theoretical and practical, related to economic analysis and policy have been taken up for critical review by SLFUE over the years. I take this opportunity to wish the Annual Conference of SLFUE to be held in the premises of Uva-Wellassa University every success. The theme selected for this year's Research Conference of SLFUE "Restoring Economic Growth and Prosperity" perhaps indicates the concern of the conference organisers have about how the economy could be moved out of severity of the stresses caused by the two-stage outbreak of the COVID-19 pandemic of 2020-1.

COVID-19 related global impacts have been multi-faceted. Lives of millions of people around the globe were disrupted due to the pandemic, which is by far the most complex and acute global crisis after World War II. Large numbers have been hospitalized and many died. Jobs have been lost, businesses have gone bankrupt, schools have been closed, and educational and training processes disrupted, health systems have become stressed and people's livelihoods disrupted in many ways.

Domestic economies of most countries have been battered, while fear and uncertainty have become dominant elements in the lives of people everywhere. Policy responses to this multi-faceted crisis, however, have been largely two-pronged. On the one hand, these responses have been related to issues of public health and medical facilities. On the other hand, they have focused on addressing dominantly economic, monetary and financial issues. The issues raised on the question of how normal living

conditions can be restored and social progress revived also tend to revolve round largely economic and financial matters.

Addressing largely the economics fraternity, I am tempted to turn from policies to revive from COVID-19 crisis to policies and strategies required for the achievement of socio-economic development in general. Thinking around this subject also has been informed largely by ‘economic analysis’, or that sub-discipline of economics called ‘development economics. After the end of World War II, in scores of developing countries, development was planned, and development policies worked out in accordance with dominant ‘development economics’ perspectives. There were, however, extensive failures of this development effort all round the world. In the deliberations in your Annual Conference too, it is imperative that you understand the limitations of economic analysis when it comes to guiding of development policy and practice. Enhanced interest needs to be paid, I believe, to what other disciplines can offer toward understanding and management of development.

Economic revival and growth require a collaborative approach involving all segments and stakeholders of the economy. This university economists’ Forum could be used as the launching pad to co-ordinate efforts of resource personnel from different relevant fields, and effectively make use of their different perspectives about manoeuvring the socio-economic processes in these difficult times. My best wishes again for every success of the SLFUE conference of January 2021 and I hope it would herald the beginning of a series of dialogues that will truly be helpful in restoring prospects of economic growth and prosperity in Sri Lanka.

**Deshamanya Prof. W D Lakshman**

Governor

Central Bank of Sri Lanka

## Message of the Chairman

### Sri Lanka Forum of University Economists 2020



I am very much pleased to forward this message on the International Research Conference of our forum “Sri Lanka Economic Research Conference 2020”. This is the consecutive 9<sup>th</sup> international conference of the forum after establishing in 2012. This is a historic event for the forum as this is the first time in the history of the forum, that we organize our flagship event both physically as well as an online.

This year’s theme of the conference is “**Restoring Economic Growth and Prosperity of Sri Lanka: *Options and Strategies***” which is much aptly theme with the current situation of the country as well as the globe. While the country as well as the whole world is struggling to cope with the new normal conditions created by the Pandemic, as university economists we are strenuously making a platform for policy debate on the economic restructuring of Sri Lanka. Thereby, as the forum, we aimed to contribute to the post COVID reconstruction debate of the country.

I congratulate and wish all the presenters who submitted their papers, participating in the event physically or online. I thank Chief Guest Deshamanya Professor Emeritus W.D. Lakshman, who eagerly accepted our invitation and all the members of the panels and technical sessions and our sponsors BOC and Chrysalis. Also, I thank all the members of the forum and all the members of the organizing committee for making SLERC 2020 is a success in the midst of the COVID Pandemic.

Sri Lanka Forum of University Economists wishes you all a very fruitful SLERC 2020 and believe that you will be able to disclose, discuss, debate and agreed on your findings and contribute for a speedy recovery of the Sri Lankan economy.

**Dr. P. H. T. Kumara**

Chairman/Sri Lanka Forum of University Economists 2020

Faculty of Management

Uva Wellassa University of Sri Lanka

## Keynote Address

### Restoring Economic Growth and Prosperity of Sri Lanka: Options and Strategies



Thripitakacharya Dharma Keerthi Sri Sumangala Rathanapala Dhammarakkhitha Most Venerable Bengamuwe Sri Dhammadinna Nayake Thero, Chancellor of Uva Wellassa University, Prof. Jayantha Lal Ratnasekera, Vice Chancellor, Conference Participants, Former Colleagues, Friends, ladies, and gentlemen, Preliminaries

A very good evening to you all! This is my second visit to Uva-Wellassa. The first visit was some 20 years ago during the formative years of the University. My visit was as a member of a team of senior academics appointed by the UGC to examine the progress and performance of the University. On this occasion, I cannot avoid recalling my good friend, Dr. Chandra Embuldeniya – your pioneering and innovative Vice Chancellor. In addition to being a great host, Chandra deserves my appreciation for his experimentation with a unique concept and a model of an “entrepreneurial University” for Uva Wellassa. How far he succeeded in this venture is worth looking into.

If I recall right, I had the privilege of chairing the very first International Research Conference of SLFUE held at the University of Colombo. This is indeed a Forum in the development of which, I was involved, I hope positively, in various important, as well as trivial ways. I am extremely glad to see that the Forum has got so well-established covering almost the entire university system. All my interventions in SLFUE activities were in response to requests of one person, requests which I found difficult to decline. It is not inappropriate on my part therefore, to appreciate, with gratitude, the contribution made by my good friend Prof. Lalithasiri Gunaruwan, in the progress of the Forum, so far. I am very glad indeed for opening doors a few decades ago for the mathematician turned economist or should I say political economist, into the world of university economics.

I take pleasure in the opportunity offered to me to be here with you today delivering the Keynote Address at this 9th International Research Conference of the SLFUE, and to share with you some of my thoughts on the theme of the

Conference, i.e., “Restoring Economic Growth and Prosperity of Sri Lanka: Options and Strategies”. Most of the time during this hour or so, I will be speaking to you as the Governor of the Central Bank of Sri Lanka. But as the argument demands, occasionally, the academic in me also might come out.

This International Research Conference, today, intended to promote economic and development research is, I understand, enriched by some 40 research papers, accepted after a process of refereeing. Congratulations to organizers for their effort in collecting so many research papers for a symposium. Restrictions on movement which prevailed due to COVID-19 must have been a factor making many researchers in economics contribute papers to the conference. I hope these papers do real justice to the extremely heterogeneous and rich subject called economics or political economy.

It was after 40-odd years of an academic career that I took up this entirely different position of responsibility. As an undergraduate in Peradeniya, a doctoral student at Oxford, and later in my university teaching career, I studied, researched and taught things which I come across daily in my Central Bank life – gross domestic product, economic growth, general price level, inflation, interest rates, commercial banks and bank credit, exchange rates, balance of payments, fiscal policy, monetary policy, trade policy, import restrictions, industrialization, agricultural policy, financial institutional structure, etc. etc. to list out only a few items, randomly selected with no particular order.

I decided to accept the CB Governor position, when it was unexpectedly offered to me, thinking that I am fairly well conversant, at least theoretically, about what has to be done in the Bank, namely the conduct of monetary policy and implementation of measures to keep the domestic price level and financial institutional structures stable, thereby facilitating the overall objectives of a country’s economic policy – promotion of development, employment and social well-being.

What one finds common in what is learnt in books and lecture rooms, and what is practiced in the real world are probably limited to words and theoretical propositions. When it comes to the level of policy and practice, even a person who has extensive knowledge in any particular subject area, will have to spend considerable time and effort to learning the intricacies of real-world practice and the interface between book knowledge and the socio-political realities affecting policy making. I saw the need also to unlearn many things which I have carried into this position from the academic world.



Encouraging research in general, I need to in this forum also highlight the importance of policy relevance of research. This is needed for research results to be able to facilitate real-world processes and policies towards improving people's living conditions. We have seen over decades, extensive research activity on policies and practices of development, but we continue to remain underdeveloped or "developing". We ought to be ashamed of being called "developing" for as long as the last three quarters of a century after the Second World War, while observing many postcolonial countries moving out of that derogatory label. As students in economics we must indeed make a vow that we will work hard to guide the nation's journey out of being "developing" or "underdeveloped". The Uva Wellassa University is an ideal place to make that vow remembering the human sacrifices made by those who gave leadership and those who participated in the great freedom struggle, which was to the British the Uva Wellassa Rebellion (1817–1818).

### **Restoring and Reviving COVID-19 Affected Economy**

The chosen theme for this conference is "restoring" economic growth and prosperity, hinting that conference organizers were interested in focusing on the last few years, may be from 2015 onwards. Without going that far into the past, I will take just two years, 2020 and 2021, in my address. The year 2020 was a time most of us would like to forget in a hurry, primarily because of the horrendous impact, which the coronavirus pandemic has had over humanity throughout the world. This pandemic related crisis that we are still experiencing is by far the most severe global crisis since the end of World War II. Throughout the last ten-odd months of 2020-1, all we heard was news of disease, misery, deaths, anxiety, and fear. Our lives have taken a massive shock and we still do not know when we will be able to get back to normalcy again.

The performance of the economy in 2020 was, as expected, lackluster and during the second quarter in particular, truly dismal. This was caused by the unprecedentedly hostile environment created by the pandemic. As per the GDP estimates of the Department of Census and Statistics (DCS), the Sri Lankan economy had experienced negative rates of growth of 1.7 per cent and 16.3 per cent respectively in the first and second quarters of 2020. The economy rebounded in the third quarter recording a positive growth of 1.5 per cent. However, the onset of the second wave of COVID-19 seems to have dampened the momentum in the fourth quarter of 2020. Accordingly, the economy is projected to have contracted, according to Central Bank predictions, by around 3.9 per cent in the full year, 2020. It may be noted, however, that some

international agencies have predicted for Sri Lanka somewhat higher rates of contraction in 2020 than the rates indicated by CBSL projections.

Nevertheless, the economy is well poised to rebound in 2021, supported by the unprecedented measures of policy stimulus introduced by the Government and the Central Bank, improved domestic economic sentiments, alongside the improving prospects of the global economy. Globally the invention and commercial production of several anti-corona virus vaccines are strengthening 2021 growth prospects. Locally, in addition to other developments, I should make a special note of the improving conditions of the country's tourist industry. From prevailing conditions there can only be improvement as we have reached the bottom at the end of 2020.

The external sector was severely affected at the initial stages of the pandemic, but marked a notable rebound by mid-2020. Proactive measures introduced to restrict non-essential merchandise imports and foreign exchange outflows for purposes of investment, lower global petroleum prices as well as larger than expected remittances from migrant workers helped contain the pressure on the exchange rate and challenges in the external sector to a great extent. The trade deficit contracted notably, contributing to strengthening the external current account balance. Low earnings were recorded from tourism, and other services exports due to the impact of the pandemic. Partly cushioning the impact, a notable rebound in workers' remittances was observed, despite various challenges faced by migrant workers. The pandemic affected cross border financial flows notably. Foreign direct investment (FDI) inflows were low, as in the case of all emerging economies, while outflows were recorded from the rupee denominated Government securities and equity markets, although the Colombo Stock Exchange performed notably well with active participation of domestic investors. However, gross official reserves remained at adequate levels, while the Sri Lanka rupee remained resilient.

Post-2019 Sri Lanka is operating on a development model that is different from the preceding period. The vision for this new model comes from the electoral manifesto turned policy document, "Vistas of Prosperity & Splendour" of President Gotabhaya Rajapakse. Budget 2021 approved in Parliament in December 2020, guided as it was by this policy document, has become the current implementation plan of the above Presidential vision.

The overall policy approach is one of state-guided market economy like in a "developmental state". This descriptive title for a distinctive policy approach has

been coined by Chalmers Johnson in his analysis of the Japanese development model of the post-war decades. Broadly similar policy frameworks had helped not only Japan, but also the so-called East Asian Tigers and later some South East Asian countries to achieve high and sustained development. The “developmental state” model as one of state-guided market economy has a lot to offer to Sri Lanka in its going forward looking for rapid growth and development in the medium and long terms, provided the policies concerned are properly and consistently applied.

The COVID-19 pandemic, in addition to being devastating in socio-economic impacts, has also offered us opportunities to think out of the box and address some of the long-standing structural weaknesses of the economy. The following are some of these structural weaknesses: relative neglect of domestic production, excessive product and market concentration of exports, exports of products without moving up on value chains, heavily import-dependent consumption and production, prevalence of poverty pockets and economically vulnerable social groups, the so-called dual deficit (in the budget as well as on the external current account), and the over-reliance on foreign debt. The production-driven economy, through domestic, as well as foreign investment, is now being promoted, along with a more rational view about openness in external trade. The boost received by agricultural production and related higher value chain activities has been substantial. The opportunities opened up by COVID-19 to rethink our economic policy of the last half-century also are substantial.

I do not have the time here to talk about the entire government policy. Instead let me take up part of it – some elements of the monetary and financial aspects of the development programme that is largely under the stewardship of the Central Bank. Policies and measures in these subjects are having their impacts on progress or otherwise of numerous sectors of the real economy, either acting directly or working through various intermediary agencies. I will take up three subjects for discussion in the rest of my address: (i) the low interest rate regime; (ii) measures to ease stresses in the external sector; and (iii) financial sector stabilisation policies.

### **Low interest rate regime**

The role of the interest rate in a market economy is differently interpreted. It is clearly a double-edged weapon. A reduction of interest rates encourages investments but at the same time discourages savings. Prior to 1977 we had a system of relatively low interest rates. The argument against such low interest

rates at the time, was that it led to shallow financial depth and the recommendation was for “financial deepening”. Interest rates were made to rise, sometimes to very high levels since the end – 1970s. TB rates went up to 18 – 20% levels. Upper margin of lending rate ranges rose to as high levels as 30%. This was considered necessary to improve domestic savings and to address high inflation rates at the time.

The government policy of encouraging domestic production activity since 2019 led to the adoption of the present low interest rate regime. Low levels of inflation and stable inflation expectations have helped in the implementation of this policy. Accordingly, policy interest rates and the Statutory Reserve Ratio (SRR) were reduced by the Central Bank to their lowest levels in history and special lending schemes were initiated at concessionary rates. Another measure adopted was to introduce interest rate caps on selected loan products to expedite the monetary policy transmission process. These monetary easing measures have brought market interest rates down significantly, with most interest rates reaching historically low levels. Lending rates, which were at double digit levels, came down substantially, often to single digit levels. As a follow up of these measures, one witnesses a gradual increase in credit extended to the private sector. COVID – 19 necessitated a rise in credit to the public sector to extraordinary levels, and the low interest rates regime enabled the Government to gain from the consequent low cost of public debt financing. There was a 3 per cent reduction in the cost of financing Treasury bills and bonds in 2020, compared to 2019 – a reduction of government expenditure by Rs. 200 billion. The availability of low-cost funding on a sustainable basis would encourage businesses, including start-ups, to venture into new industries and sectors that have high growth potential. In the meantime, there is the need to introduce methods to help social groups, such as fixed income earners, particularly senior citizens depending on retirement pensions, affected by low deposit interest rates. The sustainable solution to this problem lies in long-term income growth and institutional developments involving mutual funds, insurance and annuity, pension, and superannuation schemes.

Low lending rates and adequate levels of liquidity in the market would help channel funds to the private sector in the form of low-cost loans. The Central Bank expects credit to the private sector to expand by around 14.0 per cent in 2021 and at least by around 12.0-12.5 per cent annually over the medium-term, thereby supporting the envisaged growth of the economy. Directed or targeted lending has been part of industrial policy of “developmental state” regimes in East and South east Asian countries. Sri Lanka has had some limited practice of

directed lending. In order to make low interest rate policy effective in respect of investment and growth promotion, the existing policy of directed lending is will be refined and extended to cover new areas, according to Central Bank announcements.

### **Measures to stabilize External Sector.**

For the sustainability of the low interest rate structure, it is essential that foreign exchange leakages into non-essential imports and for outward investment purposes are minimised, thereby allowing the domestic production economy to reap the intended benefits from easy monetary conditions. Overall, while working within a framework of market economy, the performance of the open economy policies introduced from 1977 are being reviewed vigorously, so that the country's economic agents could follow a focused approach to make Sri Lanka truly an industrial economy.

A policy framework with such long-term objectives would generate greater macroeconomic benefits than being driven by short-term vicissitudes in the market and unbridled desire for short-term financial gains. In accordance with the policy framework outlined in the “Vistas of Prosperity and Splendour” and the Budget 2021, the Government has provided policy support to improve domestic production, particularly in agriculture, fisheries, livestock, manufacturing industry and information technology sectors.

Domestic supply improvements in turn would enhance Sri Lanka's external competitiveness and export potential, as well as actual export earnings, while also reducing seasonal volatilities in domestic inflation to a great extent. These features of the new macroeconomic policy framework would ensure a coordinated approach to pushing the country on to a rapid growth path and sustained prosperity.

Such a policy to operate without hiccups, there should be careful planning and stabilization of the external sector. What happens to trade, current account and other balances in the country's balance of payments, and external reserve position and finally, on what happens to the rate of exchange of the currency all depend on overall external inflows and outflows and their composition.

These would include goods and services; income account inflows and outflows (primary and secondary income), financial account inflows and outflows (direct and portfolio investments, loans, trade credits) etc. Sum of these (netting out credits and debits) is the addition/reduction of external reserves. The volume of

reserves, in an economy open to the world, takes an extremely important position in policy terms.

The current account has recorded a surplus in the third Quarter of 2020. The Gross official reserves were around USD 5.6 billion by end December 2020. Workers' remittances are estimated to have exceeded USD 7 billion. It is expected that higher remittances will follow the new policy measure offering an additional Rs 2 per US dollar so remitted.

In the meantime, several measures have been adopted to preserve/ increase the reserve position. These would cover the whole gamut of policies adopted to increase inflows and to reduce outflows. It is not correct to take merely the financial account flows of the BOP. The latter, i.e., investments, loans, loan repayments, various currency exchange arrangements called SWAPs, are what most people talk about. This may be because these are amenable to policy action in the short term. Arrangements are in place for roll over of previously taken loans - new loans taken from multilateral agencies, foreign banks and market borrowings, swap arrangements and Special Deposit Accounts scheme.

In our present situation, there are several important policy measures affecting the real sector or real sector related activities. The implementation of these policies, in the areas of rationalisation of imports, improving domestic production and exports, improving proportion of export proceeds brought in, promoting workers' remittances, careful opening of country for tourist traffic, and promoting FDI into such projects as the recently opened tyre factory, Port City Project investment etc. Yet, foreign exchange related activities in a small country are rather difficult to guide and regulate. Market sentiments become very important in this subject area of policy making and regulation. One finds market participants often being able to find ways and means of circumventing the regulator.

In 2020, we encountered an extremely challenging external environment and therefore strict policy measures were introduced to rationalise on non-essential merchandise imports, while encouraging foreign exchange flows into the country. These measures helped contain the pressure on the exchange rate without depleting foreign reserves. Although the argument that market forces must be given a relatively free hand in the determination of the exchange rate and foreign exchange flows is widely heard, such market fundamentalism could hardly co-exist with the overall "developmental state" framework of policy. Market manipulations by a few for undue personal gain during difficult times, at the expense of the masses, do often happen. The exchange rate acts as a shock

absorber to alleviate the impact of external developments on the domestic economy, but the Central Bank has to, within the current policy framework, intervene in the domestic foreign exchange market to reduce undue volatilities in the exchange rate, as well as to build up international reserves as appropriate. This has been done fairly effectively in 2020. The Central Bank trusts that the envisaged real sector developments will help maintain exchange rate stability. It is worth recalling that 2020 data show that a planned reduction of the trade deficit, perhaps the more intractable one in the twin deficits referred to, is feasible. It has been possible during this year to repay external debts on time while also maintaining the external reserve at acceptable levels. Properly designed and implemented regulations work and indeed produce expected results.

We are traversing through challenging times. It is important to closely monitor domestic as well as global monetary and macroeconomic developments to be able to effectively deal with renewed and impending challenges. The pandemic and its wide-ranging impacts have urged all of us to rethink our economic strategies. In the past, we borrowed rather freely from international markets and multilateral agencies to develop the nation, and as a result, our foreign debt had increased notably and rather menacingly. Foreign commercial borrowing, commencing from 2009, remained in the initial years at subdued levels with total International Sovereign Bonds (ISBs) issued in the initial six years, 2009-2014, remaining at US dollars 5,000 million. ISBs issued in the next five years from 2015-2019 rose to US dollars 12,050 million, pushing up the country's foreign debt from commercial sources substantially. The current policy is to move into domestic financing sources to fund the development projects. To support these initiatives, the financial markets need to be proactive, maximising domestic funding sources for growth-oriented endeavours of the public as well as the private sectors.

### **Financial Sector Stabilization Policies**

The year 2020 has been, and this year is going to be, extremely difficult times. The first wave COVID -19 began in March 2020 and went strong until about June that year. The revival, during third quarter was subsequently interrupted in the fourth quarter 2020, with the second wave of COVID-19. To help protect livelihoods and businesses the Government and the Central Bank had to step in with a series of measures such as hand-outs, moratoria, liquidity support, and low interest loans. Loans to the Government from Central Bank through various instruments went a long way to provide the financial resources to meet government's anti-COVID-19 expenses. All these measures addressing issues faced by the general public, have worked through banks and other regulated

financial institutions. However, we should not forget the fact that these extraordinary measures have affected the bottom lines of banks and financial institutions. The regulator was concerned about this. Various measures were implemented to monitor, regulate and supervise banks and financial institutions to ensure their resilience and robustness, while also introducing measures to ease their burden. These included relaxation of existing regulatory requirements, and maintenance of large volumes of liquidity in the market. These were challenges before the Central Bank. To be flexible, as well as being firm and allowing banks and financial institutions to see out-of-the box solutions while being stable were the needs of the hour. It is encouraging that banks anyway remain strong.

However, problems of instability were seen in the non-bank sector of financial institutions. A categorization of non-bank financial institutions into 3 groups - strong, moderately strong, and weak – has been made. You may recall the unpleasant episodes of failing and closure of finance companies. There were, for example, the 06 distressed finance companies, namely ETI Finance Limited, Swarnamahar Financial Services PLC, The Finance Company PLC, Central Investment and Finance Limited, Standard Credit Finance Limited and TKS Finance Limited. To create a strong and resilient non-bank financial sector, the Central Bank is in the process of implementing a Master Plan for consolidation and merger among these institutions.

In the medium to long- term, there are plans to develop certain administrative or regulatory frameworks. A new Banking Act and amendments to the Finance Business Act are on the cards. There will also be a review of existing directions to financial institutions to make them fall in line with changing regulatory methodologies and market developments.

The other Central Bank activities helping to strengthen and promote the financial sector would include digitalization work, following trends in the rest of the world. In this regard, much has been done by the Central Bank over the recent past to facilitate the growth of financial technology. The LANKAQR system introduced in 2018, has become extremely popular. The objective of this is a “less cash society”. The conversion to digital technologies helps enhance efficiency and formalize transactions. Digitalization of transactions would facilitate financial system stability while promoting economic growth. There are various measures and training programmes undertaken by the Central Bank to improve financial literacy in the country, as well. This is of significance in the move toward a stable system of financial institutions.



The Central Bank and the Government will continue to pursue a coordinated approach in steering the economy through these challenging times. The implementation of the medium-term fiscal framework of the Government will provide the needed fiscal space and to attain the targeted goal of a budget deficit of 4 per cent of GDP by 2025. This would be of immense use in the envisaged programme of sustained stable growth with price stability. It appears however, that there are huge challenges to be overcome if these declared policy objectives were to be achieved. The Central Bank will work jointly with the Government to introduce and implement essential structural changes that are required to drive the economy along the envisaged growth path. The implementation of these structural changes, along with the picking up of Government revenues and rationalisation of Government expenditures, should ensure sustainability and easy management of public debt in the period ahead.

Meanwhile, the Government has created a conducive environment for investment through necessary tax reforms as well as legislative reforms, thereby making Sri Lanka a destination of promise for investment, domestic and foreign alike. The Colombo Port City Special Economic Zone is coming up, offering positive messages as an attractive business gateway linking markets in the East and the West. Plans to promote Colombo and Hambantota ports as commodity trading hubs, and to establish a modern investment zone for local and foreign private investors under the Strategic Development Act, are expected to entice a sizable flow of foreign capital into the country in the period ahead. The “developmental state” envisages indeed a coalition among three forms of capital - domestic private capital, foreign private capital, and state capital.

As mentioned at the beginning I have briefly indicated certain critical policies and strategies that are being followed to restore economic growth and prosperity in the country. Most of my address is shaped by the hat I was wearing, i.e. that of the Governor of the Central Bank. Occasionally only the academic in me came out. I am sure, some of you researchers would be undertaking research on these policy issues. Your critiques and new ideas you might be coming up with would serve a useful purpose if these are made available to us soon. Most important are the new ideas, if possible, out-of-the box.

I am confident research Conferences like these produce relevant knowledge on the local economy, and its problems of shared growth. Shared growth is indeed what we must try to achieve. Over the next one and a half days, I encourage you

to develop your ideas and insights about pressing matters I mentioned, as well as other critical issues you yourselves would pick up for investigation.

I wish you have a fruitful and constructive two days of presentations and discussions, which in addition to academic advancement, will also help build up lasting social bonds.

Thank you!

**Deshamanya Prof. W D Lakshman**

Governor

Central Bank of Sri Lanka

**9<sup>th</sup> International Conference of the  
Sri Lanka Forum of University Economists**

*Organized by*

**Uva Wellassa University of Sri Lanka**

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## **Special Session on COVID Research**





## **EFFECT OF COVID-19 PANDEMIC ON AGRI-FOOD SUPPLY CHAINS IN SRI LANKA**

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### **Introduction**

Following in-country's diagnosis of the first Sri Lankan with COVID-19 on March 11, 2020, the government of Sri Lanka implemented control measures that were perhaps the most stringent a country has experienced during the pandemic. Starting March 20, 2020, a 24-hour curfew was imposed on the 22 million people, relaxed only in low-risk districts twice a week for a few hours. The curfew was partially lifted on April 20, then re-imposed intermittently until May 10. This stringent disease management strategy however came with economic disruption and costs, leaving a large number of people, particularly in the informal sector vulnerable which contributes to about 59.8% of the total employment and 86.3% of the employment in the agriculture sector (ADB, 2017).

In addition to its impact on public health, COVID-19 pandemic and government policy responses have caused a major economic shake up in a way that has led to dramatic changes and varied behavioural responses in businesses and among consumers. Further, the COVID-19 outbreak and the control measures forced many businesses to close, leading to an unprecedented disruption of commerce in most sectors of the economy. Many supply chain actors faced a range of challenges, such as those related to health and safety, supply chain disruptions, the workforce, cash flow, consumer demand, sales, and marketing.

With this background, the study was designed to identify the nature of the effect of COVID-19 pandemic on business activities of the actors in food supply chain and how they mitigate the challenges which occurred due to prevailing conditions in Sri Lanka and elsewhere. The overall objective of this study is to showcase the effect of the immediate measures implemented on the agri-food supply chains in Sri Lanka with emphasis on the microentrepreneurs. The paper is organized as follows. The next section provides an overview on food supply chains of Sri Lanka. An account on agri-food policy response to the COVID-19 pandemic is presented next. The

following section presents findings from food supply chain survey with emphasis on producers, households, and intermediaries.

## **Overview of Food Supply in Sri Lanka**

### **Agricultural exports and food imports**

Sri Lanka is self-sufficient in the production of rice, and nearly self-sufficient in the production of other important food items such as meat, fish, eggs, vegetables, and fruits. However, the country imports many of its essential food commodities. In 2019, Sri Lanka imported LKR 410.3 billion of food and beverages which accounts for 11.9% of the total imports (Department of Census and Statistics, 2020). Imports as a share of the total requirement was 30% of cereals, 96% of pulses, 93% of sugar, 95% of vegetable oils, 57% of spices. (Department of Census and Statistics, 2019). The country's key agricultural exports include tea, spices, fresh vegetables, fruits, and fish.

### **Agricultural production**

Food production in Sri Lanka is carried by many scattered small holders. Seeds of paddy and Other Field Crops (OFCs) are locally produced. Seeds of exotic vegetables, particularly for production in the green houses, and the other agricultural inputs (fertilizer, pesticides, fuel, machinery.) are largely imported. Livestock production is also carried out mostly by the small-holder farmers. Except for dairy, Sri Lanka is self-sufficient in other livestock products. The export crops tea, rubber, and coconut are cultivated as plantations and as well by smallholders. Other export crops, spices such as cinnamon, ginger, and pepper are mainly cultivated by small-scale farmers.

The collective action (in the form of cooperatives or other organizations) among farmers working as groups is weak that undermines their bargaining power. Village level suppliers supply inputs to farmers mainly on credit and a significant share of produce (mainly rice) are bought back by them (because of the linked markets due to missing markets for credit and insurance).

### **Food processing, Distribution and Marketing**

Food processing is a growing sector in Sri Lanka with a huge potential. The sector comprises a few large dominant players in particular commodity groups and many micro and small entrepreneurs. Poor value chain governance leads to opportunistic behaviour for both the farmers and the integrators i.e. reflected in poor commitments to contractual agreements. This

could have hindered vertical integration and insufficient growth in contractual arrangements, which slowed down linking of smallholder farmers to the markets.

Most consumers (except those based in agricultural areas) depend on markets for their food needs. The quantities channelled through supermarket supply chains, compared to traditional retail outlets, with respect to fresh vegetable are small. Urban and medium/high income consumers largely rely on supermarkets and for this segment the role played by the small retailers and wet markets has been declining over time. However, small retailers and wet markets still play a significant role in the rural markets. A few leading supermarkets buy directly from farmers mostly through their collection centres. Furthermore, studies have revealed that supermarkets tend to buy their vegetables from traditional wholesale markets especially during periods of surplus production (glut). Commercial production of vegetables, tuber crops and fruits are channelled through the Dedicated Economics Centres (Dambulla, Thambuththegama) for island wide distribution.

### **Effect of COVID-19 on Food Distribution in Sri Lanka**

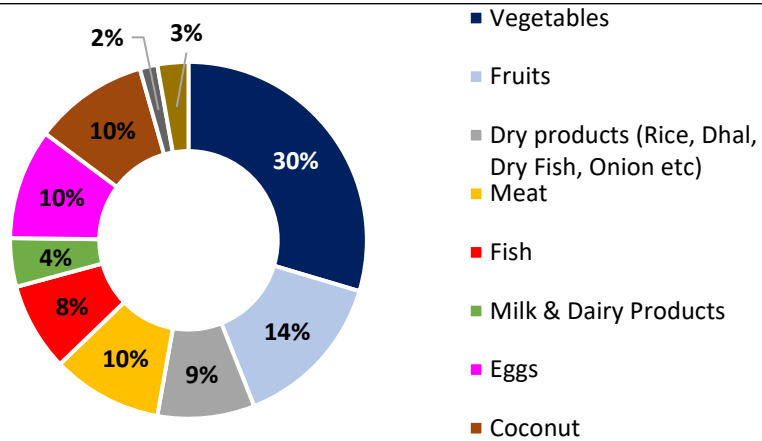
#### **Sampling and Data Collection Method**

Primary surveys were designed to collect data from supply chain actors in food supply chains in Sri Lanka. During to movement restrictions-telephonic surveys were conducted as the best alternative for gathering data. There is no sampling frame to derive a representative sample from. Hence, the research team collected data from food chain actors via snowballing. During the lockdown, food retailers came to doorsteps of the households. They were interviewed and the next supply chain actor of the supply chain was tracked down with the information provided by the retailer and so on all the way down to the producer. The data collection thus followed actors in specific supply chains. The sample comprised 250 respondents covering all 9 provinces and 13 districts in Sri Lanka.

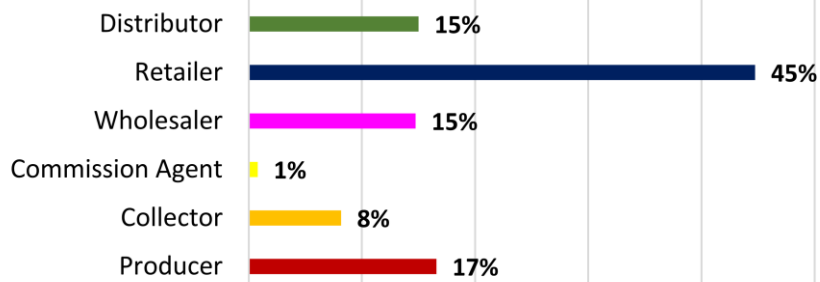
#### **Findings**

The study investigated 147 different food supply chains which operated in the study area. Figures 1, 2, 3 and Table 1 depict the composition of the supply chain actors in terms of food categories, roles played, number of supply chain activities performed and the interphases operated.

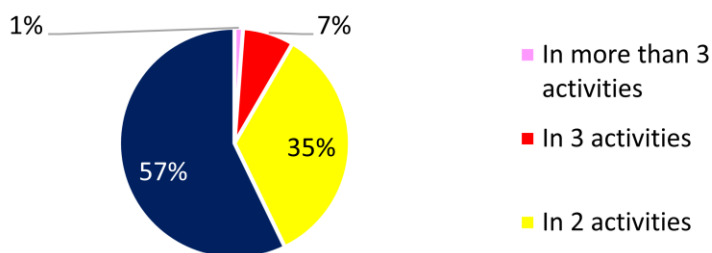
**Figure 1: Diversity of surveyed food supply chains**



**Figure 2: Composition of respondents' involvements in different supply chain roles**



**Figure 3: Nature of respondents' involvements in different supply chain roles**



Source: Authors' illustration

**Table 1: Respondents' interactions in different food supply chain interlinks**

Interphase	Frequency	Percentage
Producer-Retailer	91	16%
Producer-Collector	47	8%
Producer- Distributor	29	5%
Producer-Wholesaler	40	7%
Producer - Commission Agent	5	1%
Producer-Consumer	29	5%
Wholesaler - Commission Agent	3	1%
Wholesaler - Distributors	24	4%
Wholesaler-Wholesaler	21	4%
Wholesaler-Retailer	99	17%
Wholesaler - Consumer	26	4%
Retailer-Retailer	22	4%
Retailer - Distributor	18	3%
Retailer-Consumer	125	22%

Source: Authors' estimation

### Effect of COVID-19 on Routine Business Activities

Around 90% of the food chain actors believe that their routine business activities were affected during the period compared to pre-COVID period. Seventeen percent of them believe that the pandemic affected them positively while 65% believe that it affected them negatively (See table below). Moreover, on average, respondents had to close their businesses temporarily for 36 days.

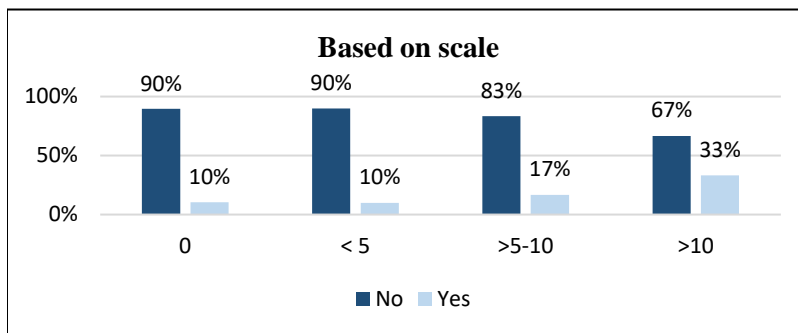
**Table 2: Perception on the Overall Effect of the COVID-19 Pandemic**

Statement	Strongly disagree	Disagree	Neither Agree nor disagree	Agree	Strongly Agree
This situation was positively affected by my regular business activities	30%	30%	23%	14%	3%
This situation was negatively affected by my regular business activities	2%	15%	18%	37%	28%

Source: Authors' estimation

There is variation in the percentage of food chain actors affected by scale of operation where smaller scale operators seem to have been affected more (Figure 4). Further, changes have happened differentially more in the input markets (Table 3). In terms of response, majority changed their previous supplier (25%) for some inputs due to movement restrictions, availability of stocks with suppliers, and the intensity of the bargaining power of the respondents. The entrepreneurs decreased all/some of the quantities of material inputs that they bought compared to the pre COVID period. Moreover, they changed some of the material inputs (15%) to match with the prevailing market conditions (Table 4). Also, respondents have faced reduction of working capital. As per table 5, majority have faced a 10 to 30 percent reduction in working capital during the pandemic period. Source:

**Figure 4: Ability to conduct routine business activities as normal by Scale**



**Table 5: Changes to Material Inputs**

Changes occurred with regard to material inputs	Frequency	%
Change the supplier of all previous inputs	17	4%
Change the supplier of some inputs	97	25%
Change all the material inputs	11	3%
Change some of material inputs	59	15%
Increased the bought quantities of all previous inputs	14	4%
Increased the bought quantities of some of previous inputs	51	13%
Decreased the bought quantities of all previous inputs	71	18%
Decreased the bought quantities of some of previous inputs	72	18%

Authors' illustration

<b>Table6; % Experienced Reduction in Working Capital</b>		
<b>% Reduction of working capital during the pandemic period</b>	<b>Frequency</b>	<b>%</b>
< 10	6	4%
>10-30	92	59%
>30-50	48	31%
>50-70	6	4%
>70 -90	3	2%

Source: Authors' estimation

The Table 7 below summarizes the changes that occurred in average input price and quantity, average output price and quantity and average profit margin.

**Table 7: Summary statistics of average input price change, input quantity change, output price change, output quantity change, and profit margin change**

<b>Change Occurred</b>	<b>Observation</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Min</b>	<b>Max</b>
Average input price change	235	-0.24	0.51	-1.00	2.03
Average input quantity change	232	-0.15	1.26	-1.00	9.00
Average output price change	244	-0.16	0.47	-1.00	3.09
Average output quantity change	241	0.04	1.83	-1.00	19.50
Average profit margin change	232	0.13	3.28	-15.00	24.33

Source: Authors' estimation

### Adoption of mitigation practices

Some respondents tended to rely on loans to overcome the economic instability during the pandemic period. As a percentage, 15% of the respondents obtained loans during the pandemic. To maintain supply of labor, some owners tended to provide transport facilities to laborers during the pandemic period. Table 8 below presents the perception of the effects of COVID-19 on business activities, and behavioral changes.

**Table 8: Perceived effect of COVID-19 on business activities and behavioral changes**

Statement	Strongly disagree	Disagree	Neither Agree nor disagree	Agree	Strongly Agree
I had to change my role/functions in the food supply chain	11%	31%	19%	32%	7%
I have shifted into a new food supply chain	13%	48%	18%	18%	3%
I found some new business opportunities	9%	36%	23%	27%	5%
This situation motivated me to think about innovative ways to overcome	7%	22%	22%	45%	4%
This situation motivated me to utilize existing social networks for resource mobilization	6%	16%	21%	49%	8%
This situation motivated me to expand the existing business and/social networks	7%	20%	19%	48%	6%
I looked for alternative income sources (eg. Agricultural activities, selling sanitizer and face masks)	7%	39%	16%	32%	5%
This situation was positively affected by my regular business activities	30%	30%	23%	14%	3%
This situation was negatively affected by my regular business activities	2%	15%	18%	37%	28%
Even after the pandemic, I wish to continue businesses/business practices I started during the pandemic	3%	15%	34%	36%	12%

Source: Authors' estimation

Intermediaries in the sample responded that COVID-19 pandemic negatively affected their business (65% respondents agreed on this statement) and few (21%) shifted into new food supply chains and some found new business opportunities and engaged with alternative income-generating activities such as agricultural work and activities from the surge sector, selling sanitizer and face masks. Importantly, apart from that, COVID-19 pandemic motivated



them to think more innovatively to conduct their businesses, to utilize existing social networks for resource mobilization and to expand the existing business and/social networks. Further, from the majority of entrepreneurs who have started new businesses or/and altered their previous businesses are willing to continue those activities even after the pandemic period.

### **Effect of COVID-19 pandemic on the Producers**

A sample of 250 farmers from 7 districts representing different agro-ecological zones of the country were interviewed to understand the effects of COVID-19 pandemic on their production activities. The agricultural production activities have not been significantly impacted even though as Pandemic hit at post-harvest or at the harvesting stage of the crop in the Maha cultivation season. However, since the markets were disrupted, fresh produce farmers (e.g. vegetables and fruits) faced greater difficulty in selling their produce. Even though the government launched a public procurement programme, there was no proper structure in place. Most fresh produce farmers reported selling their produce at substantively lower price.

### **Effect of COVID-19 pandemic on Consumers**

An online survey was conducted comprising a sample of 300 households representing the 25 districts of Sri Lanka. A self-administered questionnaire was distributed among all undergraduate students enrolled in BSc degree programs in Faculties of Agriculture in University of Peradeniya, Rajarata University of Sri Lanka, and the Uva-Wellassa University. The questionnaire was circulated in September 2020 and it was left open until 300 students responded. The students were requested to provide information on socio-economic characteristics of the household, and its food buying behavior and food consumption pattern before and after the first wave of COVID-19 disruptions. The socio-economic characteristics of the sample indicate that over 60% of the sample was from middle class and majority of the parents work in the formal sector (only 10% of the parents work as casual laborers). The average distance to the nearest grocery store and town, which provides a proxy for connectedness to markets, were 1km and 6.5km, respectively.

The results revealed some changes in the food buying behavior owing to COVID-19 disruptions. Reductions in in-person shopping, tendency to purchase more at one go when shopping, used comparatively less busy stores for shopping, buying larger quantities than previous and starting to rely on food delivery systems were the most frequent changes occurred (Table 9).

**Table 9: Changes in shopping habits**

<b>Shopping Habits</b>	<b>Frequency</b>	<b>Percentage</b>
Shop in-person less often	110	14%
Purchase more groceries when shopping	102	13%
Shop-in-person in less busy stores	105	13%
Purchase more frozen food	14	2%
Purchasing more packaged foods	65	8%
Started grocery delivery	66	8%
Purchasing less fresh (perishable) produce	48	6%
More attention to food packaging	38	5%
Increased frequency of grocery delivery	21	3%
Purchase fewer groceries when the shop	17	2%
Buying larger quantities than usual	72	9%
Buying cheaper or less preferred foods than usual	42	5%
Going to different grocery stores	34	4%
Shopping habits have not changed	22	3%
I don't shop for groceries	27	3%
Not sure	16	2%

Source: Authors' estimation

The perceptions of the households on safety of food had also changed due to COVID-19 disruptions. The majority highlighted that they were not 100% confident about the safety of the food they consumed during the COVID period, but they have somewhat faith (around 50% confident) regarding the safety of the food they consumed during the COVID period (table 10).

The findings on food consumption pattern revealed that availability of rice, the staple, at the household level was not adversely affected in majority of the households. By the time that the disruptions commenced, paddy harvesting operations were concluded in most regions of the country. As most

of the paddy farmers are semi-subsistence, sufficient stocks of rice was available at the household level. Also, during the disruptions, the government imposed a ceiling price on rice and facilitated paddy procurement through government agencies to ensure smooth distribution of rice among the consumers and safe-guard producers. In addition, an increase in consumption of items extracted from food tree crops, such as jackfruits and breadfruits, was observed.

**Table 10: Confidence in the safety of food bought for consumption**

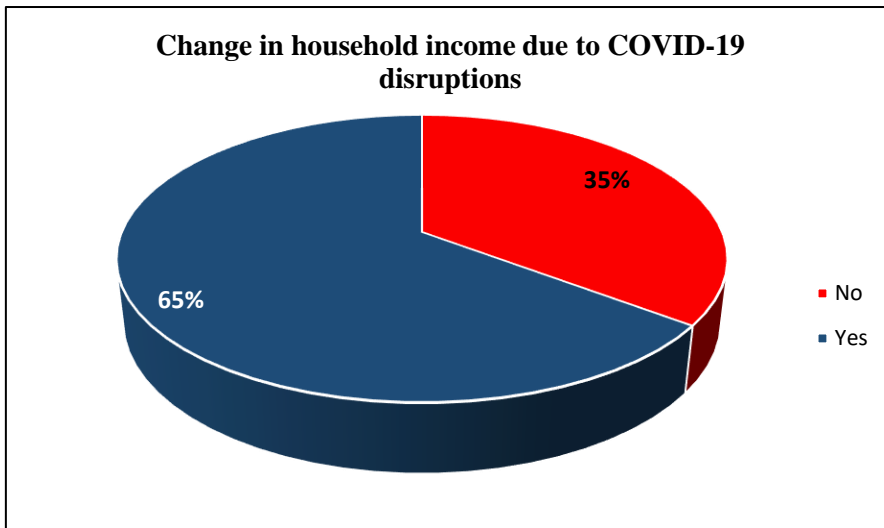
Statement	Frequency	%
Yes, I am very confident that the food I am buying is safe to consume	56	19%
Yes, I am somewhat confident that the food I am buying is safe to consume	162	55%
No, I am not at all confident that the food I am buying is safe to consume	35	12%
No idea	44	15%

Source: Authors' estimation

The ceiling prices imposed on canned fish and dhal by the Consumer Affairs Authority seems to have ensured accessibility to the essential ingredients in typical middle-class Sri Lankan food consumption. Egg prices had decreased during the times of COVID as small-scale producers started releasing stocks of eggs among the households. In terms of market price behavior, no price change was observed in wheat flour, bread, dairy products, and sugar as most of these food items are subjected to price regulations. The survey results indicate that quantities of consumption of such items have either not changed or even increased during COVID-19 disruptions as tendencies for stocking and bulk purchases went up.

The respondents however perceived a general rise in food prices relative to non-food. Price increases in condiments, pulses, vegetables, coconut, fish, dried fish, and fruits were felt by the majority of consumers. Consequently, a decrease in consumption of vegetables, leafy vegetable, fruits, dried fish, eggs, milk, fish, and meat like food was observed.

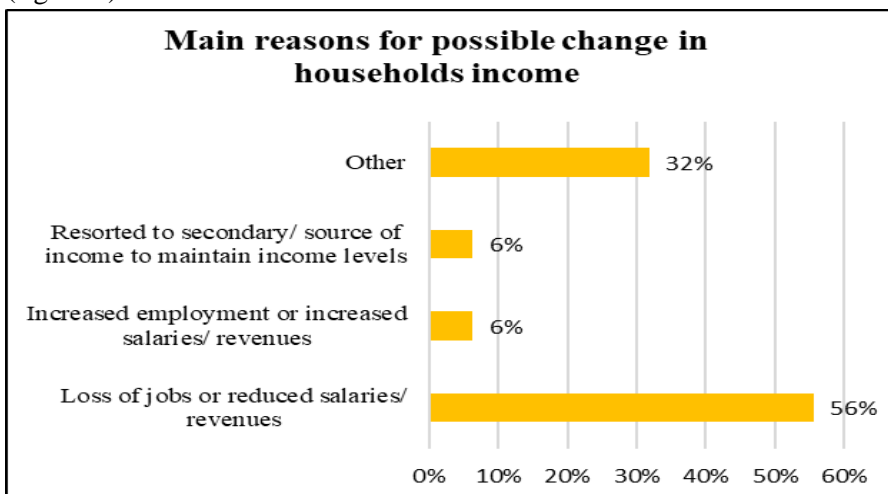
The changes in household income could further exacerbate lack of food affordability. More than half of the sample have agreed on having changes in household income as in figure 5.



Source: Authors' illustration

**Figure 5: Change in household income due to COVID-19 disruptions**

And they have identified loss of jobs/reduction in salary during the COVID-19 period as the main factor which have led to change the household income (figure 6).



Source: Authors' illustration

**Figure 6: Main reasons for changing household income**

At a summary level, a change in food habits could also be seen toward subjectively assessed healthier options and a tendency for a healthier lifestyle. The survey results indicate that people ate home food whenever possible, drank more herbal, nutritious drink more frequently, and tried to have a sufficient and balanced meal during the times of disruptions. Proper washing of vegetables, fruits, meat and fish before preparation and heating of food for a longer duration were also observed.

Table 11 presents the changes in eating habits during the COVID period, accordingly households have tended to eat only from home (22%), to eat more healthy and nutritious foods (18%), to eat enough amount (14%), to switch from tea to herbal drinks (14%) and to drink herbal drink more frequently (13%) during the COVID period. Increase in home-garden cultivation was another change in response to the incentives provided by the government for cultivation in home-gardens. A resulting increase in consumption of home-grown food, healthier life styles, provision of more care for vulnerable groups, and spending more time on social-networking were also visible in survey results.

**Table 11: Changes in eating habits**

<b>Eating habits</b>	<b>Frequency</b>	<b>Percentage</b>
Towards eating more healthy and nutritious food	149	18%
Skipping meals	20	2%
Eating only a few varieties of food	70	9%
Eating less than earlier	36	4%
Eating enough	111	14%
Eating not enough	9	1%
Hungry but did not eat	12	1%
Ran out of meals	13	2%
Eating only home-cooked food	184	22%
Switch from tea to herbal drinks (koththamalli, paspanduwa, etc.)	111	14%
Drink herbal drinks more frequently	106	13%

Source: Authors' estimation

## Conclusions

The COVID-19 pandemic and the government-imposed movement restrictions were expected to have had mostly negatively affected the food supply chain actors. Due to inefficiencies in the food marketing channels, while the fresh produce farmers suffered from lack of a market for their produce, the consumers found less availability of fresh food. What was least disrupted were the non-perishable cereals. More than the supply, it was the supply chain issues that were comparatively affected. The intermediaries in the supply chain faced difficulties in accessing produce for resale. Even though some concessions were given by the government e.g. low interest loan facility, debt moratorium not many intermediaries availed of these. This is partly a reflection of the lack of integration of small entrepreneurs with the financial markets. However, the micro and small entrepreneurs in the food supply chain depicts a high flexibility in quickly adjusting to the market needs which may be due to the low fixed to variable cost ratio of small businesses. The low fixed cost to variable cost ratios and their small size provides them resilience even when they are most adversely affected with a correlated shock like COVID 19.

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## **RESTRUCTURING TOURISM ECONOMIES TO FACE THE ‘NEW NORMAL’: COVID 19 ALTERNATIVE TOURIM**

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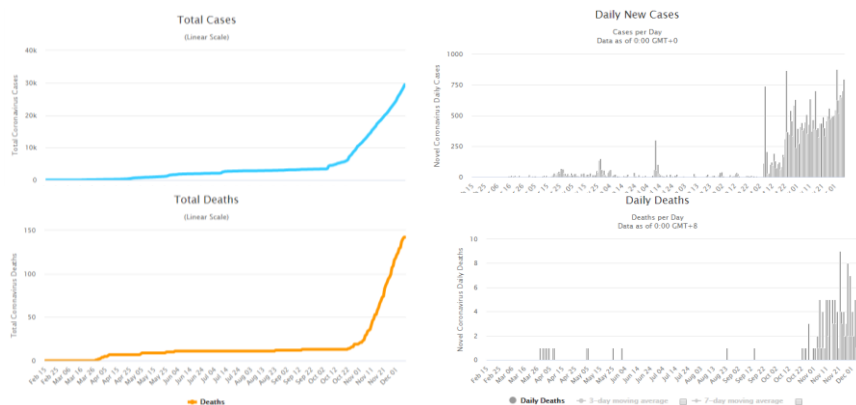
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### **Introduction**

The world did not anticipate the impact of COVID19 to be this magnitude. It has been around a year since the first COVID19 patient had been reported from Wuhan, P.R. China. The novel pandemic has brought the entire world to its knees. The industrial and service sectors have come to a screeching halt and the agriculture sector is still surviving despite of many challenges. Both public and private sector institutions are searching for alternative strategies to resume and run their operations and the government's hands are tight with many financial constraints. The schools and universities are turning in to online, with poor or no 3G, 4G coverage in the peripherals. The food and beverages, vegetables, medicine and other orders are placed online and the supply channel is still half the mile. The opening times of the shops are getting limited, so as the items to be sold. The flights are grounded and the ships are anchored. The share market, the back born of nation's economic infrastructure, was shut down for a few months for the first time in its history. The importations are controlled to save the foreign currency and the limelight is on local economies. At this onset, COVID19 has exhibited much things that were realistic only in fictions and the show is yet to continue. Thus, the purpose of this working paper is to make an assessment of impact of COVID19 on Sri Lanka tourism and to propose strategies to face the 'new normal' through alternative tourism.

The latest statistics issued from World Health Organization (WHO) indicates that COVID19 is still at a growing phase. The daily record of COVID19 cases has doubled from 300,000 in early September to 600,000 in early December 2020. To date (December, 11), 70 million COVID cases have been reported globally including approximately 1.6 million deaths. The growth curve is still upward trending and the virus lives well with the winter. The situation in Sri Lanka is also alarming since Sri Lanka exceeded the land mark of 30,000 cases on 9<sup>th</sup> December 2020 with 144 deaths (see Figure 1).

According to United Nation World Tourism Organization (UNWTO) statistics international tourist arrivals has declined by 70% in January-August 2020 over the same period in 2019 due to various reasons (UNWTO, 2020). They include: travel bans, suspension of flights, curfew regulations, high cost of travel, safety concerns of the potential travelers, and change of attitude of hosts towards the guests (Samarathunga, 2020). The UNWTO further estimates 75 million job losses worldwide and a plunge of US\$ 1 trillion in international tourism receipt. The airlines industry, in particular, has suffered a loss of US\$ 390 billion and aviation-supported jobs has fallen by 43% (IATA, 2020). International tourism could recover the levels of 2019 in a period of 2.5 to 4 years based on a variety of factors including: 1) travel restrictions; 2) slow virus containment; 3) Low consumer confidence; 4) prevailing economic conditions; 5) lack of coordinated response among countries; 6) slow flight resumption according to UNWTO (2020). This is by far the worst result in the historical series of international tourism since 1950 and puts an abrupt end to a 10-year period of sustained growth since the 2009 financial crisis.



Source: Worldometer (2020)

**Figure 1: Spread of COVID19 in Sri Lanka**

### **Sri Lanka economy and tourism**

Since the end of the terrorist struggle, Sri Lanka kept much faith on the tourism industry by introducing conducive tourism policies to uplift Sri Lankan economy. As a result two mid-term tourism plans were produced by Sri Lanka Tourism Development Authority namely: Tourism Development Strategy (2011 – 2016), Sri Lanka Tourism Strategic Plan (2017 – 2020).



Both plans aimed at increasing the employment opportunities for local residents, earning foreign exchange, attracting Foreign Direct Investments (FDI's), increasing the number of hotel rooms in Sri Lanka and thereby to contribute to the Sri Lankan economy. Table 1 summarizes the growth of Sri Lanka tourism since 2009.

**Table 1: Value & volume of Sri Lanka tourism**

Year	Tourist Arrivals	Foreign exchange earnings (US\$ mil.)	Employment opportunities created (direct and indirect)	Hotel Rooms (SLTDA registered and unregistered)
2009	447,890	349.3	124,970	14,461
2010	654,476	575.9	132,055	14,710
2011	855,975	838.9	138,685	14,653
2012	1,005,605	1,038.3	162,869	15,510
2013	1,274,593	1,715.5	270,150	16,223
2014	1,527,153	2,431.1	299,890	18,510
2015	1,798,380	2,980.6	319,436	19,376
2016	2,050,832	3,518.5	335,659	22,336
2017	2,116,407	3,924.9	359,215	35,986
2018	2,329,294	4,380.6	388,487	38,214
2019	1,913,702	3,606.9	402,607	40,365
2020 (Q1)	507,311	-	-	-

Source: SLTDA Annual Reports (2009 – 2019)

Sri Lanka tourism industry is the third biggest Foreign Exchange (FE) earner with a total earning of \$ 4.4 billion in 2018 and \$ 3.7 billion in 2019 (SLTDA, 2020) that has got the worst hit among other top FE earners: foreign remittances, textile and apparel, and tea. The apparel and tea sectors will also continue to record a declined FE earnings due to the impact of COVID-19 on source markets. Although Sri Lanka has formulated strategies to attract six million tourists by 2025 and earn \$ 10 billion income, it is highly unlikely that those goals will turn into realistic figures. Additionally, the target of achieving 3.5-4 million tourists and earning US\$ 5 billion in 2020 has already turned to a day dream.

According to SLTDA statistics in 2018, 173,592 and 229,015 people were employed as direct and indirect employees respectively by the tourism industry (SLTDA, 2020). As of now, a vast majority of these workers are temporarily unemployed due to the closure of hotels and restaurants, airlines,

travel agencies, tourist shops etc. This has made a significance impact on the families who were totally depending on tourism. On the other hand, tourism investors are facing a financial crisis without being able to maintain a sufficient cash flow to pay back the debts, to pay the salaries and for other essential maintenance works at the properties. At this back drop issuing a debt moratorium, stop charging hotel and tour guide's renewal fee, and exemption of VAT and TDL from the industry for a shorter period can be identified as an attempt to protect the industry.

The tourism industry is an integrated industry networked with many other sectors in the economy including hotel, community level operations, education, financial, agriculture, medical, travel and transportation, construction, real estate, retail etc. There are number of service providers such as accommodation Suppliers, Travel Agencies, Event Coordinators, and Transportation service providers etc. The current situation has halted all the income sources to those service providers. Therefore, it is important to protect these sectors and make them cater future tourism demand of the country. Otherwise, this may lead to reallocation of resources to other industries leaving the tourism industry unattended.

Cruises are particularly susceptible to epidemics that put the cruise passengers at a great risk. The case of Diamond Princess Cruise has exhibited the vulnerability of cruises to pandemics. Thus, 'cruise calls' have been called-off. The impact to Sri Lankan tour guides is eye opening. Tour guides, that include National Tour Guides, Chauffeur Tour Guides, Area Guides, Site Guides and Informal (unlicensed) Guides are totally unemployed, who make a total of 5,424 (SLTDA, 2019). It is further important to note that currently there are no bookings for 2020 winter season and the green light for Summer 2020 is yet to come.

Sri Lanka's popular national parks have been closed since March, 2020 in response to the COVID-19 pandemic. It has made a huge impact on tour guides, jeep drivers, guesthouse owners, and many others dependent on the tourism industry. While some are eligible for government programs, including a stay on jeep repayments, others such as campsite owners and whale-watching boat operators have little recourse for a return on their investments. There are calls for affected workers to be temporarily employed as maintenance workers in the closed parks, pending the eventual reopening of the tourism industry. The employees and owners of small guesthouses,

bungalows and camping sites closer to the national parks are few other groups affected by the current situation. Although combatting COVID19 become successful, it is not sure how fast the airlines, cruise lines, hotels and restaurants, destinations and other tourism related service establishments can prepare themselves to run their operations due to the post-COVID19 challenges.

When analyzing the impact of COVID19 on Sri Lanka tourism, it is vital to assess the impact to Sri Lankan source markets (see Table 2). Recording 355,002 tourist traffic to Sri Lanka in year 2019 India was the highest tourist generator to Sri Lanka. As of 9<sup>th</sup> December, 2020, India reports 9,762,326 COVID-19 cases which is currently increasing by around 26,351 new cases per day. United Kingdom, the second major source of tourist traffic to Sri Lanka, which recorded 198,776 arrivals in 2019 (SLTDA, 2020) hit badly by the coronavirus recording 1,766,819 cases as on 10<sup>th</sup> December 2020. The outbreak is not controlled yet as recorded numbers daily increase by around 16,578 new cases per day in UK. The fourth main source market, Germany, records average 23,873 new COVID-19 cases with a total of 1,242,198 cases in the country. China, surprisingly, stood tall despite of global COVID-19 blow with their own controlling mechanisms and experimental vaccines.

Most of the countries listed in Table 2 have imposed international travel restrictions against their residents as explained earlier in this article. As supply side factors: 1) closure of Sri Lankan international airports; 2) mandatory Polymerase Chain Reaction (PCR) for international travelers; 3) mandatory 14 days quarantine period; 4) poor attitude among the general public towards foreigners; 5) standardizing the tourist hotels according to new health guidelines; 6) closure or suspension of operations of hotels and travel agencies discourage international travelers to visit Sri Lanka. At this backdrop it is important to understand alternative measures to protect Sri Lanka tourism industry.

## **Restructuring the Tourism Economies**

### **Alternative tourism potentials in Sri Lanka**

Sri Lanka has around 22 national parks, 36 lagoons around the island, and around 240,000 of plants, out of which 3368 species are flowering plants. Sri Lanka is also home for 512 species of birds, 245 species of butterflies, 5 out of 8 species of turtles in the world, 93 species of fish, 116 species of

Amphibians, 65 species of dragon flies (Gurusinghe, 2020). Sri Lanka is also blessed with 33% of forest cover and about 50% of green cover (UN, 2020). As a result International Union for Conservation of Nature declared Sri Lanka as one of the 36 bio-diversity hotspots in the world (IUCN, 2020).

**Table 2: Top 10 source markets to Sri Lanka tourism and the impact of COVID19**

#	Source Market	% share of total traffic	Impact of COVID19 (as on 10 DEC 2020)		
			Total No. of cases	Total No. of Deaths	Mortality Rate (%)
1	India	18.6	9,762,326	141,735	1.451857
2	England	10.4	1,766,819	62,566	3.541166
3	China	8.8	86,661	4,634	5.347273
4	German	7.0	1,242,198	20,704	1.666723
5	France	4.6	2,324,216	56,648	2.437295
6	Australia	4.8	27,993	908	3.243668
7	Russia	4.5	2,541,199	44,718	1.759721
8	United States	3.6	15,784,967	296,072	1.875658
9	Maldives	3.1	13,274	47	0.354076
10	Canada	2.5	433,242	12,954	2.990015
	Total	<b>68.0</b>	<b>33,982,895</b>	<b>640,986</b>	<b>1.886202</b>

Source: SLTDA (2020) Worldometer (2020)

Apart from that, Sri Lanka is blessed with incomparable tangible and intangible attractions (Ministry of Tourism and Christian Religious Affairs, 2017; Samarathunga, 2019; Weerathunga *et al.*, 2020). However, both natural and cultural attractions in Sri Lanka are highly underutilized (Liyanage and Jayawardena, 2013). Even to date, there is no comprehensive document to analyze the value of alternative tourism in Sri Lanka and the annual survey conducted by Sri Lanka Tourism Development Authority also do not pay sufficient attention towards alternative tourism.

However, few non-profit organizations including Sri Lanka Eco-tourism Foundation, continue to promote alternative tourism in Sri Lanka despite of many challenges. The subsequent sections will explain the importance of promoting alternative tourism in Sri Lanka and few alternative tourism concepts that can be easily implemented in Sri Lanka as an alternate to unsustainable mass tourism.

**Promoting Alternative tourism**

Mass tourism can be identified as the most famous form of tourism in the world that involves movement of large number of tourists (usually tens of thousands) to the same destination at the same time of year (Cooper *et al.*, 2005). Mass tourism is very popular due to low cost and standard services, especially on 'All Inclusive' packages. Due to constant and overwhelming demand, the tour operators, destination management companies (DMC's), hotels, airlines, cruise lines and other service providers make large scale economies and provide tourism products and services at a cheaper price. Despite significant positive impacts of mass tourism, it simultaneously brings irreversible negative consequences to the destinations (Samarathunga and Gnanapala, 2016). However, the present social distance measures and travel restrictions has paused mass tourism with the fear of tourists visiting crowded places. This alarming situation has grabbed the attention of the national tourism organization, investors, employees and other stakeholders. Therefore, it is expected to develop 'alternative tourism' during the post-COVID19 revival phase. The importance of alternative tourism is that it can play a pivotal role to utilize underutilized tourism resources and to promote sustainable tourism in the long run (McGehee, 2002).

Alternative tourism takes the tourists away from their comfort zones and gives them an exotic experience which is close to the nature, culture, history or even the religion of the country that they visited. Different facets of alternative tourism are: 'Health and Wellness Tourism', 'Rural Tourism', 'Agro-tourism', 'Eco-tourism', 'Back-packing Tourism', 'Community-based Tourism', 'Pro-poor Tourism', 'Volunteer Tourism', 'Spiritual Tourism' etc. (Novelli, 2005). For the tourism investors and entrepreneurs this is a good market to earn big by serving to fewer and elite groups. Sri Lanka's diverse landscapes, rich natural and cultural heritage, and traditional knowledge can lay a breeding ground for the promotion of alternative tourism within the country. Out of many, we propose following niche tourism concepts to introduce by means of alternative tourism to promote Sri Lanka as a primeval destination to visit:

**Health, Wellness, Ayurveda and Spiritual Tourism**

Movements of three quarters of the world population is now limited to their own walls or fence. All these people will look at different ways of rejuvenating to get away from the stress and haunting experience of their lives. Many European countries have already established 24 hours help lines

to attend to the grievances of such people. As a result, we can forecast an increased demand for health and wellness tourism, and spiritual tourism among the Western tourists in the months to come. Rest and recuperation, spiritual healing and understanding, physical and mental wellbeing, Ayurveda and Yoga, meditation, and understanding the reality of life will be key search terms among in the tourism search engines during the revival of tourism. Sri Lanka has a comparative advantage to grab this market associated with deep rooted Buddhism and Hinduism philosophies and Ayurveda in Sri Lanka. The Western institutions including hospitals, police, military, and other first respondents will select Eastern destinations like Sri Lanka to send their first line operational staff for distress and rejuvenation. The traditional Ayurveda herbal medicines and the medicinal process improve the immune system of the human body. A research-based promotion will be able to get the attention of the potential clients towards Sri Lanka.

### **Rural Tourism and Agro Tourism**

‘Rural tourism’ and ‘Agro tourism’ can be identified as one of most famous niche tourism trends in the world (Novelli, 2005). Lots of urban dwellers around the world are searching for rural and agricultural experiences during their vacations as a method of enhancing their knowledge and adding some life skills. The COVID19 made the people to think back about their lives and skills of survival during their time at condominiums. As a result, the parents will think of equipping their children with basic life skills that include agriculture and farming to survive during unprecedented challenges of life. As a result, it is postulated an increased demand for agro-tourism in the future where people can learn simple ways of life, planting, gardening and understanding the environment around them. Therefore, we need to clearly identify what farms, what paddy fields and what *Chenas* are suitable to promote agro-tourism and make necessary developments to attract and retain the tourists.

### **Tea Tourism**

Many researches have proved the herbal value of tea to increase the immunity of the human body. Sri Lanka as one of the best tea producers in the world already has a reputation for its incomparable ‘Ceylon Tea’. Since some of our traditional international tea importers including Russia, Iran, and Turkey are badly affected by the virus, the demand for tea will be fluctuated in the short-run. However, to keep the tea estates running and to employ thousands of workers we can think of introducing experienced based tea tourism to the

world. Tea tourism need to be developed around the entire process of tea production including tea planting, estate maintenance, tea plucking, tea processing, tea packing and most importantly tea tasting. However, if we are to promote tea tourism, tourists should be given unique and innovative experience in the tea estates that solely reflect the tea culture. The simple daily activities happening in tea estates can turn into tourism activities easily with proper planning and product development. The cost involved in this entire process is minimum. It is further important to narrated songs, play dramas about it and even to plan some cities with the 'Tea' theme to add a touristic value to tea tourism.

### **Eco-tourism and Community Based Tourism**

Sri Lanka being a bio-diversity hot-spot in the world has a huge upside potential to promote eco-tourism. The 22 national parks, numerous rivers, tanks, and waterfalls, different weather zones and geographical zones, marine environment, endemic flora and fauna are not effectively touched by Sri Lanka tourism. A very low number of eco-tourists are visiting Sri Lanka get a real eco-tourism experience since most of tour eco-tourism products are largely concentrated to commercialized camping, jeep safaris chasing the animals and boat rides scaring the fish and other aquatic animals. Proper tourism product developments need to be done with the mediation of the eco-tourism experts either regionally or nationally. Trekking and tracking, bird-watching, whale and dolphin watching, turtle watching, nature photography in particular can be promoted as eco-tourism products in Sri Lanka while delivering benefits to the rural communities through community-based tourism. However, without merely restricting the tourists' visits to 'gazing' an active participation with 'performing' is recommended to promote these events among the tourists (Perkins and Thorns, 2001). Having said that, we should adhere to eco-tourism principles introduced by The International Ecotourism Society (TIES) when developing eco-tourism products.

### **Alternative markets**

Due to increased health risks future travels will show signs of regional travels. As a result, the potential tourists will find it more comfortable to travel to short-haul destinations. Since the international traveling will be limited to particular regions of the world during the first recovery phase of COVID 19, it is important to pay the prime attention on regional markets at the beginning. Accordingly, China, Australia, Maldives, Singapore, South Korea, Thailand, Taiwan, and Hong Kong should be our greatest concern

since the COVID19 impact to such generating countries are relatively low compared to other top markets. Table 3 exhibits potential markets to Sri Lanka for destination promotion immediately after combatting COVID19.

**Table 3: Potential alternative markets to Sri Lanka**

Country	No. of COVID cases (2020.12.10)	No. of Deaths	Outbound Travel in 2018 (mil.)	Arrivals to Sri Lanka (2018)	Arrivals to Sri Lanka
China	86,661	4,634	150	265,965	0.17%
Australia	27,993	908	11.2	110,928	1.00%
Maldives	13,274	47	N/A	76,108	-
Singapore	58,291	29	8	19,861	0.24%
South Korea	39,432	556	28.7	15,748	0.05%
New Zealand	2,088	25	3	14,595	4.86%
Thailand	4,151	60	10	9,178	0.09%
Taiwan	720	7	16.6	8,187	0.04%
Cyprus	13,286	68	N/A	672	-
Hong Kong	7,180	113	7.4	25	0.0003%

Source: UNWTO (2020), SLTDA (2020)

Even though China believed to be the country where the virus first began spreading, they have successfully managed to control COVID19. On the other hand, China is one of the top source markets to Sri Lanka for a considerable time and one of the top tourists generating countries in the world as well. The unique outbound market in Hong Kong provides a perfect breeding ground to enrich the tourism industry in Sri Lanka. According to UNWTO, Hong Kong ranked 11<sup>th</sup> in the world in terms of international tourism expenditure. However, Sri Lanka has failed to grab this elegant market which is in the same region and only 0.0003% of Hong Kong tourists visit Sri Lanka. South Korea is another promising market for Sri Lanka tourism after the COVID 19 epidemic. South Korea is highly urbanized country with the 12<sup>th</sup> biggest economies in the world. Sri Lanka and South Korea enjoy an abiding and friendly relationship which goes back to the 5<sup>th</sup> century AD. Currently South Korean investment has more than 75 companies based in Sri Lanka generating over 18,000 job opportunities in the country.



Additionally, more than 28,000 Sri Lankan contractual employees are engaged in the manufacturing, construction and fishery sectors under the Employment Permit System (EPS) in the Republic of Korea. This situation lays a firm foundation for enhancing tourism in Sri Lanka under VFR and Business category. Therefore, a promising potential is there in Sri Lanka to attract South Korean tourists which is still not addressed effectively.

## Conclusion

As mentioned earlier it is not possible to resume mass tourism in near future since mass gatherings are risky until a vaccine is developed to fight with COVID19. Now the challenge lies ahead is to re-brand Sri Lanka as a 'Niche Tourism Destination' after identification of correct alternative tourism products and concepts. The concept of 'quantity' is failing and the 'quality' is emerging during the post-pandemic tourism phase. Alternative tourism will protect the people, environment and economy while empowering the rural communities to increase their living standards. Further, it will support the industry to overcome the health barriers imposed by COVID19 virus. A learning based active experience will be a definite value addition for the promotion of alternative tourism development in Sri Lanka while using correct platforms to market our products. Research based innovative methods will give birth to 'Creative Tourism' that will position Sri Lanka as a pristine niche tourism destination in the world while securing the well-being of people, planet, and sustainable profit.

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## COVID-19: THE SOCIO-ECONOMIC IMPACT ON SRI LANKA

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### **Introduction**

The world is going through the most destructive pandemic in the 21<sup>st</sup> century so far; the Corona Virus Disease (aka COVID-19). Since the initial reporting of the infections from Wuhan city in China; the human-to-human infection of the disease ensured it to be escalated into a global pandemic. The extensive nature of the virus spread over global economic activities were extensively affected following the health shock. The health shock of the pandemic combined with the economic shock generated far reaching complications to individual economies as well as to the global economy.

Sri Lanka is not an exception of this global trend where the economic cost of health shock itself resulted in economic losses and was intensified through the extreme prevention methods imposed initially in the country.

While the health shock impacted each spectrum of the society in a uniform manner, the economic shock is felt unequally through each segment of the society (Stiglitz, 2020). The people who are in the lower spectrum of the income distribution witnessed the most difficult time dealing with the situation and in fact were faced with a dilemma of dealing with the economic shock while following the health guidelines issued control the spread of the virus.

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Even after the second wave of the virus in the country the health cost in Sri Lanka remains very low with more than 25 000 recorded cases and a mortality rate of 0.48 per cent which is considerably impressive in comparative sense according to official data published by the Ministry of Health. However, it is completely irrational to predict a fixed future and these data can undergo dramatic change within matter of few weeks. Given this back drop it is completely impossible to predict the 100 per cent accurate depiction on the economic implications of the future rather can be made attempts to generate general picture on likely economic complications based on different situations.

The research was conducted on this motive to investigate the economic shock resulting from the health shock. In order to investigate this relationship, the study focused on the economic shock at both household level and macroeconomic level to identify the economic complications arising from the pandemic at each level of the economy.

### **Objectives and scope of the study**

A study of this magnitude needs establishing broader boundaries to capture the overall economic implications generated by the ongoing pandemic. Thus, the entire research process of collection and analysis of data is entirely depending on the research objectives spectrum of the research. The study formulated based the motive to investigate the existing economic challenges imposed by the pandemic and to propose policy options to overcome such challenges. Based on this backdrop the prime objective of the study is to investigate and assess the immediate economic impacts of the COVID19 pandemic on Sri Lankan economy. It is obvious that all the economies at a global level; are affected by the COVID19 pandemic and the assessment of the impact of the pandemic that quantify the likely magnitudes of the effects must be evaluated within a range of scenarios for the formation of policy strategies for regaining the economies affected by the pandemic. Accordingly, the prime objective of the study is dedicated in this regard.

However, in order to formulate a comprehensive analysis; specific objectives are also incorporated to the study. The COVID-19 outbreak has an unprecedented effect on the entire spectrum of economic activities in Sri Lanka. The economic shock would result in a decline of household consumption and private sector economic activities which also generate significant implications on investment activities as well.

Notwithstanding with the temporary decline of some economic activities; the pandemic may lead too far reaching long run economic costs to the national economy at large. For instant, the direct impact of disruption to business activities in front-runners of the Sri Lankan economy in the recent past such as the tourism, construction and textile industry would deepen the economic cost to the country. In order to evaluate these sectorial level economic implications of the pandemic a set of specific objectives are also incorporated to the study.

First the study will investigate the COVID-19 impact on various economic activities in Sri Lankan households. Moving into national level; the pandemic impact on selected economic sectors will also be investigated in order to generate an overall picture about the economic cost of the pandemic. Finally, based on the findings emerging from the above sub-objectives prudent policy measures are suggested to mitigate the negative economic implications and to reach a V-shaped economic recovery in Sri Lanka.

### **Methodology**

Therefore, the study aimed at investigating the economic impacts of the COVID-19 pandemic amalgamating both quantitative and qualitative approaches to achieve the objectives mentioned above. The impact of the pandemic felt at each level of the Sri Lankan economy and therefore a consideration on every dimensions of the economy must be studied. Therefore, both primary and secondary data were collected for this research to provide a meaningful insights and policy implications.

Since this research was a rapid assessment of the immediate impact of the pandemic the data collection was carried out at a time where the entire country was locked down as a transmission prevention mechanism. As a result, the online questionnaire method and in-depth interviews by means of telephone interviews were conducted for gathering of the relevant primary data.

The survey questionnaire contained forty-three questions to cover various aspects of the economic shock on household level of the economy. A sample of 1500 households were chosen and finally 1087 usable responses were received covering 22 administrative districts in Sri Lanka. The reference period for the data collection was from 20th April 2020 to 20th May 2020.

In order to identify the economic cost in key economic sectors the experts and practitioners in different sectors of the economy were interviewed<sup>2</sup> by the research team and their views were instrumented with secondary data obtained from Central Bank of Sri Lanka, Tourism Development Board, the Chamber of Commerce and World Bank World Development Indicators.

## **Findings**

This section consists of two sub-sections where the first section will be discussing about the findings of the online survey carried out to investigate the household level impact of the pandemic and the section following will discuss the economic-bearing of the pandemic on the selected economic sectors.

### **The Household level impact**

The findings of the online survey conducted to investigate the household level impact will be compiled considering pandemic implications on three main economic variables such as the household Income, expenditure, and indebtedness of the household.

The income sources of 64 per cent of the households have been affected while 7 per cent lost their entire income. It should be noted here that the overall household income was taken into account for this purpose rather than the individual income status of the participant of the research. There is no association between change of income and change of job status after the COVID-19 outbreak which reflect that the loss of household income will be temporary loss of their jobs and other income sources. However, 3% of households lost their entire livelihood due to the pandemic. The daily wage earners are the most vulnerable spectrum of the society where due to the lack of savings their resilient to long term disruptions to livelihood would put them in a very disadvantageous position. While admitting that most of the daily wage earners are employed in the informal sector and their access to internet and computer literacy limit the ability of collecting data, approximately 82per cent of households were resilient to the crisis since they were fixed income earners.

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2 The in-depth interviews were conducted following the ethical guidelines.

Changes of expenditure and savings patterns are provisional. Education, transport, entertainment expenditure, medicine and loan repayment expenditure significantly declined, and it can be assumed that all these changes are provisional and thus people will be on the pre-pandemic conditions in the post-COVID-19 period. Electricity bills, internet cost and donations have noticeably increased. Two per cent of households experienced net losses instead of savings and the loss was estimated to be LKR 60,000 per household on average per month during the period of the economic lockdown. Fifteen per cent of households reported no losses or no savings. Average savings amounted to LKR 70,000 while the median savings per household amounted to LKR 20,000.

Meanwhile, people have changed their attitudes and practices towards daily living during lockdown period at the Post COVID 19 period. Nearly 75 per cent of households are ready to continue the activities initiated during the post-COVID- 19 period, including home gardening. Forty-six per cent of households have understood that they are wasting foods and consumables. However, it was revealed that smoking and alcohol consumption patterns have not been changed significantly and the likelihood of changing them is very minimum.

During the study period no change in debt liabilities was reported in 79 per cent of the households whereas only 6 per cent of the household has fallen to indebtedness due to the COVID-19 outbreak. The COVID-19 has not created a debt trap for many of the households in Sri Lankan economy. Five to ten per cent of the households borrowed on loan repayments and daily consumption needs while a very small percentage of households borrowed for medical treatment and bill payments. Just 8 per cent of households are seeking support for repayments of loans borrowed during the pandemic.

The government-imposed relief measures on debt repayment to ease out the pressure on debt repayment. However, more than 50 per cent of households stated they are not in a need of financial assistance while around 45 per cent of households are seeking financial support for loan repayment, redeeming mortgaged items, paying outstanding credit card balances and other bill payments. The current debt moratorium introduced by the Central Bank for three months will provide only a cushion, the liabilities will be accumulated and both borrower and the lending institution will be in trouble after three months, unless the borrower's income sources are regained.

Finally, we investigated the expectation of the household on any kind of assistance needed from third party to deal with this situation. About 55 per cent of the households refused any kind of technical assistance since they have no permanent damage due to COVID-19. Forty-five per cent of households are expecting some type of advice for their betterment and thus government intervention is important. Formal or informal arrangements within societies for promoting mutual assistance proved to be improving resilience of the lower income earners in a time of unexpected economic shock. Therefore, 78 per cent of the households have opted to form such social capital in the neighborhood for mutual assistance among communities.

### **The National-level Impact**

The next section will be investigating the macroeconomic-level implications of the pandemic by selecting key contributing sectors to Gross Domestic Product (GDP) of the country on average in the recent past.

The Travel and Tourism industry was one of the driving forces of the Sri Lankan economy in the post war era. Sri Lanka regaining its status as an international tourist hotspot resulted in an influx of tourist arrivals to the country which exceeded 2 million tourist arrivals annually by 2018. The transmission prevention measures such as travel bans, mobility restrictions, lockdowns and border closures disrupted global travel and tourism industry for which Sri Lanka was not an exception. While international tourist arrivals reached bottom line; domestic tourism also hindered with internal travel restrictions. As a result, the industry faced a dramatic shift from a most lucrative industry to a severely disrupted industry due to the pandemic. This unexpected change resulted in the layoff of temporary and casual employees, while permanent employees are also in high risk of job loss with the current salary freeze. Approximately twenty per cent of indirect employees lost their earning sources. Zero income created a financial distress to investors as well and were trapped by indebtedness despite the loan moratorium granted for a few months. Investors are likely to leave the industry though there are no threats on mortgaged property to foreclose. Stakeholders will indeed be relieved in 2021 if there are no more disasters. Regaining tourism entirely depends on the source markets' recovery and on the safety brand of Sri Lanka. Thus, Sri Lanka has to harness new avenues in tourism.

Meanwhile the Banking and Finance sector is expected to play a dual role of cushioning the other sectors of the economy while maintaining the financial



soundness. While the assets quality of the banking sector is expected to go down, the credit demand would adversely affect in near terms responding to disrupted economic activities. Non-Performing Loans (NPLs) are expected to go up in the short and medium terms, which can be risky. Even though various regulatory measures have already been taken by the Central Bank to give a positive shock to economic activities, the effectiveness of such policies in reaching the expected outcomes to stimulate productive sectors of the economy remain questionable.

Further, far-reaching consequences are expected on Sri Lanka's stock market. The COVID-19 pandemic has kept investors in suspense since February, placing markets in high levels of volatility, and flight into "safer haven assets". Similar to other economies, uncertainty over economic slowdown in Sri Lanka, led to a sell-off in the financial market and capital outflows. Market analysts expect this situation to continue until the market settles down as both local and foreign investors are looking at exiting from risky assets due to the global pandemic. The foreign investors must have taken into consideration the fact that Sri Lanka has been downgraded by international credit rating agencies as well. Despite the foreign selling pressure, the CSE turned up and showed a little improvement after 12th May. This implies that investor sentiments are becoming positive gradually.

The export sector prospects remain gloomy in the short and medium term which is intensified through lack of diversification on export basket of the country. The leading export item, the textiles and garments recorded USD 5.6 billion of export earnings in 2019. The estimated losses of the industry for the 2 months' period from 15th March to 15th May round up to USD 1,400 million. The most alarming signal is that 45 per cent of the Sri Lankan export market depends on the USA, which is the most COVID-19 affected country in the world, followed by UK (14 per cent), Italy (8 per cent), Germany (6 per cent), the second most severely COVID-19-hit countries. Demand contractions could result in a reduction of apparel exports by an additional 30 – 40 per cent after June, due to mass cancellations of orders by buyers and problems in the purchasing of necessary raw materials. These circumstances, coupled with delayed shipments, forced discounts, and currency depreciation, have led to working capital problems across the industry. On the other hand, some export products indicate promising sings such as exports of personal safety equipment's and exports of heavy duty tyres. However, sustaining such gains in the long run is crucial.

The productive activities related to production and employment of most of Micro, Small and Medium-Scale Enterprises (MSMEs) are also significantly hit by the COVID-19 pandemic. Approximately 80 per cent of enterprises were exposed to suffer a production and employment drop. More than 80 per cent of the MSMEs declined their sales due to delayed or cancellation of orders by domestic and foreign buyers. The most severely affected enterprises were the "accommodation and foodservice sector" which is a major part of the tourism industry. Approximately 10 per cent of MSMEs in the apparel and textiles industry in Sri Lanka have shifted their production towards protective clothing such as face masks under the pandemic environment. Nearly 15 per cent of MSMEs have benefited under the current crisis. Retail and wholesale trade, Ayurvedic medicine activities, and computer sales have been continuing their business without a significant drop in sales.

The construction sector was one of the key contributors to the national economy in the recent past. However, even before the pandemic started the construction sector was already suffering from delayed payments for government financed projects and lower demand for certain segments such as high-end condominium developments. On this backdrop the construction sector would face constraints in meeting contractual agreements on completion dates and costs, while the labour and related issues would also affect the performance of the construction sector in the short run due to health standards. Raw material-related issues are also expected with the imposition of import controls.

### **Conclusion and Policy implications**

The impact of the COVID-19 pandemic and the economic disruptions that followed were felt on almost every household in the country however, it was intensified among the daily wage-earning households. Despite most of them are employed in the informal sector of the economy policy interventions of the government need to contain instruments to deal with the short-term cash transfers to medium and long-term actions to protect their livelihood activities. Although the government has implemented a cash relief package for such groups it is necessary to ensure the benefit reach the people in need and continuation of the programme until they are able to return to their economic activities.

In terms of overall economy, the sectors that are depending on global economy have little hope in returning to normalcy even if the conditions in the country improve. The prospects remain gloomy for the exports sector as many leading export markets have been severely affected. However, the adverse implications of the pandemic can be mitigated with demand stimulation policies as short-term remedial measures. In this direction, utilization of both expansionary fiscal and monetary policy proposes options to increase the aggregate demand. However, with the current fiscal sentiment of the country adaptation of the expansionary fiscal policy for long period of time would result in further fiscal distress. On the other hand, the long-term economic gains would be highly sensitive to supply side policies where incentive driven production promotion and safeguard measure needed specially for MSMEs where economic distress has generated long lasting negative implications.

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## **Decent Livelihood and Well-being**





## **CHALLENGES & PROSPECTS FOR ECONOMIC EMPOWERMENT OF PERSONS WITH VISUAL IMPAIRMENT & BLINDNESS ENGAGED IN SELF- EMPLOYED VENTURES**

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### **Introduction**

People with disabilities experience numerous barriers with regard to securing employment, thus, they are more likely to work for low wages, informally and precariously. Besides, some of them are entitled for a disability benefit which is often inadequate to cover their daily expenses (Global Disability Summit, 2018). Economic empowerment can be defined as a way of ensuring income security for people with disabilities to achieve income security, advance economically, enrich themselves through empowerment and autonomy to make economic decisions within and outside the home (Global Disability Summit, 2018). Self-employment is perceived as a viable option for empowering disabled individuals that facilitates achieving a balance between disability status and work life (Kitching, 2014; Pagán, 2009; Adams, et al., 2019). Pagán (2009) indicated the presence of a strong relationship between disability status and self-employment; thus, self-employment rates were higher among people with disabilities compared to those who report no limitation in daily activities (Kitching, 2014; Pagán, 2009; Adams, et al., 2019).

The Global Disability Summit (2018) indicates that obstacles to economic empowerment experienced by people with disabilities can vary depending on the nature of an individual's impairment, their gender, socioeconomic status and the context in which they live. Adams, et al., (2019) further indicate that the decision to enter into self-employment for most disabled individuals were influenced by the 'push' factors such as lack of alternative employment opportunities, rather than the 'pull' factors such as passion or interest in a particular field, or the desire to work for themselves (Kitching, 2014; Adams, et al., 2019).

Past research reveals that the disabled self-employed face significant problems in sustaining the business due to reasons such as consumer discrimination, inadequate training, poor access to information, absence of appropriate business support and challenges in accessing finance (Adams, et al., 2019; Kitching, 2014; Pagán, 2009; Vaziri, Schreiber, Wieching, & Wulf, 2014).

### **Research Problem**

People with visual impairment and blindness (VI&B) represent the majority of the differently abled population in most communities (WHO, 2011), including Sri Lanka where 996,939 persons with VI&B have been reported (Department of Census and Statistics, 2012). In order to be sustained, people with VI&B must be economically independent as the mainstream. The research problem emanates from the fact that although self-employment is a viable option for the differently abled, no systematic investigation has been carried out to determine the challenges experienced by persons with VI&B, nor previous evidence of self-employed people with disabilities are available in the Sri Lankan context. Thus, this study contributes to this empirical gap of understanding self-employment and its challenges, experienced by persons with VI&B in Sri Lanka.

### **Objective**

The objective of this study is to explore the extent to which persons with VI&B are engaged in self-employment ventures and to determine the key challenges they run into.

### **Methodology**

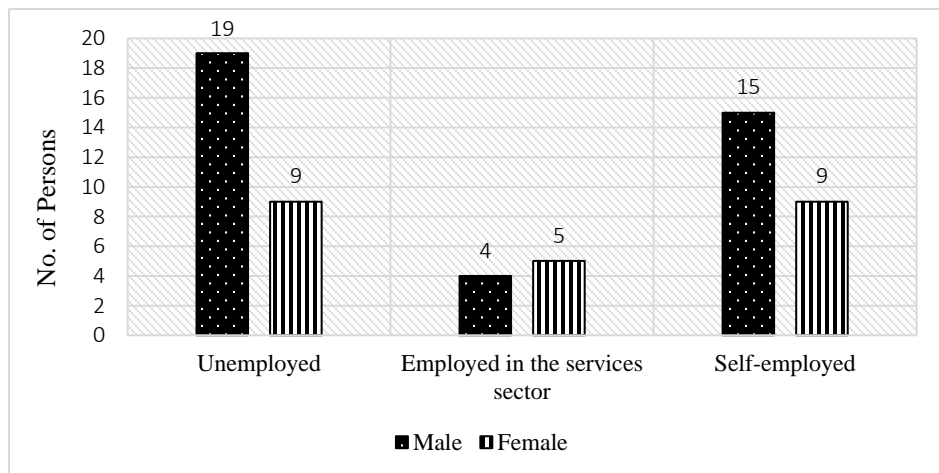
A mixed methodology consisting of qualitative and quantitative approaches were adopted where the study population comprised of 61 persons with VI&B which nearly accounted to the total VI&B population of the Hambantota District. This was accomplished with the involvement of the authors at the 'White Cane Day' function of the Hambantota district held on 12<sup>th</sup> December 2019. Thus, the sampling methods of selection of 'subjects' could be described as a mix of volunteer and convenient sampling. The sample consisted of 24 (28-66 years old) self-employed individuals with VI&B with a generally lower educational background engaging in self-employment as they had no other alternative. In-depth face-to-face interviews were conducted with the sample based on a pre-determined interview protocol which focused on factors related to general well-being, education and employment. Each interview lasted for 20-30 minutes and the proceedings were recorded and transcribed. Using pattern matching and thematic analysis techniques, the data were analyzed to elucidate the key

challenges of self-employment for persons with VI&B. Descriptive statistics were also used to analyze the demographics of the total VI&B population of the Hambanthota district.

## Results and Discussion

### Descriptive Statistics:

Results claim that a majority of 43.6% of the total VI&B population of Hambanthota were totally blind. Further, 35.9% were only able to see light while the rest were only able to see shadows. Genetic issues and neurological disorders have been the main cause for VI&B for the majority amounting to 52.3% of the sample, while others experienced the condition due to accidents and consequences of health conditions such as diabetes, thalassemia and glaucoma. Twenty nine out of these 61 persons were born blind while others became blind later in life. A majority of 47.5% were married and lived with their spouse while 40% were unmarried and 12.5% lived away from spouse. In considering the educational background, 39% were early school drop-outs and 34% managed to pass GCE (O/L); 12% have reached GCE (A/L) level while there were only six graduates. It was significant that the school drop-outs were mainly due to poverty and the fact that the majority (54.3%) had to attend regular schools with no special facilities for VI&B. Approximately 61.5% of the total VI&B population of Hambanthota were Samurdhi recipients while 12 others received a disability benefit of Rs. 5,000 monthly. Four persons were reported as recipients of both the Samurdhi and disability assistance.



Source: Authors' estimation

**Figure 1: Distribution of employment among persons with VI&B**

Figure 1 above illustrates the distribution of employment among persons with VI&B in Hambanthota. The employed VI&B consisted of school teachers and government servants while the self-employed consisted of painters, cultivators, shopkeepers, ayurveda therapists, choir weavers and those who produce incense sticks, bricks, eakle brooms.

### **Economic and Social Challenges:**

In considering the educational background, 39% were early school drop-outs and 34% managed to pass GCE (O/L); 12% have reached GCE (A/L) level while there were only six graduates. It was significant that the school drop-outs were mainly due to poverty and the fact that the majority (54.3%) had to attend regular schools with no special facilities for VI&B. Approximately 61.5% of the total VI&B population of Hambanthota were Samurdhi recipients while 12 others received a disability benefit of Rs. 5,000 monthly. Four persons were reported as recipients of both the Samurdhi and disability assistance.

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The analysis of in-depth interviews revealed five challenges of self-employment experienced by persons with VI&B.

- **Difficulty in obtaining raw materials** – Most of the self-employed persons with VI&B had to travel long distances to obtain raw materials such as choir and fertilizer which made them to use public transport, with its inherent difficulties.
- **Lack of financial support** – In certain instances, persons with VI&B had to cease self-employment ventures or stop business temporarily due to unavailability of financial resources to continue, particularly, working capital. This is attributed to lack or inability to access information and absence of special schemes for providing such financial support.
- **Inadequate infrastructure** – Although most of the respondents within the sample had the required skills, resources and facilities were inadequate, which limited their opportunity for expansion.

- **Consumer discrimination** – Most of the consumers were often reluctant to purchase products manufactured by persons with VI&B assuming they were unhygienic or not of good quality. Thus, in many situations, they were compelled to market their products by other costly means.
- **Inadequate training** - Only 29.4% of the self-employed persons have received training at rehabilitation centers which included candle making, weaving choir ropes/rugs/chairs and ayurveda massage therapy. They had to undergo training on various disciplines which end with a range of skills without mastering a single.

Thus, it is evident that there is a considerable need for additional support for VI&B involved with self-employment. Initiatives aimed at providing financial and non-financial support such as access to concessionary grants and loans providing working capital, technical advice, access to markets, mentoring and training on small businesses would improve their economic independence. Effective job training initiatives could be introduced to overall unemployed/self-employed persons with VI&B aimed at improving quality, encouraging jobs that match their potential and preferences. Thus, availability of effective social protection systems could promote income security of the self-employed VI&B through removal of barriers.

## **Conclusion**

This study highlights five challenges of self-employment experienced by persons with VI&B which includes difficulty in obtaining raw materials, lack of financial support, inadequate infrastructure, consumer discrimination and inadequate training. In addition, the study also presented demographic statistics of the VI&B population of the Hambanthota district. Limitations of the study include considering only one district for data collection, thus, as future research, the authors aim to test the findings against a large population. Findings of the study revealed, initiatives aimed at providing financial and non-financial support, effective training and deployment of a disabled-friendly business model would facilitate economic empowerment of self-employed persons with VI&B. Empowering persons with VI&B would enhance their financial independence, thus, enabling them to contribute to the country's economy at large.

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**Keywords:** *Economic empowerment; self-employment; visual impairment and blindness*

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# **INTERRELATIONSHIP BETWEEN DECENT WORK IMPROVEMENT AND PENETRATION INTO GLOBAL SUPPLY CHAIN: A Deep-dive into Literature pertaining to Apparel Industry**

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## **Introduction**

Emphasizing labor issues in the apparel industry has become crucial in the present context. This is mainly due to the increasing awareness of poor working conditions among workers and high labour dissatisfaction all over the world (Asadullah & Talukder, 2018). Decent work conditions are key elements to accomplish reasonable and harmonious employment relations. However, this is not always witnessed in the Global Supply Chain (GSC) within the apparel industry (Goto, 2011). The distinct growth during the past 25 years within the apparel industry does not signify its many problems, including those related to the work practices and the work environment (Gnanayudam & Dharmasiri, 2008) and this has resulted in the industry being castigated as "slave driven". Therefore, the social aspect of sustainability, including decent work conditions and labour rights in the global production network within the apparel industry receive increasing attention among academics, researchers, and professionals in the field.

As per Anker, Chernyshev, Egger, Mehran, and Ritter (2003), the word "decent" indicates the need for workers to have "acceptable" or "adequate" work and working conditions. International Labour Organization (ILO) has identified four main pillars which support the objectives of decent work, including (a) employment creation, (b) rights at work, (c) social protection, and (d) social dialogue. In the context of Sustainable Development Goals (SDGs), inclusive growth and decent work for all men and women constitute the social dimension of SDG 8.

According to the Chartered Institute of Procurement and Supply ([www.cips.org](http://www.cips.org)), GSC is a vigorous universal network when a company procures or uses goods or services from overseas. It involves people, information, processes, and resources in the production, handling and distribution of materials and finished products or

providing a service to customers. Participation in GSC allows local industries to attract investments, achieve technological capabilities, and increase economic growth (Goto, 2011). Therefore, it is always advantageous for manufacturers in the developing world to attempt penetrate into GSC.

The penetration into GSC could be expected to be supported by decent work practices in the sense those could help companies enhancing their productivity, employee satisfaction, employee retention, and the mental health of employees (Goto, 2011). However, at the same time, such practices could imply high costs of production resulting in lesser international competitiveness, thereby constraining the potential of penetration into GSC. In apparel industry across the world, this deterrent tendency would be much accentuated in so far as it produces highly standardized products, and also are to be sold at extremely competitive prices. This induces companies seeking entrance to GSC to resort to cost minimizing practices; in which conjuncture, social aspects relating to working conditions could suffer. The present research focused on this challenging tradeoff the producers seeking entry to GSC are confronted with.

### **Research Problem and Objectives**

Apparel industry, being the world's largest non-resource-based economic activity (Goto, 2011), allows developing countries an opportunity to penetrate into the GSC. However, at the same time, there is a likelihood that attempts to achieve decent work conditions could adversely affect price competitiveness of suppliers.

In this regard, the present study was conducted to appraise scientific literature, in view of (a) unearthing deterrent factors of decent work promotion in the apparel industry, and (b) identifying possible impacts of promoting decent work practices on GSC penetration. Based on the outcomes, development of an appropriate index to reflect the “decent work push” for GSC penetration pertaining to the apparel industry was also pursued.

### **Methodology**

The study was based on a comprehensive review of literature in the subject domain. It aimed at analyzing and classifying prevailing knowledge and understanding on decent work and associated GSC penetration issues. Thorough literature review was thus conducted, focusing on previous research published in recognized Journals, in view of ensuring the quality of the analysis. In this context, the Australian Business Deans Council (ABDC) 2019 ranking was used, which has identified indexed journals publishing research in the field of decent



work and GSC. The study was able to gather 42 research papers including reports of the International Labour Organization (ILO), covering the 20-year period from 2000 to 2019. Selected research papers were analyzed in-depth and their findings were grouped into three categories; namely, (a) constraints acting against improving decent work conditions, (b) factors reflecting the importance of promoting decent work, and (c) impacts of decent work improvements on GSC penetration. Number of citations and their respective shares were computed to reflect the relative importance of each of such variables.

Examination of positive and negative impacts of decent work on GSC penetration, as reflected in literature, was subsequently used to develop an index to represent the influence decent work has had on GSC penetration around the world.

### **Results and discussion**

Through review of literature, the study managed to identify 13 different dimensions which reflect the level of decent work conditions in the global apparel industry (Table 1). It became evident when perusing through previous studies that, except for 4 factors, namely, verbal and physical abuse, sexual harassment, lack of training to use equipment, and child labour, all others have been cited by over 10 percent of researchers. Most frequently cited were excessive working hours, underpay, unsafe conditions in the workplace, poor working conditions and gender discrimination, which, together constituted approximately 67 per cent of the total citations examined. Even though no single factor has been cited by over 40 per cent of the researchers, this reveals there could be constraints to decent work present in the apparel industry. It may be noteworthy that Asadullah and Talukder (2019) have found that decent work conditions are poor in apparel manufacturing companies in the developing world.

Secondly, the literature revelations on the purpose as to why decent work environment may be desired within the apparel manufacturing companies were examined (Table 2). Out of total citations on this aspect, 81 per cent was represented by just four purposes, namely, (a) to reduce high labour turnover, (b) to increase satisfaction, (c) to reduce stress and increase mental health, and (d) to reduce injuries at the workplace. Approximately 61 per cent of researchers have highlighted the necessity to reduce ‘injuries’ as the most prominent purpose, possibly reflecting the gravity of this issue in the apparel industry. Risk of accidents is high even though safety equipment is available within factory premises (Islam & Stringer, 2018), may be because only a basic training had been

provided for employees due to high costs involved. Notably, only a few researchers have cited the factors of increasing productivity and government requirements as decent work inviting objectives. It is only expected that increased productivity may not emerge as a frequently cited purpose if the “interviewees” in these researches were largely the employees, as that would not be their interest. However, employers would be interested in achieving high productivity levels.

**Table 1: Level of decent work**

Author	Excessive working hours while exploiting labour	Underpay (lower hourly pay)	unsafe conditions in workplace	Restrictions for unionization	Lack of workers' rights	Poor working conditions	Lack of legal and social protection	Gender discrimination (Wage gaps, positions, do not provide maternity leaves)	Verbal and physical abuse	Sexual harassment	Lack of training to use equipment	Health related issues	Child labour
Anker, Chernyshev, Egger, Mehran, and Ritter (2003)						x							
Ghai (2003)			x	x	x								
ILO (2019)	x	x				x							
Nova and Wegemer (2016)	x					x							
Anner (2019)			x		x	x							
Gereffi and Memedovic (2003)						x							
BGMEA (2018)			x	x									
Elbert et al (2016)					x	x							
Islam and Stringer (2018)	x	x	x	x		x	x	x	x	x	x	x	
Cowgill and Huynh (2016)		x											
Barrientos (2007)						x	x						
Hancock, Carastathis, Georgiou and Oliveira (2015)													
Madurawela (2017)			x				x	x					
Seashore (1974)													
Burchell et al (2013)					x								
Goto (2011)		x			x			x					
Paul-Majumdar and Begum (2000)	x												
Kurpad (2014)	x	x	x			x	x		x	x			
Delaute (2019)	x	x						x					
Milberg and Amengual (2008)	x												
ILO (2017)	x												
Asadullah and Talukder (2019)	x	x	x					x					
Feldman (2009)	x												
Huynh (2016)								x					
Taslim and Haque (2011)		x											
Chowdhury et al (2012)	x	x											
Hossain and Akter (2010)		x				x		x					
Muhammed (2011)			x	x								x	
ILO (2012)			x									x	
Robinson and Falconer (2013)	x			x									
Nurhayati, Taylor, Rusmin, Tower and Chatterjee (2016)			x									x	x
Yperen (2006)												x	
Nordás (2004)			x									x	x
Gnanayudam and Dharmasiri (2008)						x							
Ian Taplin, Winterton and Winterton (2003)		x											
Pagell et al (2005)	x												
Starmanns (2017)		x											

Source: Developed by authors

Yet, they may be pursuing that objective by inducing (or even forcing) their employees to work harder or excessive hours, which could go against decent work objectives, and even could amount to exploitation (in Marxian terminology). Thus, it is evident that the possible “productivity push” effect of decent work, has not yet successfully caught attention of “employers”, and decent work still is largely an “employee concern”. When addressing the interrelation of decent work improvements and GSC penetration in the apparel industry, this study came across six factors referred to in literature which either positively or negatively impact on penetrating into the GSC (Table 3).

**Table 2: Importance of improving decent work**

Author	To reduce labour turnover	To increase productivity	To comply with international requirements	To enter GSC	To meet government requirements	To increase job satisfaction	To reduce stress and increase mental health	To reduce injuries at workplace
Elbert et al (2016)	x	x	x	x				
Burchell et al (2013)					x	x		
Delaure (2019)			x	x				
Islam and Stringer (2018)						x	x	x
Seashore (1974)						x		
Milberg and Amengual (2008)							x	
Madurawela (2017)								x
Kurpad (2014)								x
Ghai (2003)								x
Anner (2019)								x
BGMEA (2018)								x
Asadullah and Talukder (2019)	x							x
Akhter et al. (2017)							x	
Chowdhury et al. (2012)	x							
Ghai (2003)								x
Anner (2019)								x
BGMEA (2018)								x
Madurawela (2017)								x
Kurpad (2014)								x
Asadullah and Talukder (2019)								x
Muhammed (2011)								x
ILO (2012)								x
Nurhayati, Taylor, Rusmin, Tower and Chatterjee (2016)								x
Nordås (2004)								x
Gnanayudam and Dharmasiri (2008)	x					x		
Phusavat (2001)		x						
Warr (2006)							x	
Ian Taplin, Winterton and Winterton (2003)	x							

Source: Developed by authors

Out of 29 such citations found in literature, only 21 per cent have reported positive effects on GSC penetration by enhancing decent work conditions. The remaining 79 per cent have revealed that promoting decent work could bear negative impact on GSC penetration. Most of them have emphasized that improvements in decent work result in higher cost of production and such would create adverse effects on competitiveness in seeking entry to the GSC while shrinking their market share. Out of all citations, only 4 per cent have revealed possibility of securing price advantage and an increased competitiveness facilitating entry into GSC that could be secured through improving decent work conditions.

Finally, the study went into developing an “index” to reflect the degree of facilitation of access to GSC through improvements in decent work conditions, based on the above findings of analysis of previous studies referred to so far. It was constructed by presuming equal weightage to each “factor”, while assigning +1 for “conductive effects”, and -1 for “deterrent effects”.

**Table 3: Relationship between decent work improvements and GSC penetration**

Author	Increase country image	Increase productivity	Price advantage and increase competitiveness	Increase cost of production	Decrease competitiveness	Reduce global marketshare
Anner (2019)				x		x
Blasi and Bair (2019)				x		x
ILO (2019)				x	x	x
Elbert et al (2016)	x					
Nadvi and Thoburn (2004)						x
Jin and Moon (2006)				x		x
Kurpad (2014)					x	x
Delautre (2019)	x				x	x
Milberg and Winkler (2011)					x	
Gereffi, Bamber, and Fernandez-Stark (2016)				x	x	x
Egels-Zanden (2014)					x	
Elbert et al (2016)	x	x				
Islam and Stringer (2018)						x
Kurpad (2014)					x	x
Muhammed (2011)		x				
Anner (2019)			x			
Merk (2009)					x	

Source: Developed by authors

The overall “index” was computed by taking the sum of weighted averages of positive and negative findings, expressing the index as a ratio ranging between -1 and +1. The index so constructed to reflect “*decent work push for GSC penetration*” pertaining to the apparel industry, as revealed through literature, worked out to be approximately -0.58.

This brings suggestive evidence to indicate that improvements of decent work conditions in apparel manufacturing companies could induce a retarding net effect on their capacity to penetrate into GSC. Therefore, though the apparel industry is a source of employment in which there is opportunity to improve well-being of factory workers, the overall tendency could be towards employers compromising labour standards in the pursuit of GSC entry or sustaining and/or further advancing their position in the GSC. In other words, the business interest of GSC penetration is likely to over-ride any desire to improve the quality of working environment. It also leads to infer that pursuance of decent work has not been conducive towards adequately inducing productivity at work. Had it been, the resultant industrial cost-effectiveness could have enhanced market competitiveness, naturally incentivizing employers to pursue decent work, enabling successful surmounting of this apparent tradeoff.

## **Conclusion**

The apparel industry is one of the biggest work heavens for employees in developing countries. But, as revealed through literature, employment in apparel manufacturing companies is highly exploitative because of excessive working hours and inadequate pay. Furthermore, it is reported that unsafe and poor working conditions and gender discrimination also figure among the most prominent constraints in improving decent work conditions. Thus, these factors are worth addressing with priority; as alleviating such causes have the potential of bringing in the greatest possible improvement in decent work conditions. Literature also indicate that an enhancement of decent work practices would enable employee satisfaction, their mental health, and could mitigate high labour turnover and reduce injuries at workplaces.

This research also enabled perceiving that there could be an inverse relationship between decent work improvement effort and penetrating into GSC, mainly because the GSC is highly competitive and any attempt to improve work conditions, in most circumstances, would tend to increase costs of production, thereby constituting a constraint vis-à-vis price competitiveness. If decent work strategies that induce a greater degree of productivity supporting industrial cost

effectiveness could be invented only that the apparel industry would be able to successfully overcome this apparent tradeoff. If not, companies are likely to compromise labour standards and decent work conditions to survive in the GSC.

**Key words:** *Apparel industry; Decent work; Productivity; Competitiveness; GSC penetration*

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## **IN A QUEST FOR ‘WHAT THEY VALUE THE MOST’: PERSONS WITH VISUAL IMPAIRMENT AND BLINDNESS IN A CLUSTERED COMMUNITY IN SRI LANKA**

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### **Introduction**

The community engagement and the resource requirements of a community would vary on the nature of the community. If one would broadly recognize persons with visual impairment and blindness (VI&B) as community per se, it is expected that their needs, resource requirements and the activities they engaged-in would differ from the rest of the population in general. This research aims to explore the nature of resource requirements and the activities commonly engaged-in by a ‘community’ of persons with VI&B, in a ‘clustered village’ in Southern Sri Lanka.

Though sociologists interpret the term community in various ways, this study adopts the definition of Sylvia Dale, (1990); “Community is a body of people living in the same locality...Alternatively, a sense of identity and belonging shared among people living in the same locality, Also, the set of social relations found in a particular bounded area” (Dale, 1990, p. 562). Accordingly, the ‘*Siyaneethugama*’ 55<sup>th</sup> model village was developed by the National Housing Authority in 2018, where 27 families having at least one person in each with VI&B, would very well be embraced as a “community”. Each family is allocated a 10 perch land with a basic one-bedroom house.

Visual impairment or vision impairment, is the degree of reduced vision level from low vision to total blindness that impedes a person’s ability to function at certain or many tasks. As at 2018, among the Sri Lankan population of 21 million (worldometer, 2020), considerably 1.7% of individuals carry a visual impairment (Devapriya, 2020).

A study is yet to be performed in the Sri Lankan context based on the theme “Resources and activities that VI&B people value the most in their lives”. The

preference of an individual's resources and activities may vary according to their demographic characteristics.

This empirical study focuses on deriving what types of resources and activities the VI&B people ascertain the most in their lives, and how the demographic characteristics affect their lives based on their visual impairment type. This study contributes to draw attention from the government towards the VI&B people and types of actions the government can take, to improve the lifestyle of VI&B people in Sri Lanka.

### **Research Problem**

Thus, to date no broad investigations conducted in a Sri Lankan context on the types of resources and the activities that VI&B people value the most, as well as the impact of demographic characteristics on their lives. Hence, this research signifies the findings to this empirical gap.

### **Objective**

The main purpose of this research is to ascertain the types of resources and activities that VI&B people value the most in their lives and how demographic characteristics affect their lives.

### **Methodology**

A two-day data collection camp was conducted at “*Siyaneethugama*” model village in the Hambantota District during 09-11 December 2019. Purposive sample technique was used for selecting the sample. One to one interviews were held with the persons with VI&B and the family members totaling 41 respondents, lasted for 30 - 40 minutes. The discussions focused on resource and diverse activity areas like demography, education, resource requirements, education, health facilities and transportation. Main resources were segregated into six: the government funds, vocational trainings, infrastructure facilities, types of news media, private and public transportation; Similarly, activities into five: outdoor activities, shopping for goods, preparing meals, doing homework and taking care of themselves. Measures of variance calculated and graphically represented.

### **Results and Discussion**

Table 1 shows demographic characteristics of VI&B people.



**Table 1: Demographic characteristics of VI&B people**

	Frequency (%)	
	Blind n =19 (46.34%)	Visually Impaired n=22 (53.66%)
<b>Gender</b>		
Male	10 (52.63%)	16 (72.73%)
Female	9 (47.37%)	6 (27.27%)
<b>Age</b>		
20-39	1 (05.26%)	6 (27.27%)
40-59	17 (89.47%)	12 (54.55%)
60-80	1 (05.26%)	4 (18.18%)
<b>Marital Status</b>		
Married	10 (52.63%)	14 (63.64%)
Bachelor	9 (47.37%)	8 (36.36%)
<b>Education Level</b>		
No schooling	2 (10.53%)	1 (04.55%)
Grade 1 - 8	3 (15.79%)	3 (13.64%)
Passed Grade 8	4 (21.05%)	6 (27.27%)
Passed GCE O/L	4 (21.05%)	7 (31.82%)
Passed GCE A/L	3 (15.79%)	2 (09.09%)
Graduate	3 (15.79%)	3 (13.64%)

Source: Authors' calculation based on the primary data.

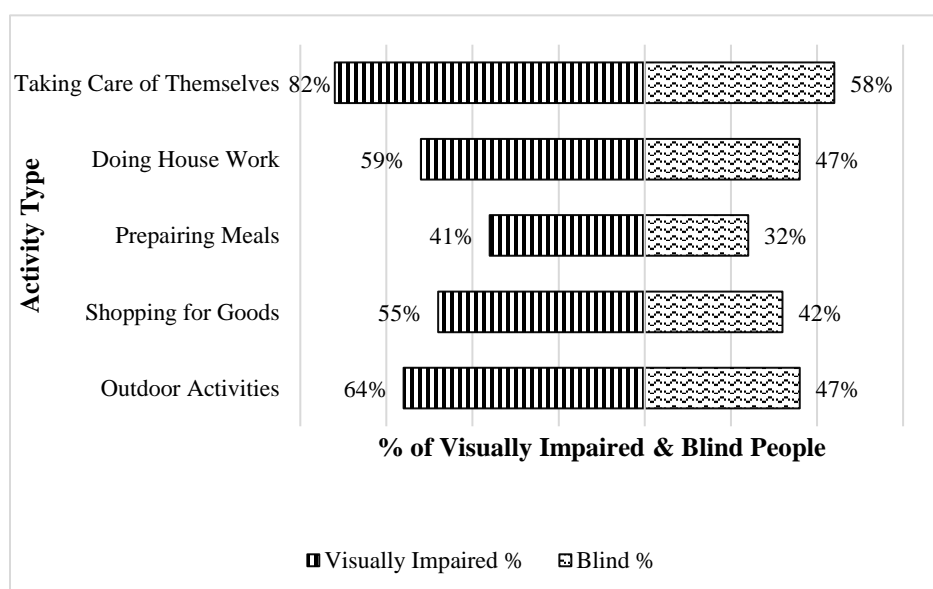
Among the 41 interviewed, 19 blind and 22 visually impaired represent 46.34% and 53.66% respectively, of the total sample population. Male population is 26 of the total sample, where 10 are blind, representing 52.63% of the total blind population. The remaining 16 visually impaired make up 72.73% of the total visually impaired population. Female population is 15 of the total sample, where 9 being blind represent 47.37% of the total blind population. The other 6 are visually impaired, representing 27.27% of the total visually impaired population (Table 1).

Most of the VI&B people tend to be older, where majority were between the ages of 40 to 59 years. Accordingly, 17 blind people consist 89.47% of the total blind population. Twelve people from the visually impaired sample between age group of 40-59 carry 54.55% of the visually impaired population (Table 1).

Most of the visually impaired are married, with 14 in the sample population, thus, representing 63.64% of the visually impaired population. Most of those blind are bachelors, with 9 in the sample population, forming 47.37% of the blind population (Table 1).

Most of the blind people were educated. Consisting 21.05% each of the blind population were GCE O/L qualified and those passed Grade 8 (4). Among the visually impaired, 31.82% were GCE O/L qualified (Table 1).

A majority of interviewees were males (26) and the rest being females (15) with 63% and 37%, respectively. Additionally, 24 were married and 16 were single. Seventeen are totally blind and 20 with a visual impairment. Respondents were in the age category of 33-66 years. Despite their visual impairment, some blind people have their own source of income, some are painters, carpenters and making bricks. Also, 78% of the people were not using spectacles while 22% were using spectacles.

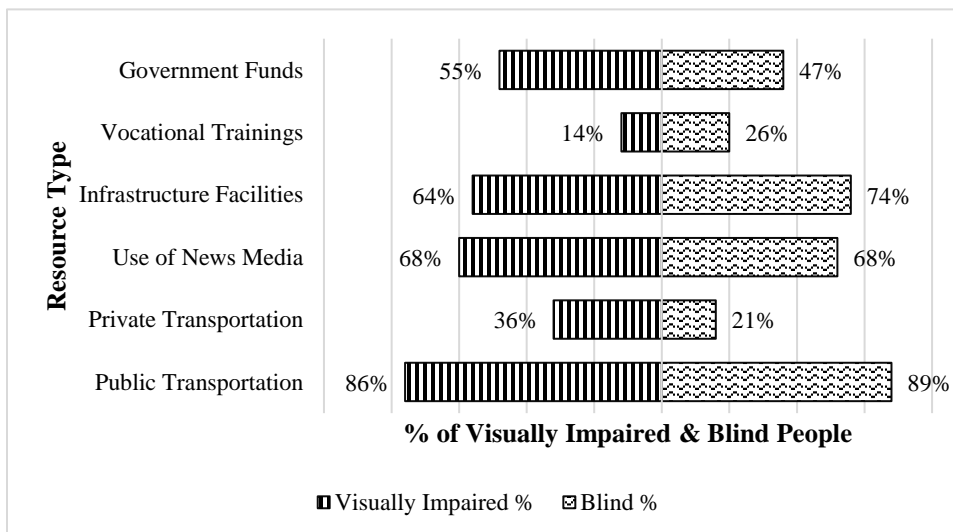


Source: Authors' illustration based on the primary data.

**Figure 1: Results of activities that VI&B people engage in the most**

The least number of visually impaired (9) preparing meals consist 41% of respondents. The highest number of blind (11) taking care of themselves is 58%, while the least number (6 people) prepare meals by themselves.

Here, 82% of visually impaired (18) and 58% of blind (11) taking care of themselves means that they can manage their own daily tasks including washing, cutting nails & hair, toileting, dressing & undressing, eating & drinking etc. In addition, 59% of visually impaired (13) and 47% of blind (9) managing household tasks - cleaning and washing (dishes and laundry) depict the ability and effort to perform their tasks themselves. Additionally, 55% of visually impaired (12) and 42% of blind (8) can do shopping to buy goods. About 64% of visually impaired (14) and 47% of blind (9) are engaged in sports, handicrafts, entertaining activities, religious activities, cultivation etc., are identified as the main activities that they engage with.



Source: Authors' illustration based on the primary data.

**Figure 2: Results of resource types that VI&B people value the most**

Six major resource types that VI&B people value the most (under Methodology) indicate the highest number of people (19 visually impaired and 17 blind people) use public transportation, where 86% visually impaired and 89% blind. Figure 2 signifies the least number of visually impaired people (3) enriched with vocational trainings as 14%, while the blind population shows the least in using private transportation (4) as 21%. Furthermore, 36% (8 visually impaired people) travel by their private transportation methods, and 68% (15 visually impaired and

13 blind people) use media sources like television, radio and mobile phones etc., to access daily information; 64% of visually impaired and 74% of blind (14 people in each category) have proper infrastructure facilities with a mode of satisfaction; 26% (5 blind) enhanced their ability by undergoing vocational trainings; 55% visually impaired and 47% blind (12 visually impaired and 9 blind) receive government grants like “Samurdhi” & “Jeewanadhara”.

### **Conclusion**

A high number of visually impaired people take care of themselves, while the least number prepare meals themselves (activities). The majority of people (19 visually impaired and 17 blind) use public transportation (resources). The majority of VI&B people between 40 to 59 years age categories tend to be older. Of the total sample population, 89.47% blind peoples are between 40 to 59 ages (17). In addition, this represents 54.55% visually impaired and it includes 12 people. This research assists the government and the society to implement facilities for inclusion of VI&B people into the society.

**Keywords:** *Demographic Characteristics; Resources & Activities; Visually Impaired & Blind People (VI&B people)*

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## **IMPACT OF INCOME DIVERSIFICATION ON HOUSEHOLD WELFARE IN SRI LANKA**

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### **Introduction**

Income risk is a central feature of households in developing countries. How well households can mitigate these adverse effects on their welfare is the major topic in development economics (Alderman and Paxson, 1992). Income diversification is referred to as a process whereby households adopt multiple income sources (Nghiem, 2010). According to Minot (2006), rural households adopt multiple income-generating activities to manage risk, to satisfy household consumption needs, to take advantage of positive externalities among activities, and to respond to diseconomies of scale.

Sri Lanka is an upper- middle income developing country with around 80% of people live in rural areas. Income sources in Sri Lankan households have unique characteristics due to differences in topography, agro-climatic conditions, and socio-economic features. Sri Lankan economy also is at a transitional stage where a predominantly rural-based economy changes towards a more urbanized economy oriented around manufacturing and services. According to Dissanayaka and Weeratunga (2017), employment in the service sector will continue to grow during the next 14 years period while the trend for the industrial sector would grow at a slower pace. The employed population in the agriculture sector will continue to decline.

### **Problem statement**

Globally higher attention is given to the income diversification strategies. Few studies were conducted regarding income diversification in Sri Lanka (Dharmadasa and Polkotuwa, 2016; Jayamanna et al., 2015, Hewavitharana and Dharmadasa, 2016). Previous studies mainly focused on identifying the patterns and the determinants of income diversification in Sri Lanka, especially in agriculture-related households. Though there are unique features with the structural changes in the economy in the Sri Lankan context, to the best of our knowledge, no study has examined the impact of income diversification on

household welfare in Sri Lanka. Akahakol and Aye (2014) state that most researchers simply consider the impact of diversification on welfare without examining the factors affecting the households to diversify while others consider only the latter. This study examines the impact of income diversification on household welfare while evaluating the factors affecting the decision of households to diversify.

According to UNICEF (2012), in recent years the use of asset-based wealth indices as an alternative metric measure of welfare has become increasingly prominent while little attention was given in the Sri Lankan context. There is significant merit in moving the process of poverty measurement away from expenditure-based indicators toward a more asset-based focus (Sahn and Stifel, 2003). Therefore, this study used money metric measures as well as the asset index to measure household welfare.

There is a wealth of literature that discusses diversification strategies of rural households while little attention has been given to diversification in the urban sector. Therefore, we attempted to analyze the impact of income diversification on household welfare considering all three economic sectors (Rural, Urban and Estate) in Sri Lanka. Specifically, the study focused on finding the determinants of income diversification and household welfare. Furthermore, understanding the nature of the income diversification in Sri Lanka along with its impact on household welfare would give rise to policy formulation as to how social welfare measure could be changed with changing household characteristics and income earning strategies.

## **Methodology**

Data for the study were derived from Household and Expenditure Survey 2016 (HIES) conducted by the Department of Census and Statistics. The data set comprised 21,756 households and this research considers the whole data set for the analysis representing all three sectors. Data were analyzed using descriptive statistics, Probit regression, and Ordinary Least Square (OLS) Regression. If a household receives income from more than one income source from following, the household was considered as a household with diversified income

1. Income from Wages and salaries (Employment)
2. Income from Agriculture (Seasonal Crops)
3. Income from other Agriculture (Non-Seasonal Crops and livestock)

4. Income from Non-Agriculture ( Mining and Quarrying, Manufacturing, construction, trade, transport, Guesthouse, Restaurants Bars, Other services, etc
5. Income from other cash receipts (such as pensions, dividends, rents, remittance, local and foreign and transfers)

In analyzing the data, first a probit regression was run to find the determinants of income diversification by considering the characteristics of household head, other household characteristics as explanatory variables. We include regional dummies to check the impact of regional differences in income diversification. Next we regressed the annual per capita expenditure by incorporating a dummy variable to show if the household has diversified its income as the income data is believed to be less reliable than consumption data (Ranathunga and Gibson, 2014).

We further analyzed the impact of income diversification on household welfare using asset index strategy. The independent variables (characteristics of household head, other household characteristics) were selected based on the availability of data in HIES (2016) and previous studies such as Ranathunga and Gibson (2014), Dharmadasa, and Polkotuwa (2016), and Deyshappriya and Minuwanthi (2020).

The OLS Model for this study specified as following (Akaakohol and Aye, 2014)

$$Y_i = \alpha_0 + \alpha_1 X_{i1} + \cdots \dots \dots \alpha_n X_{in} + \varepsilon$$

Where  $Y_i$  = Log of Annual household consumption per capita or Aggregate asset index and  $X_{i1} - X_{in}$  = Explanatory variables.  $\alpha - \alpha_n$  = Coefficients,  $\varepsilon$  = error term

Asset Indices are calculated from variables of household's ownership of assets. Consumer asset index, productive asset index, and aggregate asset index were created using asset ownership variables (Ajaero et al., 2017). Asset Indices according to Filmer and Scott (2008) are of the basic form:

$$A_i = b_1 \cdot a_{1i} + b_2 \cdot a_{2i} + \dots + b_k \cdot a_{ki}$$

$$A_i = \text{Asset index of household "i"}$$

$a_{1i}, a_{2i}, \dots, a_{ki}$  = k indicators of asset ownership variables (such as radio, television)

$b_1, b_2, b_3$  = Weights to be used in aggregating the asset indicators into an index

In calculating each of the asset indices, the study used the principal component analysis (PCA) to determine the weights as a factor score for each asset variable. In this study, the scoring factors of the first principal components (efficient components) were used for constructing the asset indices using the asset indices formula by Filmer and Scott (2008).

## Results and discussion

This section presents the results of the study and discusses them. First, we present the results related to determinants of income diversification followed by the results related to welfare and income diversification.

Our results suggest that more than half (61%) of the households in Sri Lanka have diversified their income. More specifically, income diversification in the rural sector is higher than that of rural and estate sector. Household members that are permanent employees are less likely to be diversify their income portfolio as they receive sufficient income from their employment. Results further suggest that households having more members tend to move towards diversifying their income confirming the findings of previous studies of Barrett et al. (2001); Dharmadasa and Polkotuwa (2016).

**Table 1: Results of the probit regression (Marginal effects after the probit regression)**

Variables	dy/dx	Standard error	t	p>t
Education years of household head	-0.0076***	0.0010	-7.23	0.000
Age of household head	0.0108***	0.0016	7.01	0.000
Age <sup>2</sup> of the household head	-0.0001***	0.0000	-6.78	0.000
Gender of household head	0.0223**	0.0107	2.08	0.038
Marital status of household head	-0.0270**	0.0118	-2.29	0.022
Household head from ethnicity majority	0.0921***	0.0090	10.19	0.000
Household Size	0.0955***	0.0039	26.57	0.000
Number of younger dependents	-0.0709***	0.0054	-13.10	0.000
Number of old dependents	0.0309***	0.0052	5.89	0.000
Urban Sector household	-0.1556***	0.0102	-15.02	0.000
Estate Sector household	-0.0490**	0.0191	-2.57	0.010

Source: HIES data 2016

The p-value of the regression analysis was 0.0000; it was less than 0.05 so the model is fitted with the data. Pseudo R Squared value is estimated at 6%. Old



household heads are having high tendency to diversity in to different income sources since, they are having more experiences and more awareness on the livelihood strategies and income sources. It is a fact that higher education levels of individuals assure better income opportunities either in the government sector or the private sector. Once, they are employed in these sectors based on their education levels, they are fully dedicated to those employments so that they do not seek alternative income sources. We used two dummies to denote regional differences in urban and estate sectors with respect to income diversification and household welfare. Accordingly, income diversification in the rural sector is higher than that of other two sectors. Households from major ethnicities also can have a significant impact on diversification. Surprisingly, our results suggest that married household heads are less likely to diversify their income and having young dependents reduces diversifying their income into different sources although having young dependents tends to increase income diversification. This may be due to the fact that the household members may not have extra time to engage in other income generating activities when they have more young dependents as they have to be very well taken care of. On the other hand, having old dependents means the family could be a nucleus family and many members live in the same household and they too have to be taken care of and more mouths are to be fed. Therefore, it could be expected that these households tend to diversify their income portfolio.

### **Results of the OLS Regression (Dependent variable: Annual Log per capita Expenditure)**

We used two different indicators to measure the household welfare namely per capita income and aggregate asset index. We regressed these two variables with several household characteristics and two regional dummies. Our estimated results suggest that the household welfare increases when households diversify their income portfolio. According to the results, it is clear that income diversification can have a positive impact on Annual per capital Expenditure at a 5% level significant level. Therefore, the null hypothesis that income diversification has no significant effect on household welfare in terms of log per capita annual expenditure is rejected. Sri Lankan society is a male dominating one and in most cases the household head is therefore a male. On the other hand, most of them are educated to a certain level. Our results show that educated male households contributes to increase the household welfare while it is decreased by having more people and more young dependents in the household. It implies when the number of younger dependents increases a considerable amount of money has to allocate to their Education, Health & Safety, etc. Theoretically, high

educational attainment is strongly associated with the standard of living. Results revealed that completed any level of educational qualification increases the per capita expenditure of a household. It implies that Education creates better employment opportunities which essentially determine household income. In the other hand, education enhances social networks and human capital. Ranathunga and Gibson (2014) have also demonstrated that the incremental value to household welfare indicated that a distinct jump for an extra year of education at the levels where the national exams are completed reduces poverty.

**Table 2: Effect of income diversification on household welfare (Dependent variable; log per capita expenditure)**

Prob>f	=0.0000		
R-Squared	= 0.2374		
Root MSE	= 0.5845		
P*<0.1 , P**<0.5 , P***<0.01			
Variables	CoefficientRobust	t	p>t
Log Annual expenditure per capital	Standard error		
Income Diversification	0.0252** 0.0088	2.85	0.004
Age of household head	-0.0011** 0.0004	-2.71	0.007
Gender of household head	0.0460*** 0.0136	3.37	0.001
Marital status of household head	-0.0137 0.0143	-0.95	0.340
<b>Education level of household head</b>			
Primary education	-0.1335***0.0209	-6.36	0.000
Secondary education	0.5043*** 0.0208	24.25	0.000
Tertiary education	0.7901*** 0.0319	24.79	0.000
Household Size	-0.0854***0.0038	-22.44	0.000
Number of younger dependents	-0.0613***0.0062	-9.75	0.000
Number of old dependents	0.0262*** 0.0058	4.52	0.000
Female adult ratio	0.1565*** 0.0214	7.31	0.000
Urban Sector household	0.2821*** 0.0121	2.29	0.000
Estate Sector household	-0.1302***0.0167	-7.78	0.000
Constant	11.824 0.0297	396.99	0.000

Source: HIES data 2016

According to the results, the number of old dependents positively and significantly contributes to household welfare in Sri Lanka. It may be due to the old aged benefits such as pensions and other types of incomes they receive either from government or donors. The female adult ratio also acts as a positive determinant to increase the welfare of the households. Despite geographical variables, compared to living in an urban area, living in the other two sectors generates negative effects on household consumption expenditure. This might be

due to the regional disparities in Sri Lanka in terms of economic and social factors.

### OLS Regression (Dependent Variable: Aggregate Asset Index)

**Table 3: Impact of income diversification on household welfare (Dependent variable: Aggregate asset index)**

Prob> F	=0.0000			
R-squared	=0.3628			
Root MSE	=0.7287			
P* < 0.1, P** < 0.05, P*** < 0.01				
Variables	coefficient	Standard error	t	p>t
Aggregate Asset Index	Robust			
Income Diversification	0.0299**	0.1122	2.67	0.008
Age of household head	0.0055***	0.0005	10.96	0.000
Education years of household head	0.1137***	0.0015	74.58	0.000
Ethnicity of household head	-0.0313	0.0174	-0.18	0.857
Marital status of household head	0.09731	0.0142	6.84	0.000
Number of Young dependents	-0.1090***	0.0074	-14.65	0.000
Number of Elder dependents	0.0483***	0.0070	6.81	0.000
Household size	0.1449***	0.00482	30.05	0.000
Urban Sector household	0.20270***	0.0163	12.42	0.000
Estate Sector household	-0.1846***	0.02650	-6.97	0.000
Western Province	0.4939***	0.0230	21.46	0.000
Central province	0.2426***	0.0240	10.09	0.000
Southern Province	0.2430***	0.0229	10.60	0.000
Eastern province	0.0405	0.0272	1.49	0.136
Northern Province	-0.1760***	0.0304	-5.80	0.000
Northwestern Province	0.3084	0.0252	6.39	0.000
Northcentral Province	0.2850***	0.0276	10.36	0.000
Sabaragamuwa Province	0.1612***	0.0254	6.39	0.000
Constant	-2.0492	0.04158	-49.28	0.000

Source: HIES data

The study used the aggregate asset Index (Both Productive and Consumer assets) which have received comparatively low attention in previous studies. Results revealed that income diversification has a significant and positive impact on the Household asset index at a 5% significant level implying that more livelihood diversified households can have higher welfare in terms of the Asset Index. Household size also affects positively on the asset index implying that when household size increases the need for consumer assets might increase and productive assets also will increase as savings to the members. When the number

of elder dependents increases, they also might own some productive assets which can include in the household assets. However, when there are younger dependents in a family the money allocation for them is increasing. It will lead to save less and to gain more assets. Regional disparities can be seen when looking into geographical variables. Estate sector households are more likely to have less household welfare in Sri Lanka because most of the Estate sector households depend on tea plantations and those lands are owned by respective plantation companies, not by them.

### **Conclusion and recommendation**

According to the results, income diversification can be considered as the most important and significant strategy for raising household welfare in Sri Lanka in terms of per capita expenditure, per capita income, and Aggregate asset index. Results also depict that the major determinants of household welfare and income diversification decision in Sri Lanka are human capital-related factors and the regional characteristics of the household.

The study identified the regional disparities among sectors in Sri Lanka. Households in the urban sector are well off rather than households in the rural sector. In terms of income diversification, households in urban areas have the least tendency to diversify income portfolio. Most of them who have not diversified their income are wage or salary earners. Encouraging them to start medium or small-scale enterprises, concepts like flexible working hours will lead to attracting them in to adopt different income sources and it will ultimately help to upgrade their household welfare. For increasing the extent of income diversification in the rural and estate sector, it is necessary to provide incentives for entrepreneurial development, encourage small-scale businesses in the rural area, expansion of the existing credit market, development of infrastructure, and improvement of information facilities are needed. The government can enhance the awareness or opportunities on income sources for the households. The government can enhance education status, for instance, by giving scholarships for higher education, subsidized primary and secondary education, developing skills in working place, policies that facilitate investment in education, etc. Income diversification is low in female-headed households. The government can also encourage females by women empowerment programs and by making entrepreneurial opportunities. According to the results, most of the households which are having agricultural lands do not gain income from it especially in the urban sector. Agriculture landholders have to promote policy implementations to make them gain income from their lands by making lands productive lands. In

conclusion, this study has shown that income diversification has important effects on household welfare, as depicted in ownership of consumer and durable assets of households, per capita expenditure, and per capita income.

**Keywords:** *Household welfare; Income diversification; OLS regression; Probit regression.*

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## **LIVELIHOOD SECURITY AND INCOME DIVERSIFICATION OF TEA SMALLHOLDERS; EVIDENCE FROM GALLE DISTRICT**

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### **Introduction**

Total tea production in Sri Lanka is acquired by two sectors. They are regional plantation companies and tea smallholding sector. Among these two sectors tea small holding sector become major contributor to the country's tea production. Often following a multi-crop model on land holdings of less than ten acres are considered as the tea smallholders. Tea small holders contribute to the 74.5% of total tea production and also more than 393420 number of small holders have 121967-hectare land capacity which are contributed to increase tea production. Tea Small holding land extent in Galle district is 27427 hectares (Tea Small Holdings Development Authority, 2016). Total green leaf production and tea production produced by Galle district are respectively 199.016 mn.kg and 42.799 mn.kg (SLTB, 2016).

Livelihood security of tea small holders basically depends on their ability to gain profitable income through their cultivation and ability to manage their cultivation, income and resources for that. Livelihood security consist with different components such as economic security, educational security, food security, habitat security, health security (include water and sanitation), social network security (Frankenberger et al, 2002). Negative effect to the livelihood security condition will lead tea smallholders to make decisions about continuity or change their current livelihood effecting total tea production.

### **Problem statement**

Tea small holders are one of subset in tea industry that can make significant impact on total tea production (Bandula et al, 2016). Therefore it is essential to identify how the household level economic status, health condition, education level, social participation and the infrastructure facilities effect to the overall household livelihood security level and how the livelihood security level effect on tea small holding household heads decision to diversify their income sources. It is essential to understand the correlation between level of household livelihood

security and their production capabilities which is highly depend on labour factor, income received and contribution of the tea land owner. Therefore it's important to find the triggering factors that led tea smallholders to diversify their income in to the various income sources while reducing concern about tea cultivation and management practices to secure the futurity of the field.

### **Objectives**

- Assessment of the components of livelihood security of tea small holders while identifying the factors effecting to the livelihood security of rural tea smallholders
- Identification of the significance of the factors that effects on household livelihood security level while understanding their magnitudes of the impact.
- Identification of the relationship between household livelihood security level and income diversification strategy of tea smallholders.

### **Methodology**

#### **Data**

Primary data relating to various parameters of Income Diversification and Livelihood security were gathered through pre tested questionnaire which was filled with randomly selected small holders of Hingaloya/Hiniduma sub office which contain most number of tea smallholders in Galle district (24225). Total sample size 200 tea smallholding families. Income received for each tea smallholder from the tea factory and the loans achieved from Dellawa tea factory was compared with answered questionnaire and confirm the values referring ledgers and bills of Dellawa tea factory as the secondary data.

#### **Data analysis**

Data were analyzed using descriptive statistics, Tabular techniques, and Linear Regression model.

#### **Construction of indices**

##### **Livelihood security index (LSI)**

Each indicator was ranked on a five point ordinal scale. Livelihood security indices such as food, economic, health, education, habitat, and empowerment security were computed by aggregating all the scores of the selected indicators. The mean of these indicators were calculated and taken as a weightage of that



specific indicator. Standardized indicator value calculated using following equation.

$$Z_{indj} = \frac{\text{Indicator } j - \text{Min } j}{\text{Max } j - \text{Min } j}$$

Where,

$Z_{indj}$  = standardized indicator  $j$

Max  $j$  and Min  $j$  = maximum and minimum value of indicator  $j$

Household Livelihood Security Index for each indicator of the entire households was calculated by using the formula given as below:

$$HLS_i = \frac{\sum Z_{indj}}{N}$$

Where,

$HLS_i$  = Household Livelihood Security for one indicator

$\sum Z_{indj}$  = summated standardized score of all households for of an indicator

$N$  = Number of households cover in the study

After HLS index for one indicator was constructed, the compound overall Livelihood Security (LS) Index was calculated by using the formula given as below:

$$LS_i = \frac{\sum W_i HLS_i}{\sum W_i}$$

Where,

$LS_i$  = Livelihood Security

$HLS_i$  = Household Livelihood Security

$\sum W_i$  = summated value of weightage of all indicators

(Adopted from Akter & Rahman, 2012)

Six different livelihood outcomes namely food security, economic security, education security, health security, habitat security and social network security were measured using following indicators.

### **Regression analysis**

To identify the determinants of household livelihood security and its interaction with income diversification linear regression analysis was conducted using STATA 14.0 version.

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \varepsilon$$

Where, Y= Household Livelihood Security,  $X_1$  = Diversified or Not,  $X_2$ = Gender of Household head,  $X_3$ = Household size,  $X_4$ = Civil status,  $X_5$ = 10 years or more educated household head,  $X_6$ = Number of dependants,  $X_7$ = ATISPOT=Allocated total income share percentage on tea cultivation

### **Results and discussion**

#### **Descriptive statistics**

There are 62.5 percent household heads diversified their income sources while 37.5 percent of them are only rely on tea cultivation. Most of household heads those who hadn't diversified their income source have support of other economically active family members financial contribution to the essential household activities. And also there is significant outflow from tea small holding sector can be found among the young male and female household heads or family members those who in young ages due to the improvement of education facilities, changing of the social thinking, and competitiveness among people. Only 14.92 percent of young population choose tea cultivation as their livelihood while rest of 85.08 percent choose different livelihood paths.

#### **Livelihood Security Outcomes**

There are six different livelihood outcomes namely food security, economic security, education security, health security, habitat security and social network security.

#### **Food Security**

Achieving food security requires that food supplies are sufficient and the household has adequate access to food, either from own production or through

the market or some other sources. In this context considered two main indicators for assessing food security of tea small holders. Household wise previous day food intake was collected in grams and it was converted into calories by using food calorie value table and average food calorie intake was calculated. Gender wise and age wise daily recommended nutrient allowances were calculated. The ratio between calorie intake and daily recommended nutrient allowance which was known as calorie adequacy ratio (CAR) was calculated using calorie adequacy ratio equation for each tea smallholder household. If CAR is equal to one then the family is taking the recommended calorie level. Five score was given when CAR is equal one or more than one. If CAR was less than one, it means those families are taking less than the recommended calorie level. According to the five point ordinal scale, relevant scores from one to four were given to them and calculated mean value of the relevant scores of 200 households. For this study household food consumption was collected by using the previous 24- hours as a reference period (24 hours recall method). By using five point ordinal scale score, selected nine food categories were divided into five food groups and score were given according to the relevant scores for the food groups and calculated mean value of the scores to generate overall diet diversity among them.

According to these two methods Calorie adequacy ratios showed 4.69 value and diet diversity showed 4.97 value among population. Aggregately indicated overall food security at 4.83 value. It confirmed food security was in higher score range according to the standardized score range of livelihood outcomes (Shyamalie, 2013).

### **Economic Security**

Per capita monthly income, per capita monthly savings and Proportion of 15-59 employed members are used to measure the overall economic security among the population. Ratio between total household monthly income and the total number of family members is consider as per capita monthly income of relevant household. According to the Household Income and Expenditure Survey 2016, mean per capita income per household is Rs 16,866 in Galle. Under this assumption of people who earn income higher than per capita income in rural sector are wealth, they were given 5 scores. Rest of the people was divided in to four categories according to ordinal scale and they were given relevant scores from one to four. Aggregated mean score was calculated by dividing the summation of all the individual scores by total no of sample members and it was indicated as 4.22 among them. Per capita monthly saving was calculated by dividing total household monthly saving by total number of family members.

Relevant scores from one to five by using fivepoint ordinal scales was given to determine per capita monthly savings and aggregated mean score was calculated by dividing summation of all individual scores by total no of sample members and it was indicated as 2.45 among the population. Proportion of 15-59 employment which showed 1.65 value and it was also determined according to the five point ordinal scale which is built based on the number of the adults employees except household head. These three values aggregately considered to calculate mean value of them and it's considered as overall economic security among the population and it was indicated as 2.7 higher range.

### **Health Security**

Accessibility to the health services, Quality of sanitation facilities, per person days of sickness are the indicators that applied to the population and mean value of these indicators considered as the overall health security. Accessibility to health services was measured as distance (Km) to the primary health care centre or government hospital. Distances were noted and the relevant scores from one to five were given by using fivepoint ordinal scale. Lowest distance was given 5 score and highest distance was given 1 score. Aggregated mean score was calculated by dividing the summation of all the individual scores by total no of sample members and it indicated as 2.70. Developed the score system to measure the quality of sanitation facilities using fivepoint ordinal scale based on the quality of latrines. Five score was given to the water sealed sanitary latrines and one score is given to the households those who used open field as their latrine facility. Aggregated mean score was calculated by dividing the summation of all the individual scores by total no of sample members and it was 4.18 among the population.

Total number of sick days of family members within month was divided by number of family members to calculate per person days of sickness value. If that value is 5 or more 1 score is given to the household, if that value 1 or less than one, 5 scores given to that households. Aggregated mean score was calculated by dividing the summation of all the individual scores by total no of sample members and it was calculated as 4.81 among the sample population. Aggregately these three values showed 3.90 mean value as overall health security among them.

### **Education Security**

Accessibility to schools, dropout rate and number of 10 years or more educated members are used to measure the overall education security. Accessibility to school was measured by giving relevant scores from one to five using five point

ordinal scale.it was developed considering distance (Km) to the primary school or secondary school from the tea smallholders house. Lowest distance was given 5 score and highest distance was given 1 score. Aggregated mean score was calculated by dividing the summation of all the individual scores by total no of sample members.it was indicated as 3.16.

Proportion of students who stop their school attending without completing their school education (5-19 year period students were considered) are considered in dropout ratio. Within the evaluation period, the students who were attending to the school (no dropout) were given 5 scores. And dropouts' students were divided into four group considering the following criteria. If the dropouts were primary educated (grade 1-5) they were given 1 score, If the dropouts were middle educated (grade 6-8) they were given 2 score, If the dropouts were metric educated (grade 9-10) they were given 3 score and if the dropouts were secondary educated (grade 11-13) they were given 4 score. Aggregated mean score was calculated by dividing the summation of all the individual scores by total no of sample members and it was showed as 4.73.

Relevant scores from one to five were given by using five point ordinal scale prepared according to the number of family members those who educated more than 10 years of formal education. Aggregated mean score was calculated by dividing summation of all individual scores by total no of sample members and it was recorded as 2.16. Mean values of these three indicators which is consider as an overall education security of population is 3.41.

### **Habitat Security**

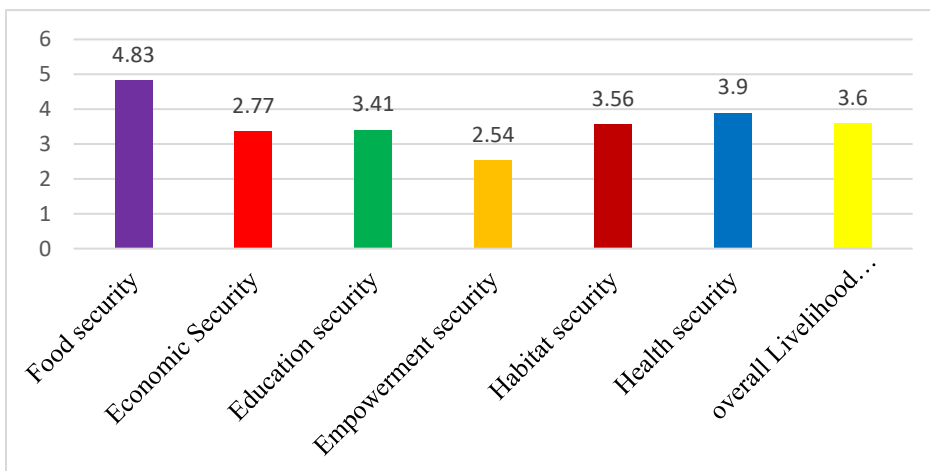
Five point ordinal scale scores were given based on the wealth ranking system developed for the quality of houses and Aggregated mean score was calculated by dividing the summation of all the individual scores by total no of sample members. Floor quality (3.79), wall quality (3.95), roof quality (3.68), Space of house (3.53), road quality around the household (2.87) are the five indictors used to measure overall habitat security. Aggregately they indicate 3.56 higher value as overall habitat security.

### **Empowerment Security**

Capacity of individuals to maintain and participate in social networks was measured by using five point ordinal scale developed considering number of societies and social organizations that household head participated. Five score is offered if household head participated all the social support organization

mentioned in questionnaire and One score is given if household head participated only for one social organization. Aggregated mean score was calculated by dividing the summation of all the individual scores by total no of sample members. Empowerment security measured through level of support that tea smallholding families received by active community participation (2.54). It indicate higher value according to the standardized score range but less valued compared to other five livelihood components.

Household level livelihood security was calculated for each household considering the equation used in Akter & Rahman, 2012 and also the overall livelihood security was calculated by dividing the summation of each household's livelihood security values from number of households. It was indicated as 3.6 among the population. According to the overall results it can be observed that tea small holders in Galle district had high levels of health security, habitat security, Education security, Economic security and food security while empowerment security among population shows low value compared to the other components. There is significant improvement can be find in food security and the health security among tea small holders of Galle district. Overall Livelihood security of tea small holders in Galle district 3.6 had higher value. This emphasized the less vulnerability of overall livelihood security of tea smallholders in Galle district. It's important to understand what are the triggering factors and their magnitude of the impact on household level livelihood security to emphasize how the overall livelihood security is in high range (3.6) while tea smallholders faced many constrained specially in past five years.



Source: Author's estimations

**Figure 1: Livelihood Outcomes of tea small holders in Galle district**

## Regression Analysis Results

**Table 01: Parameters estimated for linear regression**

Household Livelihood Security P> t	Coefficient	Standard error	
Diversified or Not	0.09544948*	0.0575131	0.09
Gender of Household head	0.3071884*	0.1674959	0.06
Household Size	0.1450915***	0.0375183	0.00
Civil status	-0.1181391	0.1844893	0.52
10 years or more educated Household head	0.1262678**	0.061697	0.04
Number of Dependents	-0.109178**	0.0385075	0.005
ATISPOT (Allocated total income share on tea)	0.0056473**	0.0027826	0.04
Constant	2.868184	0.1548199	0.000

Note: Significant levels denoted as \*\*\* p<0.01(99%) \*\* p<0.05(95%) \*p<0.1(90%)

Source: Author's estimations

The estimated model showed that income diversification, Gender, Household size, 10 years or more educated Household head, Total income share on tea cultivation, Number of dependents had significant impact on household livelihood security. Number of dependent and civil status have negative impact on household livelihood security while other five variables have positive impact on livelihood security. Among them Income Diversification and Gender showed significantly positive relationship at 10% probability level while 10 years or more educated Household head, Number of dependent, Total income share on tea showed significantly positive relationship at 5% probability level. Household size showed significantly positive relationship at 1% probability level. When consider about income diversification, it showed 0.09544948\* value correspondent to the dependent variable and it can be interpreted as, if household head make decision to extend his income sources to other income generating activities that household's livelihood security is increase with respect to the level of income diversification which was determine by the Number of income generating activities.

Gender of household head was significantly and positive effect on household livelihood security with 0.3071884\* value. It can be interpreted as male headed household have better livelihood security than the female headed households. That outcome confirms the common ideology within the rural society. Being a

female household head limit the options and opportunities that can take to secure their livelihoods.

But gender became less valued factor if household head was educated one up to 10 years or more formal education. It was improving the household livelihood security and generate significantly positive impact on it at 5% probability level with 0.1262678\*\* value. This value emphasizes the capability of education level of household head to overcome the barriers and limits of the modern job market and expand the livelihood options. Household size indicated 0.1450915\*\*\* value with significantly positive impact on household livelihood security and it confirmed the household which contain more family members have higher livelihood security with compared to the household which have less family members among population. Number of dependents shows negative relationship with -0.109178\*\* value and generated significant impact on the household livelihood security. That means if tea smallholding household have a greater number of people which are not economically independence it reduces the household livelihood security because they rely on the main income earner. Mostly main income earner is household head. This condition reduces his economic capability towards other family needs.

Total income share percentage on tea cultivation showed 0.0056473\*\*value indicating significantly positive relationship with household livelihood security index. That number confirmed, when consider household which was invest considerable share of total income on tea cultivation and its maintenance practices their household livelihood security level was high because well maintained tea field can give good income more than the other diversified income sources.

Above main factors effect on tea smallholder's livelihood condition to maintain it in higher range. Tea cultivation and the industry faced lots of constraints as discuss before especially in previous five year because of the poor decision making and inefficient implementation of government policies. Coping with this all the difficulties they faced tea smallholders secure their livelihood for the sake of the futurity of their following generations and Ceylon tea brand with the assistance of income diversification strategies. Therefore, 62 percent of household heads choose more than one livelihood other than tea cultivation. Household heads education level improve the household's overall education security. Health security was in higher range. Per person days of sickness is very low due to the good health condition of the sample population during past month



considered. Accessibility to the health services was in moderate level while sanitation facilities are in higher conditions. That confirm the positive relationship between higher sanitation facilities and the household level health condition. Habitat security of tea smallholders was also in the higher range. There were no temporary built houses found among the sample populations and 100 percent households are having electricity for their houses. But they need assistance to improve their road facilities of area. Diet diversity also in higher range as well as the calorie adequacy ratio. 73.5 percent households received required calorie amount per day and other 25.5 percent received less than it. 89 percent of household having more than 6 food groups per day indicating higher diet diversity. That confirm the rapid changes occur in the urban food consumption pattern still didn't affect to the traditional rural consumption pattern. Empowerment security level was in the higher level. But compared to the other components of livelihood security it was the lowest value. Lack of time to participate to community organizations, lack of knowledge about benefits that can received through the community organizations leads to this condition of empowerment security among the sample population. Income diversification, Household size, Education level of the household head, gender of the household head, allocated share from total income on the tea cultivation, significantly and positively effect on household livelihood security condition while Number of dependents showed negative significant impact on it. Uncertainty belongs to the agricultural products, unstable government and their rapidly changing policies toward agriculture and foreign affairs, adverse weather conditions, Labor shortages, increased cost of living are the common constraints faced by the tea smallholders. But they coping up the situation through the adoption of livelihood diversification strategies.

## **Conclusion**

According to the final results of the regression analysis and the livelihood security indices scores, overall livelihood security of sample populations was in higher range. Positive and significant relationship between household livelihood security and income diversification emphasize the reason for the higher livelihood security indicating uncertainty of tea cultivation as the single source of income. Male headed tea smallholding families more secure in economic condition with compared to the female headed households. Education level of the tea small holder household head and the other adults of the family determine the extent of income diversification of household. Households which contain more members including more economically independent adults have lowest vulnerability to the livelihood security and it improve the ability to allocate

significant percentage of total income on tea cultivation and management. Therefore, it's important to disseminate new technologies and the findings among the tea smallholders through a formal adult learning programs and education security must improve among the tea smallholder households by providing required infrastructure facilities on behalf of the futurity of the tea smallholding sector.

**Keywords:** *Calorie Adequacy Ratio; Diet Diversity; Income diversification; Livelihood security;*

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## **EMPLOYEE PERCEPTIONS OF WORKPLACE WELLNESS: A CASE STUDY IN ICT INDUSTRY SRI LANKA**

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### **Introduction**

Wellness is defined as the pursuit of activities, choices, and lifestyles that lead to a state of holistic health (Global Wellness Economy Monitor, 2018). Wellness economy contains industries that facilitate consumers to integrate wellness activities and lifestyles into their daily lives. Workplace Wellness is emerging as a major component of welfare in the global wellness economy. Workplace Wellness is not a single industry but refers to a variety of services, products and platforms that a worksite might offer to prevent disease, mitigate stress, improve work-life balance, enhance engagement, and to improve workplace culture and management structures within firms. For instance, wellness initiatives include encouraging physical exercise, incentivizing wellness, health screening, diagnostic tests, socializing programs, counseling services, etc.

Nevertheless, each year work related accidents, occupational diseases, and other work-related health problems cause 4–6 per cent economic loss in the global GDP (Global Wellness Institute, 2016). In addition, various research studies have estimated the costs of work-related stress to be significant in every part of the world [see inter alia European Risk Observatory (2014)]. Many researchers (for instance Kaspin et al. (2013) and Berry et al (2010)) have concluded that work related accidents, stress and psychosocial issues lead to increased absenteeism and staff turnover rates, and make employees less productive and efficient. Over time the economic cost of unwell employees has increased and therefore, workplace wellness programs are aiming to lower healthcare costs; improve morale, retention, and recruitment; and increase productivity and competitiveness.

However, work place wellness is still not a widespread concept in the Sri Lankan context. Though some, Sri Lankan companies have begun the process of promoting workplace wellness. This is particularly significant because Sri Lanka is currently facing two transitional phases. First, Demographic transition also

known as the ageing population phenomenon, where population aged 60 and above are increasing as a fraction of the population, with Sri Lanka identified as one of the fastest aging countries in the world. By 2030 one of every five Sri Lankans will be aged 60 or above so that, the working age population will shrink in the long run leading to decrease in national output. Secondly, epidemiological transition is in effect with Non communicable diseases being more prevalent than communicable diseases. The government therefore faces significant financial issues due to both these forces regarding its health budget. In such contexts it becomes important to maintain the existing labour force in a healthier condition and to shift a part of the healthcare expenditure (albeit preventive healthcare expenditure) on to employers. In conclusion, both these objectives could be achieved through workplace wellness programs.

Although workplace wellness is becoming a major concern in the country at present, it is evident that hardly any research has been carried out. Therefore, the research problem of this study is identifying the workplace wellness programs in Sri Lanka. As there are no research has been done on this subject matter this research is exploratory in nature.

### **Research Objectives**

This study attempts to explore the status of workplace wellness in Sri Lanka, using the Information and Communication Technology (ICT) industry as a case study. The specific objectives of the study are

- Identifying existing workplace wellness activities in the context of the Sri Lankan ICT industry.
- Examining the perceived satisfaction with these wellness programs.

I have chosen to focus on the ICT firms, for the reason that this industry, being strongly influenced by international trends: given that some of these companies have foreign principals while others transact mainly with foreign company clientele has been the forerunner in incorporating this concept into their worksites.

### **Methodology**

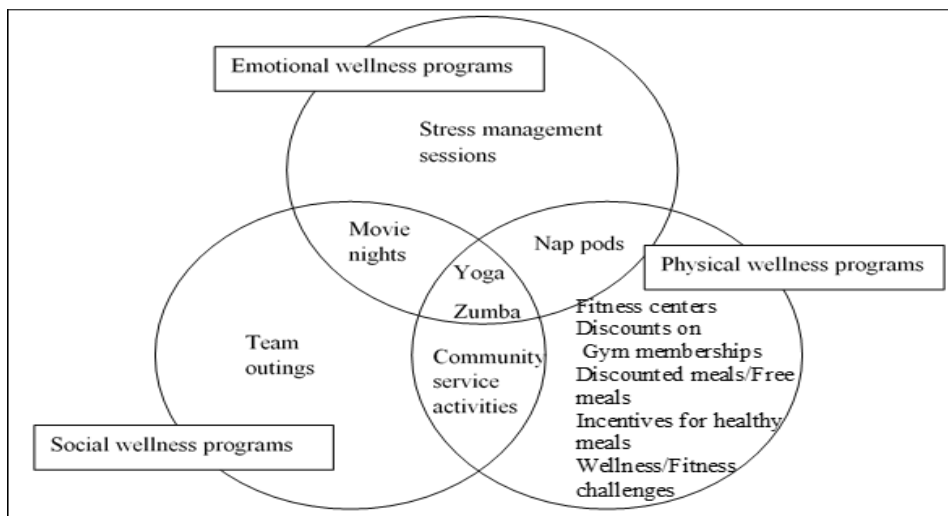
First, as there is no empirical literature on this issue for Sri Lanka, Key Person Interviews (KPIs) were carried out to identify the type of activities adopted under the concept of Workplace Wellness and the rationales for doing so. This led to conducting this research as a case study of the ICT industry as mentioned before. According to the views of the KPI respondents, initiatives relating to workplace

wellness are in progress in this industry as a result of global influence. This industry is significant in the economy as well given its current earnings and expansion potential.

This study then uses primary data collected through a survey using structured questionnaires. The sample comprises 36<sup>3</sup> ICT professionals from different private ICT companies. ICT workforce in Sri Lanka comprises of ICT companies, Business Processing Management (BPM) companies, ICT training organizations, Non-ICT companies and government organizations. However, this research only investigates the wellness initiatives of private sector ICT companies. And due to practical difficulties, the sample of respondents was selected on a convenience basis.

## Results and Discussion

The survey data revealed a number of workplace wellness programs initiated by IT companies. These programs can be categorized into three groups; emotional wellness, physical wellness and social wellness programs (See figure 01). It is important to note that certain programs can encompass more than one of these three objectives.

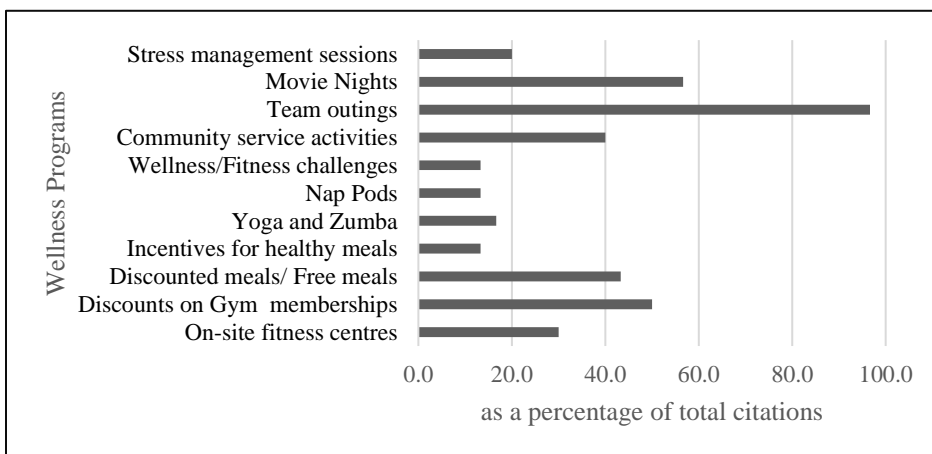


Source: Author categorization based on the questionnaire and KPI interviews

**Figure 1: Classification of workplace wellness programs**

<sup>3</sup> According to the National IT-BPM workforce survey-2019 there are 600 ICT companies in Sri Lanka. The survey includes only one respondent from one ICT companies. Hence, the sample represents nearly 6 percent of the total ICT companies.

Graph 01 reflecting worker responses shows that the, most common wellness activity tool is team outings, where team members go out for meals once a week or month with the cost being borne by the company. The second most common program is movie nights, during which the company screens a popular movie in the company premises, while providing snacks and soft drinks to enhance the experience by making the atmosphere similar to that of a film hall. Due to their work mode most IT professionals tend to work in isolation and therefore such programs can lead to more collaboration and communication, resulting in a healthier work environment and more job satisfaction. They also work to tight deadlines and under stress hence making it important to give them an opportunity to relax.



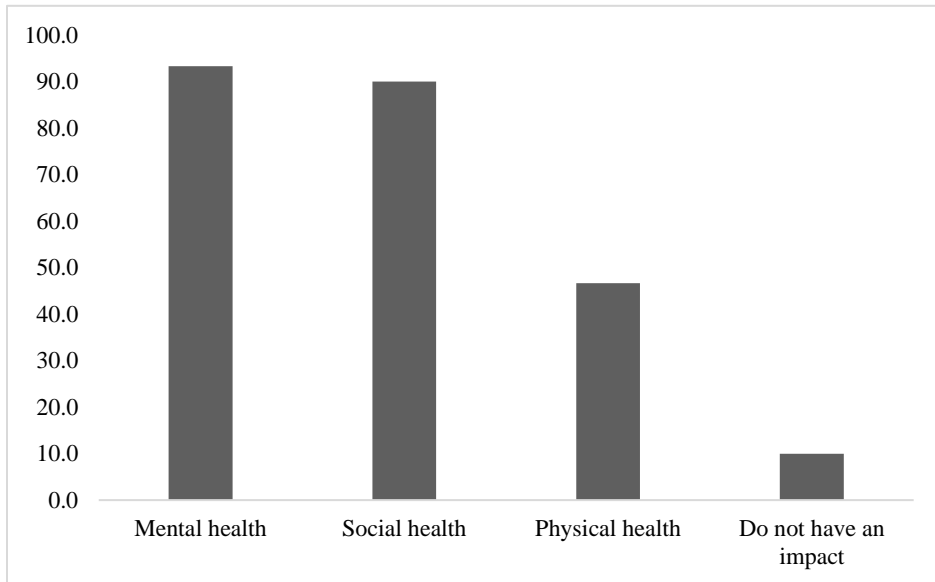
Source: Author constructed using survey data

### Graph 01: Prevalence of workplace wellness programs

Moreover, it is can be noted that many firms' offer physical wellness programs such as onsite fitness centers, gym memberships and discounted meals. IT professionals have higher health risks due to their sedentary work practices, being mainly in constrained postures and inappropriate ergonomics. A large number of respondents reported eye-strain (56.7%), backache (50.0%) and stiff necks (43.3%), all conditions known to be accentuated by working in the IT field. According to the Sharma et al (2009) musculoskeletal disorders, backache, stiff neck and joint pains are most prevalent among IT professionals. Hence, the above physical wellness programs may be offered as a response to reduce the above health risks. Furthermore, one fifth of the respondent reported depression. According to Rao and Chandraiah (2012) such occupational risks are high among IT professional due to overload of work, personal responsibilities and

expectations. Yet, only a few firms seem to have offered emotional or mental wellness programs such as stress management sessions.

According to the survey over 90 percent of the sample believed that wellness programs increase their mental and social health. This may be due to the high prevalence of movie nights and team outings which lead to social and emotional wellness. The responses in this context can be summarized as follows:



Source: Author constructed using survey data

**Graph 02: Perception of satisfaction regarding wellness programs**

### Conclusion

Briefly the above study concludes that the IT industry is working to create workplace wellness, through different strategies, focusing on the areas of physical, mental and social wellbeing, a feature that is understood and appreciated to an extent by its staff. The recommendation would then be to popularize this corporate culture across other industries as well, and to further strengthen the understanding of the workplace wellness objective within the ICT industry too. This would improve the health status of the workforce and decrease the health financing burden on the government. In addition, this would be complement achieving the 3<sup>rd</sup> (Good health and well-being) and 8<sup>th</sup> (Decent work and Economic Growth) Sustainable Development Goals (SDGs).

**KeyWords:** *IT industry; Wellbeing; Wellness Economy; Workplace Wellness*

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## CHRONIC YOUTH UNEMPLOYMENT AND POLICY OPTIONS FOR SRI LANKA

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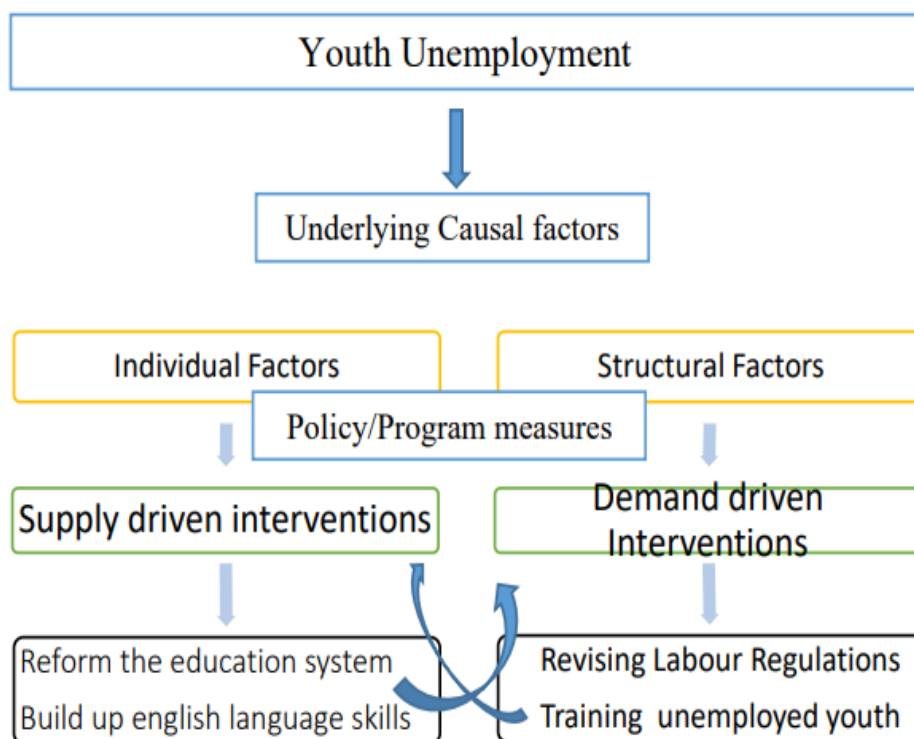
### **Introduction**

Unemployment is a state of an individual who is not engaged with gainful occupations. Since an adequate wage rate became critical to individuals' survival to purchase goods, they start looking for and depend on occupations, which they could not provide for themselves. Consequently, unemployment has become a significant life problem affects individuals both economically and psychologically (Gunathilaka 2013). Youth unemployment can be defined as the rate of unemployed population in the age group 15 – 24 years to the currently “economically active population” in the same age group (Department of Census and Statistics, 2019).

According to the labour force survey, the general unemployment rate indicates a significant positive turn since the 1970s (Munasinghe, 2016). The unemployment rate dropped from 18% in the 1970s to 9.5% in 1998 and further dropped to 4.4 in 2018. According to the age group, youth (age 15-24) show highest unemployment rate 21.4%, which is followed by an adult (age 25-29) 10.4%. Youth unemployment was almost five times as high as the overall rate. This rate is higher among the youths with G.C.E.(A/L) & above educational qualifications. In addition, the proportion of youth unemployment is 53% in total unemployment which indicates that half of unemployment population in Sri Lanka is youth. Further, the Not in Employment, Education or Training (NEET) rate of Sri Lanka which is an indicator illustrate the share of young people who are not in employment, education or training as a percentage of the total number of young people, displays that approximately one out of every five youths belong to the NEET group (Department of Census and Statistics, 2019). Even though the age category for youth is given 15-24, among them, only 33% enter into the labour market, and among them, 22% remain employed (Munasinghe 2016).

Especially, the high unemployment rate among youths and the nature of its continuation has multifaceted effects on the socio-economic structure in the Sri

Lankan economy. At first, it shows the weak government operation as it fails to utilise the productive human capital up to their fullest productive potential decelerating the economic growth of the country.



**Fig.1: A Framework to address youth unemployment**

Secondly, it aggravates the intergenerational- poverty and amplifies to the generations to come pestering poverty conditions of people. Thirdly, it causes the loss of cultural and societal values, public safety and social capital due to widening gap between the education and prospects for employment. Finally, it may lead to inter-generational conflicts as young people discouraged by being unemployed even after obtaining better formal qualifications than adults those who have job permanency and have more wealth and better living conditions (Hopenhayn, 2002). Hence, unemployment challenges policymakers to find a sustainable solution for youth unemployment. Therefore, this paper is aimed at analysing the state of unemployment in Sri Lanka and discusses the appropriate policies and interventions to address this issue.

## **Research Problem**

As illustrated by the Figure 01 above, a strategic approach to understand and address the youth unemployment issue can be divided into two dimensions; 'supply-side' and 'demand-side'. While 'supply-side' approach focusses on the individual causal factors including social networks, education and training providers, Government, agencies and employers, 'Demand-side' approach focuses on structural factors

targeted to intervene in the labour market, such as labour market opportunities at entry-level, several apprenticeships and training, public sector jobs (Skattebol et al. 2015).

Therefore, the major research question of this study is how demand driven and supply driven interventions for reducing youth unemployment in Sri Lanka formulated.

## **Objectives**

As explained previously, it is important to address the youth unemployment problem efficiently and effectively to take the economy into a sustainable development path. As individual and structural factors effect on the level of youth unemployment, a general solution will not make satisfactory reduction in the youth unemployment. Therefore, policy interventions should be focused on both supply side and demand side interventions. Hence, the major objective of this study was to identify the major interventions to curb the higher youth unemployment rate in Sri Lanka while analysing the individual and structural factors of youth unemployment.

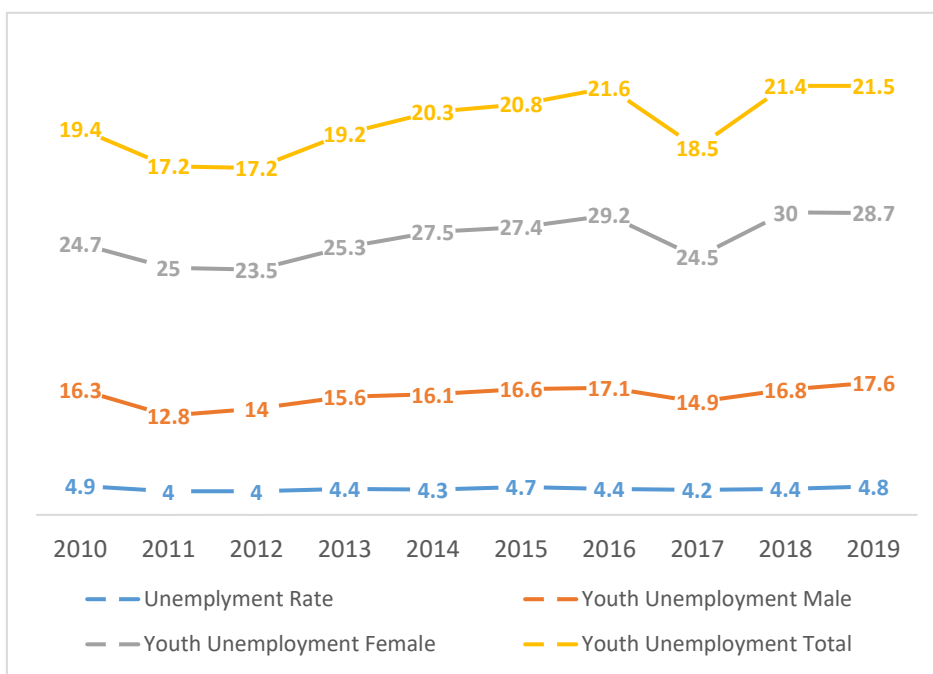
## **Methodology**

This study provides an integrated approach of preventive and curative measure by understanding two major undelaying causal factors of youth unemployment, individual factors and structural factors, respectively. Further, the framework focuses on two interventions; supply-driven and demand-driven approaches of interventions.

The study is descriptive in nature thus detailed literature review was conducted while graphs, charts and figures were employed in identifying the better programmes for Sri Lankan context. Data for the study were mainly drawn from various labour force surveys of Department of Census and Statistics.

## Results and Discussion

It is important to show the behaviour of youth unemployment before discussing the major policies and programme available for curbing it. According to the Labour Force Survey Data of the Department of Census and Statistics, Sri Lanka is recording a significantly lower rate of unemployment in the recent years (Department of Census and Statistics, 2019). However, Figure 02 shows that the youth unemployment rate is five times higher than the total unemployment rate throughout the years.



Source: Department of Census and Statistics of Sri Lanka

**Fig. 2: Youth Unemployment rate by gender (2010 – 2019)**

Further, female youth unemployment rate is always greater than males. Moreover, figure 02 shows that even though the unemployment rate is quite stable in recent years, both male and female youth unemployment rates are slightly increasing between 2011 and 2019.

Furthermore, Table 01 portrays that around one out of every four youths belong to the NEET group in Sri Lanka. This increases up to one out of third for female youth. NEET rate is significantly higher for female than male in recent Sri Lanka.

**Table 01: NEET rate (NEET group as a percentage to total youth) by gender, 2011-2019**

Gender	2011	2012	2013	2014	2015	2016	2017	2018	2019
Male	13	12.7	17	17.6	16.3	17	14.8	14.4	13.3
Female	33.4	34.7	35.5	37.7	34.6	34.5	30.2	29	29
Overall	23.5	23.9	26.6	27.8	25.8	26.1	22.7	21.8	21.2

Source: Department of Census and Statistics of Sri Lanka

There is no documented universal policy or intervention found in this case of increasing demand for labour. However, countries individually attempt various measures such as, recognising dominant potential sector and encourage them in line with vibrant schemes including, policies on interest rates, exchange rates, wage rates, taxation, that would have a significant impact on the growth of the sector and labour demand. Further redirecting regulations over industries, especially labour market deregulation, would have a significant impact over labour demand. Most effective policies and interventions should be able to focus on both supply and demand-side elements simultaneously.

Information on jobs and employers is essential to respond to the job market failures. Establishing connections between young unemployed and employers with updated information would be valid for the graduates. Nevertheless, this will not have much impact over disadvantaged young who have not completed formal education, and a more effective and sustained policy approach is needed.

There are several major actions taken by different economies as a remedial measure for chronic youth unemployment which are discussed in detail in the following sections.

### **Technical and Vocational Education programs**

Vocational training education have had a significant impact on reducing unemployment among youths (Zimmermann et al, 2013). Establishment of the vocational and technological universities, technical schools and vocational training centres have improved the attractiveness of vocational learning. Nevertheless, to enhance the popularity and the effectiveness of the outcome of these programmes, there should be shift in the Government role. The experience of other economies shows that government should bring in the private sector to deliver the training programmes rather than the government itself directly delivering those vocational educational programmes. Students have to be given

access to these industry-led vocational courses and support them by providing quality assurance and accreditation. Industry-led vocational and training courses will satisfy the needs of the industry and will have a substantial impact over employability. Similarly, regional Technical and Vocational Education and Training (TVET) centres need to be connected with the local industries, which will also have positive impacts on youth employment (UNDP, 2014)

The Proven Vocational training program in Uruguay is one of the successful programs in this context. The program was supported by the Occupational Training Fund, which was contributed by employers and workers as well as partially by the government. Since both Government and employers managed the program, training was well-liked the demand of the labour market (Godfrey, 2003). However, providing the responsibility to local authorities is important in this situation, which would primarily reinforce to get formal jobs by disadvantaged youths.

### **Levy –grant system**

Levy-grant system is a successful intervention in the youth unemployment reduction globally. In this system, job providers organise the training and pay for training through a payroll tax. Industries can reimburse the expenses of the training from the fund made-up with levied tax (Godfrey 2003). Unlike other government subsidy program, which is uncertain with the change of the government. The levy grant system (Skill development fund) prevailed in Singapore, which is an industry-driven training fund program. Industries are encouraged to have plans for training in skills with their requirements. Nevertheless, with the introduction of these type of programmes there is a tendency of using low skilled with lower salaries. However, through the fund monitoring, industries that are found using low skilled workers in the low-wage category for a long time have been penalised (Godfrey 2003). Hence, the two essential needs of youths; skills development as well as wage regularisation have been fulfilled simultaneously under this approach. However, these types of programmes have been successful in United Kingdom, Japan and South Korea.

### **Training and development**

Training systems repeatedly fail in reducing the unemployment in most of the economies because of following two reasons. Firstly, young unemployed and employed people do not have a proper idea on which skills to acquire and no means of the financial source to pay for such training. Secondly, employers also worry about the uncertainty of the return of the training they provide (World

Bank, 2007). However, providing a voucher for training to anyone who is identified to be eligible for training is another policy recommendation for many economies. This system empowers disadvantaged youths to purchase training from the open pool of resources and enhances the public and private competition among training providers and thereby enhances the diversity of the field of training providing at various levels of difficulty (Godfrey 2003). However, in this situation the government should ensure that the content of the training match with the current labour market.

### **Encouraging Self-employment (Entrepreneurship)**

Many economies have implemented various programs to enhance the self-employment as a remedy for youth unemployment. Those programs aim to motivate youths to start self-employment in small scale and make aware them on available financial support schemes (Caponiy 2014). However, the Governments should focus on facilitating the growth of the production sector and wage employment, which is a powerful mean to make structural change in the labour market.

### **Conclusion**

According to the literature, there are multiple interest parties in the private and non-governmental sectors implementing numerous initiatives to address the unemployment issue, which do not get highlighted and failed to make any significant impact because of duplication and overlapping of programs. Hence, it is important to bring the structural changes in the system by establishing a network among public, private and regional actors. Government of Sri Lanka has published many policy documents, including the National Action Plan for youth employment, proposed various reforms strategies in the education sector. Therefore, rather than repeating those policies here, it is better to urge the government to implement those policy programs effectively and minimise the disparity in implementation based on gender, ethnicity, and religion. Furthermore, the primary attention for policy measures should be given to enhance the demand for labour and ensure that youths acquire required knowledge, literacy and skills.

For this, leavy grant system can be recommended as one of the best solutions for curbing the chronic youth unemployment in Sri Lanka as this will provide the industry needed trainings and skills to the young workers and the provision of the training is both demand and supply driven. A Vocational Training Fund should be established via a training tax imposed on established industrial organizations

and this money should be directly linked to the Vocational Training Fund. However, it is important to note here that precautionary measures should be taken to avoid using the heavy grant system as a way to law wage employment scheme.

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# **Disciplined, Dynamic Financial Strategies**



## **SIGNIFICANCE OF BLACK-SCHOLES MODEL: WITH REFERENCE TO NIFTY-50 INDEX CALL OPTIONS**

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### **Introduction**

An effective security trading market provides three principal opportunities; trading equities, debt securities and derivative products (Kumar & Agrawal, 2017). Derivatives become popular financial instrument due to the development of the financial sector. Currently, derivatives are worth 600 trillion in the entire world.

“Derivatives are Financial Instruments whose returns are derives from those of other Financial Instruments” (Chance & Brooks, 2015). This “Other Instrument” is called as an underline asset. Underline asset can be either a Real Asset (Agricultural Commodities/ Metals/ Source of Energy) or a Financial Asset (Stock/ Currencies/ Bonds/ Loans).

If a derivative instrument has financial underlining asset, it is called as a Financial Derivative. There are different types of financial derivatives such as Options, Forwards, Futures, SWAPS and etc. Among them options are very popular financial derivative. “An option is a contract between two parties, a buyer and a seller that gives the buyer the right, but not the obligation to purchase or sell something at a later date at a price agreed upon today” (Chance & Brooks, 2015).

There are two basic types of options, call options and put options. In a call option buyer has the right to purchase the underline on a future date at a price agreed upon today. Call options are popular instrument for Risk Managing & Return Generation due to the lower initial investment than traditional investments.

Option traders seek correct information with regarding to the securities and market. The price of the option is playing a major information role in investment decision making. But the problem is that the option price base on the future uncertain cash flows. The performance of a derivative trader heavily depends on the level of the accuracy of the future outcomes and the selection of the correct model to predict the future price. Therefore, correct intrinsic value provides major

information for better investment. Binomial and Black-Scholes Model (BSM) are popular valuation methods among the investors and traders.

The NIFTY 50 is a diversified 50 stock index accounting for 12 sectors of the economy in the India. It is used for a variety of purposes, such as benchmarking fund portfolios, index-based derivatives and index funds. NIFTY 50 is an ideal index for derivatives trading. This study tries to find the relevancy of BSM valuation model in NIFTY 50 index call options.

### **Research Problem**

Without having the correct intrinsic value of an option contract, it is hard to use for trading or risk management decisions. Most of traders are using quantitative methods, like BSM and Binomial model. Sometimes there may have several qualitative methods as well (Subjective decisions based on traders' experience). There is no any universal accepted method for valuing on options contracts. Choice of selecting a valuation method is upon the investor or trader knowledge & experience.

The Binomial Model and the Black Scholes Model are the popular methods that are used to solve the option pricing problems. Binomial Model is a simple statistical method and Black Scholes model requires a solution of a stochastic differential equation.

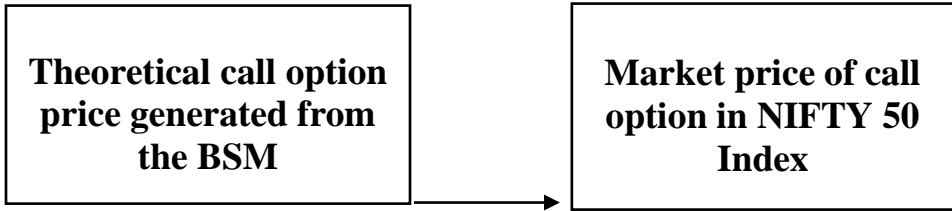
Fischer Black and Myron Scholes (1973) stated that the actual options prices deviate in certain systematic ways from the values predicted by the formula. Option buyers pay prices that are consistently higher than those predicted by the formula. Option writers, however, receive prices that are at about the level of predicted by the formula. There are large transaction costs in the option market, all of which are effectively paid by option buyers. The difference between the price paid by option buyers and the value given by the formula is greater for options on low-risk stocks than the options on high-risk stocks.

However, some researches show that discrepancies between the market option prices and prices calculated under the Black-Scholes model are not large enough to be exploited. Lauterbach and Schultz (2012) on pricing warrants, Jordan and Seale (1986) and Blomeyer and Boyd (1988) on futures options written on treasury bond have suggested that there is a very little difference between the market actual price and the Black-Scholes predicted price. Bailey (1987) studied on future option written on gold, Shastri and Tandon (1986) on Future (American options), and Jordan, Seale, McCabe and Kenyon (1987) on futures options

written on soyabean have found discrepancies are not enough in the model predicted. Therefore, it is important to identify the efficiency of the BSM model for predicting the option intrinsic price. Because proper valuation will result the expected outcome at the end of the investment horizon.

### Methodology

This study uses time series secondary data, which are spanning from 31/01/2020 to 18/03/2020. It was removed all non-trading option data by considering the turnover value of respective days. The day end “Settle Price” has been considered as the proxy for “Trading Price” of each contract. The trading price was compared with the calculated intrinsic price by using the “Person’s Correlation” test. Accordingly, the researcher analyzed and refined the research problem in to the following model framework.



**Figure 1: Conceptual Framework**

The core function of this research is the calculation of intrinsic price. Basically, it was calculated the intrinsic price without dividend yield and with the dividend yield. Therefore, following basic formulas has been taken for without dividend yield price.

$$d_1 = \frac{\ln\left(\frac{S_0}{X}\right) + t\left(r + \frac{\sigma^2}{2}\right)}{\sigma\sqrt{t}}$$

$$d_2 = d_1 - \sigma\sqrt{t}$$

$$C = S_0 * N(d_1) - Xe^{-rt} * N(d_2)$$

Conversely, only “ $d_1$ ” and “ $C$ ” value have an impact from the dividend yield of the underlying asset.

$$d_1 = \frac{\ln\left(\frac{S_0}{X}\right) + t\left(r - q + \frac{\sigma^2}{2}\right)}{\sigma\sqrt{t}}$$

$$C = S_0 e^{-qt} * N(d_1) - X e^{-rt} * N(d_2)$$

The Mumbai Inter-Bank Offer Rate (MIBOR) was considered as a proxy for risk-free rate. Because MIBOR represents the average lending rate of the Indian Financial System.

To calculate the index volatility, the daily volatility rate was taken after convert it into an annual rate. This annualized Standard Deviation has been computed based on the historical price of the Nifty-50 for the 30 days immediately preceding the day of the selection of an option. Moreover, researcher tried to find the impact on the compounding frequency of the volatility rate of the underlying asset by considering the continues and annual compounding frequency.

## Findings

Following table shows the correlation coefficient values of three types of calculated intrinsic prices with respect to the market price.

**Table 1: Results of Correlation Analysis**

		<b>Intrinsic Price without Dividend Yield</b>	<b>Intrinsic Price with Dividend Yield</b>	<b>Intrinsic Price with Continues STD</b>
<b>Market Price</b>	Pearson's Correlation	0.939314	0.939858	0.979516

Source: Authors' estimation

It can be clearly seen that the dividend yield has a less impact on the accuracy of the option valuation base on BSM model. But continues compounding volatility rate has a significant impact on the accuracy rate. However, all three calculated methods show that the BSM model significantly provides the correct market price at the rate of more than 90%.

## Conclusion

According to this study, option traders and participants can use the BSM as a good valuation model to forecast the price of the call options in Nifty 50 Index. But researcher recommends that not totally depend on a single valuation model. Rather than it is recommended to use the BSM model with some subjective adjustments base on the trader's experience on underling asset. Dividend yield has a less impact on the accuracy of BSM outcome in Nifty 50 Index call options.

Among the input variables in BSM, continues compounding volatility plays a vital role to provide more accurate price predictions.

Apart from the basic research problem, the researcher has observed that there is a price anomaly in Nifty 50 Index call options. Because, there were higher no of tradings occurred during the first two or three days of each month. But that was just an observation and future researchers should be conducted to test that anomaly.

**Keywords:** *Call Options; Option Pricing Models; Black-Scholes Model; Index Options; Nifty-50 Index*

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## **E-TRUST, INNOVATION AND USE OF FINTECH DRIVEN BANKING PRODUCTS AND SERVICES AMONGST THE UNIVERSITY STUDENTS**

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### **Introduction**

E-banking services are vulnerable to disruption owing to continuous innovative technological advancements. However, in the long run, fintech developments have the potential for cost optimization and risk mitigation. Artificial Intelligence (AI), big data, Robotic Process Automation (RPA), open banking applications and blockchain technology usage is frequent in the financial services industry, recently. AI is used to provide insights on customer behavioral patterns and accommodates banking and financial institutions to understand evolving customer necessities enabling to cater them proactively. Chatbots are another AI-driven sophisticated fintech tool that banks have commenced to use to uplift the status of e-customer service. Big data is being used to predict client investments, market changes and supports the creation of novel strategies and portfolios specially in investment banking operations. RPA is used to replace performing of manual tasks that often are repetitive and completed as routine functions. Alongside many fintech developments, blockchain was developed for finance purposes and thus has direct nexus to financial institutions. Banking regulator of Sri Lanka has already initiated fintech regulatory sandbox operations in view of promoting fintech banking services and maintaining regulatory standards, simultaneously (CBSL, 2019).

### **Research Problem**

Most of the leading commercial banks are providing chatbot services, open banking facilities and introduced blockchain based financial products (Commercial Bank PLC, 2020; HNB PLC, 2020; Sampath Bank PLC, 2020). However, acceptance of e-commerce and such innovative digital financial products and services, is not at a higher degree, although banks have addressed e-security and privacy concerns satisfactorily to retain public trust on e-services (CBSL, 2020; Hootsuite, 2020). Therefore, this study mainly pursues to analyze

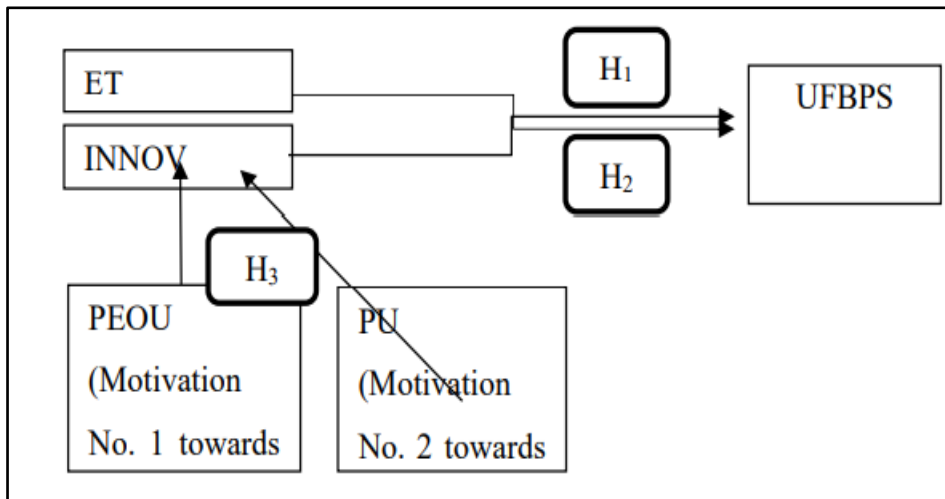


the effect of e-trust (ET) and innovation (INNOV) towards use of fintech driven banking products and services (UFBPS).

### Objectives

Primarily, to identify the effect of ET towards UFBPS. Secondly, to examine the effect of INNOV on UFBPS. Finally, to identify the interaction effect of, INNOV and Motivation (M) towards INNOV on UFBPS (as demonstrated below, perceived ease of use and perceived usefulness were used as motivators towards INNOV since those two have been identified as determinants towards adoption of innovative services such as fintech driven banking services).

The conceptual model was formulated as an adapted model relating to the Technology Acceptance Model (TAM), Diffusion of Innovation (DOI) and Commitment Trust Theory (CTT).



**Figure 1: Conceptual model**

Trustworthiness, Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) are several influential factors that explain the e-banking adoption and diffusion of the e-services (Al-Sharafi et al., 2016; Nayanajith et al., 2019). Similarly, constructs of innovation aspect such as relative advantage, compatibility simplicity etc. have been identified as significant towards the acceptance of innovative financial services (Ewe et al., 2015; Nayanajith et al., 2019). Researches on the adoption of blockchain technology from business managers' perspective and online banking adoption have used PU, PEOU and innovation variables. Several studies on mobile banking and cloud computing contexts, have

examined the role of PU, PEOU on technology adoption (Alalwan et al., 2017; Asadi et al., 2017; Lou & Li, 2017). In view of the aforementioned facts following hypotheses were proposed,

H<sub>1</sub>-ET predicts UFBPS

H<sub>2</sub>-INNOV predicts UFBPS

H<sub>3</sub>- Interaction of INNOV and Motivation (M) towards INNOV, predicts UFBPS

### **Methodology**

Deductive methodology and quantitative methods were used aligning to the ontological and epistemological stances. Respondents of this present research were the students of the University of Kelaniya (UoK) whom are patronizing fintech related banking products and services offered by the selected private commercial banks. Respondents were selected on random sampling method as per registration numbers. 287 duly completed returned questionnaires were considered for the final data analysis. Ensured reliability and necessary steps were taken to address concerns on validity of the questionnaire, prior to finalizing the questionnaire.

### **Results and Discussion**

The socio-demographic characteristic such as age, gender, income, education factors of the sample replicates the population (for the purpose of generalization of research findings) as per the initial data analysis of the study that was commenced using the IBM SPSS 20 package.

Results of Hierarchical Linear Model (HLM) with level 2 variable which is the bank, considers the covariation within banks by including the hierarchical data structure and assumes that intercepts vary across banks. Chi-square change (-2LL change) = -4.83 - -69.97 = 65.14, *df* change = 5-4 = 1, chi-square critical values with 1 *df* is 3.84 (*p* < .05) and 6.63 (*p* < .01); Therefore, noted that the intercepts for the relationships between INNOV and UFBPS (controlling for ET) vary significantly across the different banks.

Subsequently, random intercept was included to the model and it has changed log-likelihood significantly; fit of the model has significantly improved, considering 5 percent significance level

Consequently, check to identify whether the slopes and intercepts are correlated (or covary) and results shown that Chi-square change is significant and model fit has been improved, at 5 percent significance level.

Subsequent HLM analysis with the addition of M and interaction (M\*INNOV) demonstrated that, Chi-square change is significant at both 1% and 5% levels; fit has been improved, at this stage INNOV is significant,  $p = .03$ , ET is also significant,  $p = .00$ , M significant,  $p = .04$ , INNOV x M also significant,  $p = .00$ , regression coefficient of INNOV = .43, All predict UFBPS supporting all the three hypotheses of the research. The interaction term is important, as it shows the effect of M for INNOV, taking account of whether or not the respondent had INNOV concern (Table 1).

**Table 1: HLM with the addition of motive and interaction**

Parameter	Estimate	Std. Error	df	<i>t</i>	Sig.	95% CI	
						LB	UB
Intercept	1.877	.2611	17.90	7.19	.000	1.3289	2.4267
INNOV	.4258	.1489	5.13	2.85	.034	.0461	.8055
ET	.5716	.0241	283.43	23.66	.000	.5241	.6192
M	.1532	.0776	280.25	1.97	.049	.0004	.3060
INNOV*	-.219	.0455	280.08	-4.83	.000	-.3095	-.1303

Source: Nayanajith (2020)

Enabling thorough understanding of interaction effect further for practical application (in addition to the empirical evidences in support of hypothesis three), following was observed as per the Table 2. For the respondents those with INNOV concern considering PEOU, INNOV did not predict UFBPS significantly,  $b = .11$ ,  $p = .42$ . The positive gradient showed that in such persons, UFBPS is higher after the INNOV compared to the control group. For those who had INNOV aspect considering PU also, INNOV did not predict UFBPS,  $b = -.06$ ,  $p = .83$  in this particular research context. However, the slope was negative, indicating that individuals who had INNOV considering PU, scored lower on UFBPS, than the ones who did not have INNOV concerns (although this is not significant). The interaction effect, reflects the difference in slopes for INNOV as a predictor of UFBPS in those who had INNOV considering PEOU (a slight positive slope) and those who had INNOV considering PU (a slight negative slope). In conclusion it could be noted that UFBPS, after controlling for ET, was

lower for those who demonstrates INNOV consideration in view of PU than those who displaying INNOV aspect considering PEOU. For those who had INNOV concerns considering PEOU, the use of innovation has perhaps added ease of use and their usage increase while those who had innovation considering PU, would have understood that usefulness was not the cause for them, and their respective UFBPS is comparatively lower.

**Table 2: HLM rerun results separately for 2 different Ms**  
***INNOV considering PEOU***

Parameter	Estimate	Std. Error	df	t	Sig.	95% CI	
						LB	UB
Intercept	2.323	.2386	9.99	9.73	.000	1.7917	2.8551
INNOV	.1138	.1258	3.94	.90	.417	-.2373	.4649
ET	.5258	.0276	187.69	19.02	.000	.4713	.5804
<b><i>INNOV considering PU</i></b>							
Intercept	3.188	.3639	27751.58	8.76	.000	2.4751	3.9016
INNOV	-.063	.2906	27095.49	-.21	.828	-.6326	.5065
ET	.3277	.0089	91.127	36.71	.000	.3099	.3454

Source: Nayanajith (2020)

## Conclusion

Empirical findings have supported all the three hypotheses aligning to findings of previous studies conducted in different contexts (Asadi et al., 2017; Meyliana & Fernando, 2019; Stewart & Jürjens, 2018). Study was restrained only to UoK students and it is a limitation of the research. Nevertheless, findings of the research could be used by the commercial banks and fintech application developers in view of enhancing the fintech banking use in Sri Lankan context. Banks can facilitate workshops on usage of fintech products and services, with special reference to relative advantages, simplicity, e-security, and privacy, enabling to strengthening the customers' perceptions on e-trust and innovation expectations that will positively influence acceptance of such products and services for a mutually rewarding relationship. Originality of the research is application of particular hierarchical/multilevel linear model analysis and incorporation of the technology acceptance model, diffusion of innovation and commitment trust theory in a consolidated framework. Seeking diverse findings in different contexts, researchers could adopt different models and perspectives to address particular research problems in relation to fintech banking.

**Keywords:** *Banking; E-Trust; Fintech; Innovation; Sri Lanka*

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## CONTRIBUTION OF LOTTERY INDUSTRY ON SRI LANKAN ECONOMY

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### **Introduction**

Lotteries are the oldest and most common form of gambling that has a long history. Lotteries appeared in Han Dynasty of China in 02<sup>nd</sup> century mainly as a means to raise public finance for the state. Major state projects like “Great Wall of China” has developed by the help of lottery finance (Perez, & Humphreys, 2012). The ‘Gymkhana Lottery’ which was based in Galle area is considered to be the origin of lotteries in Sri Lanka. However, it was not an initiative under the auspices of the Government. The first lottery in Sri Lanka is considered to be the ‘Hospital Lottery’ which was launched under the “Hospital Lottery” Act No 04 of 1955.

Lotteries are exceptional for variety of reasons. First, lotteries represent formal economic contribution such as important source of government revenue generation, taxation, some effects of economic growth, gross domestic products and formal employment opportunities. Second, lotteries represent informal economic contribution that poverty reduction, generation of informal employments and create livelihood to people in larger extend in Sri Lanka.

As an important source of government revenue in all over the world, lotteries have been broadly investigated by the public finance researchers targeting basically on the revenue potential and beneficial as a method of taxation. Further, lotteries are unlikely to be able to contribute some percentage to the national government revenue (Humphreys & Matheson, 2012; but see, Grote & Matheson, 2011) and it generally exceed the tax collection of tobacco and alcohol (Grote & Matheson, 2011).

Lotteries are the largest livelihood development activity for the vulnerable groups in society in Sri Lanka and contribute to overall economic growth. The lottery industry has been an integral part of the livelihood development in Sri Lanka for over 50 years. It had been a sunset industry in Sri Lanka, which was transformed from helpless, vulnerable and differently able people to social accepted self-employment opportunities. With the global community entering a new era in

terms of growth prospects through sustainable development goals. The differently able people are now receiving attention.

In present a heterogeneous group of people involve as lottery agents, sellers and sub-sellers. It could almost conceptual like as pyramid where top most represent the government and the Lotteries Boards. The bottom consists a divergent group of people finally sell lotteries to the customers In addition to achieve sustainable development goals and employment opportunities, the contribution of lottery sellers towards the Sri Lankan economy is significant in areas such as poverty reduction, business promotion and rural and socio economic development. Developing livelihood of lottery sellers can help to generate financial prospective and achieve sustainable development goals through lottery industry.

Lotteries are generating public revenue which consists one third of the total revenue and allocated near half of the revenue for prizes which represent upper segment of the pyramid. Finally, contribution for lower segment of the pyramid consists one fifth of the total revenue. Government is in a position to collect money from the public through lotteries and distribute through treasury for the public welfare perspective. Evidence suggests that there is an expansion and popularity of government lotteries due to several objectives of the government such as lottery gambling as entertainment, create jobs, and generate revenues and economic development (Bjelde, Chromy & Pankow, 2008).

Lottery sellers are played very important role for economic development of the country. It was not investigated properly so far. The proposed study is focused on this existing vacuum in the literature. The present study will investigate and highlight the economic contribution of lotteries. Some researchers that have been done related the economics of lotteries and, informal economy and street vendors, but it is not significantly seen the effectiveness of lotteries to improve the economic development an empirical context as well as it has not been examined in depth in previous researches. So, the problem of this study is to “What is the contribution of lottery industry on Sri Lankan economy?”

### **Objective of the study**

The main objective of this study is to evaluate the contribution of lottery industry on Sri Lankan economy. Further, it attempts at exploring future research directions.

## **Literature Review**

Lottery is a game, a form of gambling, often organized by the state or charity in order to make money, in which tickets with random numbers, to determine the winner of a prize (Perez, & Humphreys, 2013). But John (1998), argued that lotteries have some unique features and different from other gambling products which lottery players spend a small amount of money to win a large supper prize.

According to the literature, efficiency of lottery generate revenue is arguable. Firstly, the lottery participation is voluntary and it is some different form of taxation and the government actually produce a consumption good and then taxed. The production of consumption good develop welfare even if dead- weight loss is generated when the product is taxed (Farrell & Walker, 1997; but see, Grote & Matheson, 2011). According to the Livernois (1986) lottery participation is totally voluntary activity since lottery expenditure substitute for spending elsewhere in the economy. So, generation of untaxed lotteries create welfare and taxation levels of lotteries directly reduce the welfare compared to other taxation methods (Rodgers & Stuart, 1995).

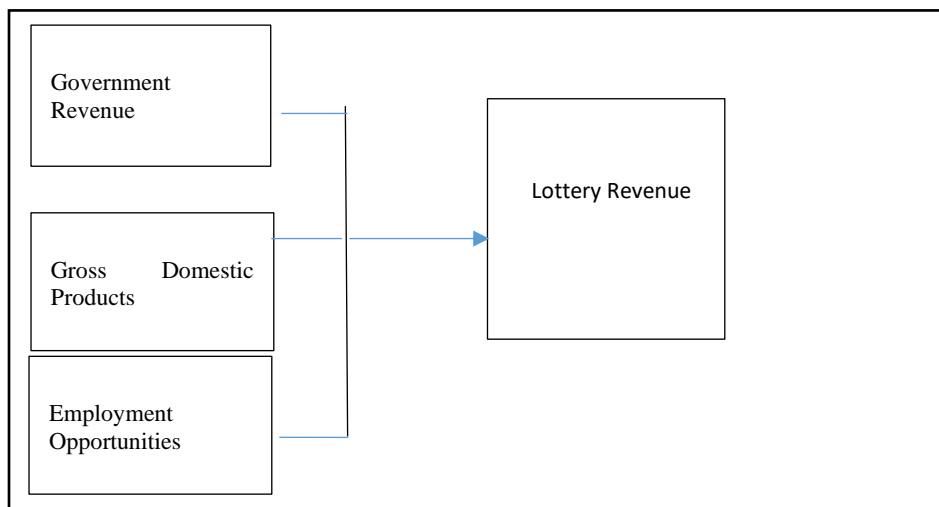
Aside from create government revenue as tax, there is high dead- weight loss of lottery tax because of the high administrative cost (Mikesell & Zorn, 1988) and advertising cost (Heberling, 2002). Generally administrative expenses are comparatively high in lottery industry. So, the industry experiencing economies of scale and, the administrative cost can be reduced by increasing sales and resource allocations (Johnson & Mixon, 1995). However, the lottery revenue has changed in a larger extend year by year, so the variation of lottery revenue is negative relationship with changes of other revenue sources of government. Because lottery revenue is part of the government tax system but it reduces the volatility of government incomes (Humphreys & Matheson, 2012).

While governments enhance the lottery system to encourage the lottery buyers (Landry & Price, 2007) and continuously generate profits from lotteries. According to the Grote and Matheson (2008), U.S. lotteries in a larger extend and specially U.K. lottery, earmarked full or part of the revenue for specific projects such as education programs. Fungibility of lotteries have centered an educational spending find that the government lottery increases total educational purpose spending by less than the value of the new earmarked lottery revenue, proposing at least some percentage of fungibility is accept when reserves are earmarked for specific programs (Grote & Matheson, 2011).



According to the findings of several studies done by the Borg & Mason (1990), Garret (2001), education purpose spending in governments that acquire earmarked lotteries for education purpose fails to improve in educational purpose spending even with other lottery savings. Further, lottery reserves earmarking to education purpose have a crucially bottom level of spending per person. Therefore, researcher found that lotteries play significant role of revenue to education, but lawmakers should redirect common fund resources away from institutions and leading to a secondary indication of fungability (Borg, Mason & Shapiro (1991) but see: Grote & Matheson 2011).

However, Land and Alsikafi (1999) identified that government allocation to educational purposes in some of the governments drop after the introduction of earmarked lotteries. Ereksen et al (2002), in their study on “Fungibility of lottery revenues and support of public education” identified that educational expenses as a percentage of general revenue go down as per capita of lottery revenues rise, experiencing the fungibility. For instance, there is a drop of nearly 1- 1.5. Percent of education purpose savings available from every 1 \$ per capita in lottery revenues created as funding for a government. Further, Forrest & Simmons (2003) identified that earmarked lottery reserves for development of sports U.K. increase whole spending on sports purpose but marginally decrease other state spending on athletics (Evans & Zhang, 2007).



**Figure1. Conceptual framework**

According to the conceptual model built at the end of literature review following hypotheses were derived.

H1: Lottery Revenue has a significant impact on Government Revenue.

H2: Lottery Revenue has a significant impact on Gross Domestic Products.

H3: Lottery Revenue has a significant impact on Employment Opportunities.

In order to test above hypothesis, it was decided to perform Regression Analysis which helps to understand whether Government Revenue (Y) can be predicted based on Lottery Revenue (X), Lottery Revenue (X) effects to the Gross Domestic Products (Y) and Lottery Revenue(X) directly influence to the Employment Opportunities (Y) using the last ten years set of data. It was also required to determine the variance explained of the model and relative contribution of each of the predictors to the total variance explained.

Suggested model was

Lottery Revenue =  $\beta_0 + \beta_1$  Government Revenue +  $\beta_2$  Gross domestic Products +  $\beta_3$  Employment Opportunities.

It was required to estimate the parameters  $\beta_0$ ,  $\beta_1$ ,  $\beta_2$  and  $\beta_3$  using the available data set.

This study is based on the secondary data which gathered analyzing existing literature in terms of published journal articles and books, conference papers, government publications, annual reports, internal reports of Lotteries Boards and other publications available in the internet.

## Results and discussion

In Sri Lankan lotteries industry is comprised only with two players; National Lotteries Board (NLB) and Development Lotteries Board (DLB). Hence, the market becomes duopoly and amidst dynamics in micro and macro environments these two entities have been remain competitive by fulfilling their reason to the establishment of raising funds for the socio-economic development.

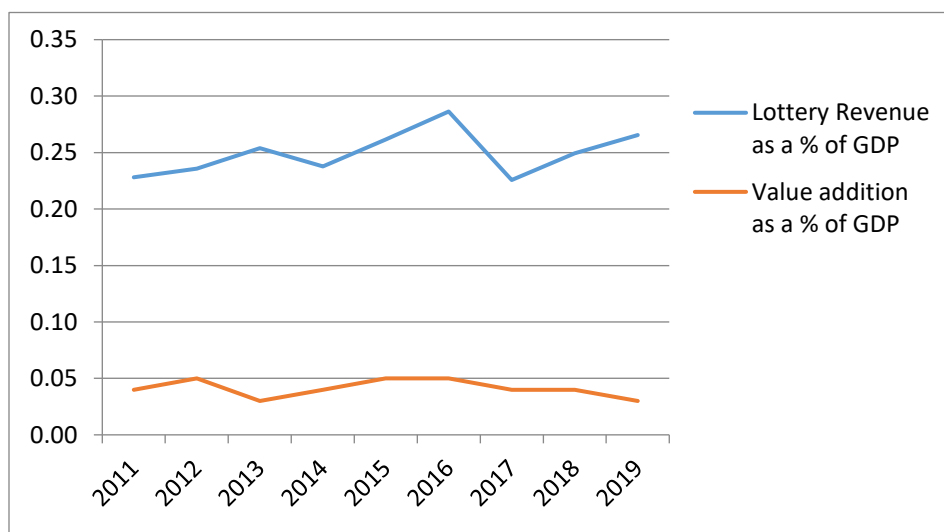
Accordingly, following table clearly depicts that, lottery industry generates considerable amount of revenue from the year 2011 and it has continuously increased with the government revenue. Further, lottery contribution as a percentage of government revenue had increased in year 2012 (0.37%) and continuously decline to year 2017 (0.14%) and then it has increased to 0.26 percent in year 2019.

**Table 01 Lottery Revenue and Contribution as a % of Government Revenue**

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019
Gov. Rev.(Rs Bn)	983	1067.5	1153	1204	1460	1694	1840	1932	1899
Lottery Rev. (Rs Bn)	16.47	20.58	24.36	24.64	28.65	34.35	30.08	35.84	39.88
Lottery Rev. as a % of Gov. Rev.	1.68%	1.93%	2.11%	2.05%	1.96%	2.03%	1.63%	1.86%	2.10%
Lottery contribution (Rs Bn)	2.72	3.92	3.72	3.82	3.61	3.92	2.52	4.61	5.06
Lottery cont. as a % of Govt. Rev.	0.28%	0.37%	0.32%	0.32%	0.25%	0.23%	0.14%	0.24%	0.26%

Source: Central Bank Reports (2011-2019) and Annual Reports (2011- 2019), Ministry of Finance

When considering the lottery revenue as a percentage of GDP, it has continuously depicted Between, 0.25 percent to 0.28 percent in last nine years. Because lottery revenue has increased year by year compared to GDP. Further value addition as a percentage of GDP also depicts nearly value of 0.05% in last nine years. That means lottery industry has continuously add value compared to the GDP year by year.



Source: Central Bank Reports (2011-2019) and Annual reports (2011-2019), Ministry of Finance

**Figure 2: Lottery Revenue & Value Addition as a percentage of GDP**

### **Employment opportunities**

A sizable number of workers engage in lottery selling activities in the labour market partly due to lack of educational and experience qualifications. Among the informal sector street vending activities are one of the major components in the informal economic activities. As a result, in large extend the vulnerable groups are engaging street vending activities such as lottery selling.

Lottery sellers have combined as a part of urban economics in majority of the countries and it provides employment opportunities for vulnerable people in rural areas. Poor people engage in lottery selling and struggle to solve their problems and survive the dependent family members through limited available resources rather than other group of the society who demand for the government to create employees for them or not engage in begging or any anti- social practices. Lotteries are going on long period of time but still livelihood of lottery sellers are no one valued so far. In year 2020, there were 17,000 lottery retailers, 3,062 lottery agents and 80 district dealers with in the country other than the 800 lotteries Board's employees.

### **Conclusion**

This research study evaluates the contribution of the lottery industry on Sri Lankan economy. Also, it provides an insight of how lottery revenue contributes to national economy, lottery revenue as a percentage of government revenue and GDP, value addition of lottery industry as a percentage of GDP, and employment opportunities. NLB has been continuously facing declining market share whilst the DLB has been gradually increasing the market share. That means, from year 2014 onwards DLB has been strategically attacking to capture the market while the process has been expedited in year 2017 marginal drop down in year 2018. Hence, from year 2014 onwards it is clearly seeing DLB takes upward trajectory on its market share. By year 2014, Lottery industry had been able to keep abreast with the industry growth or to be almost par with it. However, in year 2017 the industry experienced a decline the market growth mainly due to price increment for lottery ticket in twenty rupees to thirty rupees. In year 2018 NLB, it has been able to record a highest net profit for the last five years. Further NLB had been able to achieve a significant net profit in year 2017 and, which almost a doubled net profit is with compared to the DLB.

**Keywords:** *Contribution; Economy; Lottery*

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## **FORECASTING EXCHANGE RATE AND MODELLING THE RELATIONSHIP BETWEEN EXCHANGE RATE AND CURRENCY IN CIRCULATION IN SRI LANKA**

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### **Introduction**

The currency value of a country with respect to another country can be considered as an exchange rate and higher valued currency leads imports to be less expensive. The currency in circulation refers to the money issued by the monetary authorities by excluding the money that has been removed from the circulation. This is an important component when determining the economic behavior of a country. Furthermore, exchange rates have an impact on the production decision of companies, on the allocation of portfolios, and the prices of country and economic competitiveness. Therefore, it is really important to have reliable models to identify the current behavior and evolution of exchange rates as well as predict the future level of exchange rates, especially in times of uncertainty (Abbate & Marcellino, 2014). According to economic theories, the exchange rate can be determined using the fundamental variables, such as money supply, interest rates, and prices (Engel & West). Since Sri Lanka is a developing country Exchange rate plays a vital role in Sri Lanka's level of trade. Yet, there is no single indicator that exactly illustrates the reason for the volatility in exchange rates. Hence, it would be interesting to explore the factors of exchange rate volatility in Sri Lanka.

### **Research Problem**

There are many studies based on the relationship between exchange rates with macro-economic indicators. This study focused on forecasting US dollar exchange rates and modeling the relationship between US dollar exchange rates and currency in circulation in Sri Lanka.

### **Objectives**

- To identify the relationship between exchange rates and currency in circulation at the Sri Lankan context

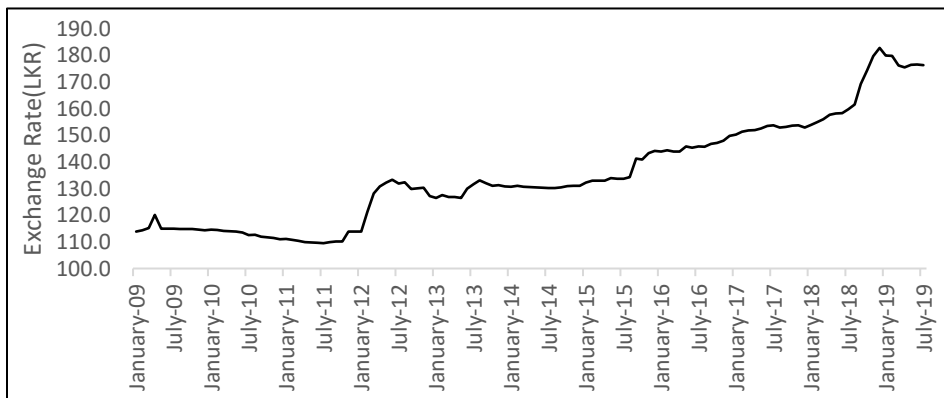
- To forecast the US dollar exchange rate
- To provide insights on the exposed risk in the international business environment

### Methodology

Monthly data of US Dollar exchange rate and currency in circulation, from January 2009 to July 2019 were considered in the study. Data was collected from the data library of the Central Bank of Sri Lanka. The data set is divided into two sets called the training set (January 2009 to January 2019) and remaining as the testing set. Initially, the original series was checked for the existence of the stationarity using the Augmented Dickey Fuller (ADF) test, Phillip-Perron (PP) test, and Kwiatkowski-Phillip-Schmidt-Shin (KPSS) test. A univariate time series model Autoregressive Integrated Moving Average (ARIMA) was fitted for the US dollar exchange rate data and the Akaike Information Criterion (AIC) was used to select the best model. Finally, performed the JarqueBera test, Ljung box test, and ARCH to check the model diagnostics: Normality, autocorrelation, and constant variance of the residuals respectively. The existence of correlation and co-integration between the US dollar exchange rate and the currency were determined using Pearson correlation coefficient and Johansen cointegration test (Asari, et al., 2011). Causality between two variables was identified based on the Granger Causality test (Bratu, 2012). Finally, a Vector Autoregressive Model (VAR) was constructed to identify the relationship between US dollar exchange rates and currency in circulation in Sri Lanka.

### Results and Discussion

Figure 1 shows fluctuations in the US dollar exchange rate.



Source: Authors's illustration

**Figure 1: Fluctuations in the exchange rate**

According to the figure 1 it is evident that there exists a variation in the US dollar exchange rates for the considered time period. The increment in the trend pattern tends to raise the concern on the depreciation in the currency value, yet, there is no significant indication of the existence of a seasonal pattern.

A univariate ARIMA model was fitted to predict the US dollar exchange rates for an upcoming period, but the dynamic nature of the driving factors (Sen, Kaya, Kaptan, & Comert, 2019) tends to make it difficult to precise forecasts on the US dollar exchange rates. Furthermore, the dependency of the considered variables; US dollar exchange rate, and the currency was checked using the fitted multivariate VAR model.

### Univariate Time Series Analysis

Since the original series of US dollar exchange rates was not stationary; the difference transformation of the series was considered for modeling. According to visual inspection of ACF and PACF plots, ARIMA (1,1,1), ARIMA (1,1,0), ARIMA (0,1,1), ARIMA (1,1,2) and ARIMA (0,1,2) were fitted. Based on the values of Akaike information criteria, the validity of the assumption and forecasting performance ARIMA (1,1,0) was selected as the suitable model with a minimum AIC value of 4.056. The significance of the fitted model was tested using the F- statistic. The test confirmed the 0.05 level of significance of the model with 0.008 F-statistic.

The Ljung-Box Test on Residuals confirmed no autocorrelation in the residuals with p-values greater than 0.05. The assumption of the constant variance of residuals was tested by using the Ljung-Box Test on squared Residuals. It confirmed the constant variance of residuals with p-values greater than 0.05. The Jarque-Bera test on Residuals not confirmed the normality of the residuals with p-values<0.0001. Residuals satisfy the most important autocorrelation and constant variance assumptions while violating normality assumption at 0.05 level of significance.

The mean absolute percentage error (MAPE) calculated for the test set was approximately 0.96%, which is significantly lesser value. The ARIMA (1,1,0) was selected as a suitable model for forecast the exchange rate and the model is

$$Y_t = 0.741547456857 + 0.403928 Y_{t-1} + \varepsilon_t$$

Where  $y_t$ : US \$ exchange rate at time t,  $Y_t: y_t - y_{t-1}$  and  $\varepsilon_t$ : Residual at time t



### Multivariate Time Series Analysis

This study employed a VAR model to check the relationship between the US dollar exchange rate and currency and improve the forecasting process. Currency is one of the macroeconomic factors related to the US dollar exchange rate. Linear correlation between currency and the exchange was measured by using the Pearson correlation coefficient. It is 0.9099 which provides better awareness about the relationship between the variables.

The first difference in the US dollar exchange rate data was stationary according to the result of univariate analysis. Also, the first differenced series of currency was stationary based on the unit root tests. The Johansen cointegration test results implied that there is no co-integration among the US dollar exchange rate and currency. The Granger causality test was confirmed currency does Granger cause the US dollar exchange rate with p-value 0.0199 which is less than 0.05.

Based on the co-integration and Granger causality tests result, it can be concluded that the better multivariate model is the VAR model for the checking relationship of the variables and improve the forecasting process. Then, the order of the VAR model was selected by using four criteria that are AIC (Akaike information criteria), HQ (Hannan-Quinn information criteria), SIC (Schwarz information criteria) and FPE (Forecast prediction error). All the criteria are proposed order 2. Based on the validity of the assumption and the forecasting performance, model VAR (2) was selected as the better model which is given below

$$D(\text{ExchangeRate}) = 0.3355 + 0.2665 \times D(\text{ExchangeRate}(-1))$$

where  $D(\text{ExchangeRate})$ : First difference of US dollar exchange rate and  $\text{ExchangeRate}(-1)$ : US dollar exchange rate lag 1. The significance of the fitted model was tested by using the F- statistic. It confirmed the significance of the model with a p-value of 0.0115 which is less than 0.05. The Breusch-Godfrey Serial Correlation LM test on Residuals confirmed no serial autocorrelation in the residuals with a p-value of 0.1025 which is greater than 0.05. The assumption of the constant variance of residuals was tested by using Breusch-Pagan-Godfrey Test on Residuals. It confirmed the constant variance of residuals with p-value 0.0823 which is greater than 0.05. The Jarque-Bera test on Residuals not confirmed the normality of the residuals with a p-value of 0.000. Residuals satisfy the most important autocorrelation and constant variance assumptions while violating normality assumption. The fitted VAR (2) model has approximately 0.9503%, MAPE calculated for the test set.

## Conclusion

There is a strong positive relationship between the US dollar exchange rate and currency in circulation in Sri Lanka. The findings of the study indicate a short-term relationship between the US dollar exchange rate and currency in circulation for the considered period. According to the obtained results, changes that occur in the currency in circulation tend to cause changes in US dollar exchange rates but not vice versa. Amidst the built models; the ARIMA model and the VAR model, the VAR model can be identified as the most suitable model with its significant indication of lower MAPE value. For future studies, the forecasting process could be improved by considering the relationship between the exchange rate and more other macro-economic factors such as Interest rates and Inflation. Moreover, data mining techniques can be employed for the same data set for more suitable models.

**Keywords:** *ARIMA; Causality; Cointegration; US dollar exchange rates; VAR*

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## **GROWTH OF INDUSTRIAL CLUSTERS AND ACCESS TO FINANCE IN SRI LANKA**

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### **Introduction**

The industrial sector of Sri Lanka achieved a rapid growth after the economic liberalization in 1977 and the subsequent implementation of the Export Oriented Industrialization policy (Kelegama, 2006). Currently, industrial sector accounts for 27.4 percent as a share of GDP, while industrial exports account for 78.9 percent of the total exports (Central Bank of Sri Lanka, 2019). However, industrial exports are very much lopsided with heavy concentration on textile and garments, which represents 46.9 percent of industrial exports.

Cluster-based industrialization, which has been successfully promoted in many developed and developing countries (Sonobe & Otsuka, 2010; Delgado, Porter & Stern, 2014), has not gained much attention among the Sri Lankan policy makers to diversify its industrial sector. However, a large number of diverse and traditional Cluster-based Industries (CBIs) such as weaving, pottery, and gemming are functioning all over the island (Jayawardena, 2000). In addition, furniture, cane, brassware and copper, and mask art industries are well-known CBIs in Sri Lanka.

Furniture industrial cluster in Moratuwa in Colombo district has a significant growth potential in the local and global markets (Export Development Board, 2010). This is the third largest manufacturing sector in Sri Lanka and it generates eight percent of the employment opportunities in the manufacturing sector. Cane industrial cluster in Wewaldeniya in Gampaha district is famous for its unique designs and environmentally friendly products. Brassware and copper industry in Pilimalalawa in Kandy district contributes significantly to the employment generation in the country (Chanjief et al., 2015). The traditional mask art industry in Ambalangoda in Galle district has become commercialized and endures mainly because of the cultural tourism (Handapangoda et al., 2016).

## **Research Problem**

One of the main obstacles to facilitate the growth of SMEs in developing countries is the finance gap, which is equivalent to an unmet financing need of US\$ 5.2 trillion in a year (World Bank, 2020). In contrast, ADB (2017) argues that CBIs have an easier access to finance than isolated SMEs. However, the cost of borrowing remains high in some clusters as most of the sources are informal. For instance, manufacturers in furniture cluster in Moratuwa pay over 60% annual interest rate for informal borrowing (Fernando, 2006). Therefore, it is interesting to analyze the financing methods and its impact on firm growth in industrial clusters.

## **Objectives**

The objective of this study is to investigate the impacts of different sources of financing, i.e., formal and informal financing sources, on the growth of the firms in traditional CBIs with special reference to furniture, cane, brassware and copper, and mask art industries in Sri Lanka.

## **Literature Review**

Geographical proximity and interdependence among the firms are identified as key dimensions of industrial clusters (Martin & Sunley, 2003; Otsuka & Sonobe, 2010). Accordingly, an industrial cluster can be defined as the concentration of enterprises producing similar and related products in a geographical area. Among many types, artisanal-rural clusters, which largely cater to the domestic market, are commonly seen in developing countries.

The cluster-based industrialization has many merits due to the higher degree of networking that facilitates transferring technology, know-how, business support services, qualification and information on market requirements. Consequently, the policy makers pay their attention to increase the horizontal linkage among small and medium enterprises in order to form clusters (Dasanayaka & Sardana, 2015). According to Kalaipriya (2018), the access to finance affects business growth while the access to finance is moderated by financial literacy. However, the Small-Scale Enterprises (SSEs) face difficulties in accessing formal financing sources mainly because of the limited competition across financial institutions outside of mainstream areas, higher transaction cost, underdeveloped capital markets, absence of credit guarantee schemes and limited access to collaterals (Asian Development Bank, 2017). Even though the informal financing sources are characterized by low transaction cost, easy and quick access, trust and control,

and often disbursed without collateral, it also has repercussions like higher interest cost rates (Berensmann et al., 2002).

### **Methodology**

A survey was conducted in January 2020 to gather data from 944 establishments. Sample selection procedure followed in this study is explained below. A sample frame cannot be established for the present study since a formal identification of the cluster-based industries has not been undertaken in Sri Lanka. However, according to the Ministry of Finance and Planning of Sri Lanka (2010), a large number of industrial clusters, which are mostly based on natural resource endowment scattered around the country. It is apparent that the industries, such as furniture (in Moratuwa), cane (Wewaldeniya), brassware and copper (Pilimatalawa), masks (Ambalangoda), gem (Ratnapura), clay products (Panduwasnuwara), palmyra (Mannar), and leather products (Pahala-Kadugannawa and Uthuwankanda) are organized as clusters in Sri Lanka. Therefore, at the first clustering stage, four industries, namely, furniture, cane, brassware and copper, and mark art industries were selected randomly.

Secondly, all the establishments were surveyed in the cane industry (in Wewaldeniya), brassware and copper industry (Pilimatalawa), and mask art industry (Ambalangoda), gathering data from 181, 190 and 203 establishments, respectively, excluding non-respondents. However, only 370 establishments from the furniture industry in Moratuwa were randomly covered out of 1000 plus establishments in order to ensure a representative sample.

The basic model for empirical estimation is specified as follows.

$\ln(\text{Size of Establishment}) = f \{ \text{Source of Financing, Other Firm Specific Variables, Owner Specific Variables} \}$

Impacts of financing sources (Levy, 1993; Keasey & Watson, 1994; Beck & Demirguc-Kunt 2006; Abor & Biekpe, 2007; Kinyua, 2014, Elston, Chen & Weidinger, 2015; Mungiru & Njeru, 2015; Pandula, 2015; Nguyen & Canh, 2020) on SMEs have been studied in several studies. Other firm specific variables include, capital consumption of the establishment, use of e-commerce in business activities (Raymond, & Bergeron, 2008; Bayo-Moriones, Billón, & Lera-López, 2013; Abebe, 2014; Kossaï, & Piget, 2014; Savrul, Incekara & Sener 2014), prior affiliations to the industry (Mottaleb & Sonobe, 2011; Kinyua, 2014) and the controlling dummies for each industry cluster. Gender (Kalleberg, & Leicht, 1991; Rosa, Carter & Hamilton, 1996; Du Rietz & Henrekson, 2000; Coleman,

2000; Bird, Sapp & Lee, 2001; Watson, 2002; Inmyxai & Takahashi, 2010) and education level (Kangasharju, & Pekkala, 2002; Chiliya, & Roberts-Lombard, 2012; Soriano, & Castrogiovanni, 2012; Amarteifio, & Agbeblewu, 2017) of the owner are incorporated as the owner specific variables. Descriptions and descriptive statistics of the variables are presented in Table 1.

**Table 1: Descriptions and Descriptive Statistics of Variables**

Abbreviation	Variable	Measurement	Mean	Standard Deviation	Minimum	Maximum
Dependent Variable						
S	Size of Establishment	Natural logarithm of total number of workers (Mottaleb & Sonobe, 2011)	4.145	5.923	1	100
Independent Variables						
SF 1	Source of Financing	SF1 (1 = the owner has financed through a formal source within the last 5 years, 0 = otherwise)	0.388	0.487	0	1
SF 2		SF2 (1 = the owner has financed through an informal source within the last 5 years, 0 = otherwise )	0.075	0.264	0	1
K	Capital Consumption	Electricity bill (LKR)	1729.99	3872.38	0	50,000
E	Use of E-commerce	1 = use, 0 = do not use	0.273	0.448	0	1
A	Prior Affiliations	1 = yes, 0 = no	0.459	0.498	0	1
C1	Dummies for Industry Clusters	1 = furniture industry, 0 = otherwise				
C2		1 = cane industry, 0 = otherwise				
C3		1 = brassware and copper industry, 0 = otherwise				
G	Gender	1 = male, 0 = female	0.894	0.308	0	1
ED U	Education Level	Years of schooling	11.112	2.360	0	19

Source: Compiled by the authors

## Results and Discussion

Six regression models were estimated by employing the ordinary least square technique. Model 1 and 2 is based on all industrial clusters, whereas Model 3 to 6 were estimated separately for each industrial cluster. The results are presented in Table 2 after rectifying the heteroscedasticity problem. Further, the models were free from the multicollinearity problem as suggested by the variance inflation factor. The establishments in the total sample (Model 1) and particularly in the mask art industry tend to grow when they use formal sources of financing. In contrast, the establishments using informal sources thrive as evident in the total sample and particularly in brassware and copper industry. This finding related to the brassware and copper industry is in line with Berensmann et al. (2002).

Overall, the above findings reveal that, compared to the establishments which have not borrowed from any financing source, the formal financing sources promote firms' growth while informal sources hinder the growth. This phenomenon can be attributed to the information asymmetries. According to Nguyen and Canh (2020), formal and informal lenders serve distinctive groups of establishments. Also, they identify that the borrowers choose informal financing not only because of the constraints of the formal sources, but also due to several entrepreneur-related, firm-related and institutional factors.

In order to overcome the moral hazard and adverse selection problems caused by the asymmetric information, formal lenders ration the borrowers based on their financial strength. Formal lenders exclude the firms which fail to prove its repayment ability through collaterals, guarantors, or social capital (links between the lender and borrower). Consequently, those excluded firms are forced to choose informal sources which are speedy and free from collateral requirements, but carry a higher interest rate (Carreira & Silva, 2010). On contrary, formal sources take a considerable duration to grant the loan although they charge a lower interest rate. Therefore, it suggests that the establishments receiving finance from the formal sources are financially strong whereas those who depend on informal sources are financially weak. The above explanation justifies that the firms which choose informal sources are more likely to fail while the firms which take loans from formal sources are stronger enough to grow.

In all the models, a growth in capital consumption is found to have positive, but very small impacts on the growth of establishments. Moreover, the use of e-commerce also expands the scale of clusters in the whole sample and this is especially visible in furniture and mask art industries.

**Table 2: Determinants of Firm Growth**

Variables	Model 1 All Clusters	Model 2 All Clusters with Industry Dummies	Model 3 Furniture Industry Cluster	Model 4 Cane Industry Cluster	Model 5 Brassware and Copper Industry	Model 6 Mask Art Industry Cluster
SF1	<b>0.256***</b> (4.436)	<b>0.170***</b> (2.937)	0.131 (1.486)	0.147 (0.927)	0.0969 (0.859)	<b>0.376***</b> (2.645)
SF2	<b>-0.209**</b> (-2.203)	-0.0788 (-0.842)	-0.0450 (-0.285)	0.158 (0.663)	<b>-0.557**</b> (-2.296)	-0.291 (-1.519)
K	<b>0.00006**</b> * (4.454)	<b>0.00005***</b> (4.238)	<b>0.00004*</b> ** (3.138)	<b>0.00007***</b> (4.683)	<b>0.0002***</b> (4.509)	<b>0.00004**</b> * (3.583)
E	<b>0.301***</b> (4.900)	<b>0.314***</b> (5.239)	<b>0.333***</b> (3.568)	0.312 (1.303)	0.0389 (0.318)	<b>0.435***</b> (3.766)
A	<b>0.144***</b> (2.852)	0.0837 (1.627)	0.0546 (0.682)	0.143 (1.126)	0.00808 (0.0736)	0.167 (1.495)
C1	-	<b>0.508***</b> (7.515)	-	-	-	-
C2	-	0.130 (1.610)	-	-	-	-
C3	-	<b>0.304***</b> (4.014)	-	-	-	-
G	<b>0.276***</b> (3.562)	<b>0.182**</b> (2.166)	0.0731 (0.367)	<b>0.372***</b> (3.468)	0.282 (1.132)	-0.143 (-0.728)
EDU	<b>0.038***</b> (3.268)	<b>0.046***</b> (4.121)	<b>0.049**</b> (2.396)	0.026 (1.173)	0.027 (1.309)	<b>0.071***</b> (2.878)
Constant	0.0163 (0.110)	-0.210 (-1.310)	0.406 (1.282)	-0.0500 (-0.201)	0.185 (0.551)	-0.308 (-0.885)
Observations	944	944	370	181	190	203
F Statistic (Probability)	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000
R-squared	0.201	0.250	0.164	0.193	0.180	0.247

Note: t-statistics in parentheses and \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Compiled by the authors based on the results of the regression models

Having prior affiliations for the establishments in CBIs contributes positively for the growth of firms. However, this is apparent only in the aggregate sample. Surprisingly, it is found that the growth of CBIs is gender biased. Accordingly, the owner of the firm being male, drives the growth of the total sample and specifically in the cane industry. An increase in education level of the owner contributes to the growth of CBIs which was prominent in furniture and mask art



industries. This finding is similar to Mottaleb and Sonobe (2011).

## Conclusions

The results identify that the use of formal financing sources contributes positively for the growth of firms in CBIs, while informal sources hinder the growth. This can be a reason for the stagnation of most of the CBIs in Sri Lanka. Therefore, promoting accessibility to formal financing sources coupled with better financial literacy is recommended to promote traditional CBIs in Sri Lanka. Moreover, the CBIs should be empowered with the required knowledge and skills to enhance their financial strength making resilient to different forms of shocks.

**Keywords:** *Cluster-based Industries; Formal Sources of Financing; Industrial-growth; Informal Sources of Financing; Sri Lanka*

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# **IMPACT OF MACROECONOMIC VARIABLES ON STOCK MARKET AND SECTOR RETURNS: MULTIVARIATE TIME SERIES APPROACH**

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## **Introduction**

The stock market return is an important economic indicator that reflects the economic environment of the country. In addition, different sector returns move differently to the changes in the macroeconomic environment and thus the study on impact of different macroeconomic variables on the stock market and sector returns has an immense benefit for investors and decision-makers.

Several types of research were performed on the impact of macroeconomic variables on the stock market and sector returns in the developed economies (Paul & Mallik, 2003; Hess, 2003). However, research on this area in the developing world is less and most of the studies were done in the recent past (Menike L. M., 2006; Kalyanaraman, 2015; Pyeman & Ahmad, 2017; Jambotkar & Raju, 2018). Nevertheless, the results in both developed and developing markets are diverse and have not reached any consensus related to the impact of macroeconomic variables on the stock market and sector returns. An extensive review on this subject found that there is not much research has been carried out on the impact of macroeconomics variables on the stock market and sector returns in Sri Lanka. Decision-makers, investors and other individuals in Sri Lanka seek up to date information on impact analysis on the stock market and sector returns for decision making. Similarly, investors, policymakers, and other individuals and institutions may seek what are the nature of short term and long-term relationships between the stock market returns and macroeconomic variables.

## **Research Problem**

On view of the above, the research problem is: “what are the nature of short term and long-term relationships between the stock market and sector returns with macroeconomic variables in Sri Lanka”.

## **Objectives of the Study**

- (i) Examine the short term and long-term relationship between the stock market return and macroeconomic variables.
- (ii) Examine the short term and long-term relationships between sector returns and macroeconomic variables.

## **Secondary Data**

The All-Share Price Index (ASPI) was taken as the proxy variable for stock market return. Even though there are twenty business sectors in the Colombo Stock Exchange (CSE) currently, data on four business sectors were not available from 1996. Therefore, sixteen business sectors indexes that have data for the period Q1:1996 to Q4:2018 were selected from the database of the CSE.

Proxy variables selected for sector returns are: Bank Finance and Insurance (BFI), Beverage Food and Tobacco (BFT), Chemicals and Pharmaceuticals (C&P), Construction and Engineering (C&E), Diversified Holdings (DIV), Footwear and Textile (F&T), Hotels and Travels (H&T), Investment Trusts (INV), Land and Property (L&P), Manufacturing (MFG), Motors (MTR), Oil Palms (OIL), Plantations (PLT), Service (SRV), Stores Supplies (S&S), and Trading (TRD).

The proxy variables considered to represent the macroeconomic environment are: (i) Inflation - CCPI (Colombo Consumer Price Index), (ii) Exchange rate – ER (Average exchange rate of Sri Lankan Rupees to United States Dollar (USD)), (iii) Economic growth – GDP (Growth of Gross Domestic Product), (iv) Interest rate – IR (weighted average yield rates on primary market operation of Treasury bill, 364 day), (v) Money Supply - MS (Broad definition of money supply,  $M_2$ ), and (vi) International Crude Oil Price - ICOP (to represent the international commodity prices).

## **Statistical Analysis**

Augmented Dickey-Fuller (ADF) Phillips-Perron (PP) tests were applied to check whether the series follow stationary. Since most of the economic variables are non-stationary and non-homogenous, log transformation was used to reduce the heteroscedasticity of variables and the first difference of the log series were used to make series stationary. The co-integration test is developed to test the long-term equilibrium relationships (Johanson & Juselius, 1990). VEC models were developed to find the short-term dynamics between stock market returns and macroeconomic variables when they are co-integrated.

## Results and Discussions

ASPI and the sector indices such as BFI, BFT, H&T, INV, L&P, MTR, OIL, S&S, SRV, and TRD showed a downward trend from 1996 to 2000 and from 2001 to 2017 those indices shown an upward trend. Both the ADF and PP tests were confirmed that all log-transformed series are integrated at first difference. Therefore, the cointegration test was selected as the method of empirical analysis. Six information criteria are used to find the most appropriate lag length to perform cointegration tests.

### The Relationship between Macroeconomic Variables and ASPI

More criteria selected lag four as maximum lag length and it used to perform the Johansen cointegration test. Trace statistic found at most five cointegration equations, meanwhile, the maximum Eigen value found one cointegration equations. Therefore, it can be concluded that macroeconomic variables and ASPI are cointegrated and have a long-term equilibrium relationship with one cointegration equation.

**Table 1: Cointegration Equation on Macroeconomic Variables and ASPI**

Variables	$\beta'$	t-stat	Decision
Inflation	-2.493	0.842	Confirmed $H_0$
Exchange rate	1.946	-1.079	Confirmed $H_0$
Economic growth	-8.079	2.009	Not Confirmed $H_0$
Interest rate	8.277	-2.247	Not Confirmed $H_0$
Money supply	-0.792	0.663	Confirmed $H_0$
Oil Price	-0.535	1.337	Confirmed $H_0$

Source: Author's estimations

The results indicate that economic growth and interest rate are significantly different from zero. Therefore, the results confirmed that, in the long term, the interest rate has a significant positive relationship, while economic growth has a significant negative relationship, with ASPI. Inflation, exchange rate, money supply and international crude oil price have no significant relationship with ASPI in the long term. Based on the results in Table 1, the fitted model can be written as:

$$\begin{aligned} \text{ASPI}_{t-1} = & 85.886 - (2.493 * \text{Inflation}_{t-1}) + (1.946 * \text{exchange rate}_{t-1}) - \\ & (8.079 * \text{economic growth rate}_{t-1}) + (8.277 * \text{interest rate}_{t-1}) - (0.792 * \\ & \text{money supply}_{t-1}) - (0.535 * \text{oil price}_t) + e_{t-1} \end{aligned} \quad (1)$$

According to the results of VECM, ECT (-0.088) has the expected negative sign and is significant. The inverse value of absolute ECT is close to 12 ( $1/0.088=11.36$ ). Accordingly, market participants take 12 quarters to learn and fully adjust the forecasting error. The results of Wald test show that no variable is significant in explaining ASPI in the short term.

### The Relationship between Macroeconomic Variables and Sector Returns

**Table 2: Summary Results of the Cointegration Tests and VECM**

	Cointegration relationship	Inflation	Exchange rate	Economic Growth	Interest rate	Money Supply	Oil price	Expected ECT Value	Model Fitness	Significant Variables (short term)
ASPI	Yes	N	N	S(-)	S+	N	N	Yes	No	-
BFI	Yes	S(-)	N	S(-)	S+	N	N	No	No	-
BFT	Yes	S+	N	N	S(-)	S+	S+	No	No	-
C&E	Yes	S(-)	S(-)	N	S+	S(-)	N	No	No	-
C&P	Yes	S(-)	S(-)	S(-)	S+	S(-)	N	No	No	-
DIV	Yes	S+	N	N	S(-)	N	S+	No	Yes	-
F&T	Yes	S+	N	N	S(-)	S+	N	No	Yes	IR
H&T	Yes	S+	S(-)	N	S(-)	S+	S+	No	Yes	GDP, IR, MS, ICOP
INV	Yes	S+	S(-)	S(-)	N	N	S+	No	No	-
L&P	Yes	S+	N	N	S(-)	S+	S+	No	No	-
MFG	Yes	N	S(-)	S(-)	S+	S+	N	No	No	-
MTR	Yes	N	S(-)	S(-)	S+	S(-)	N	Yes	No	-
OIL	Yes	N	S(-)	N	S+	S(-)	S+	Yes	Yes	IR, ICOP
PLT	Yes	S(-)	N	N	S+	S(-)	S(-)	No	No	-
S&S	Yes	S+	S(-)	S(-)	S(-)	S+	S+	No	No	-
SRV	Yes	S+	N	N	S(-)	S+	S+	No	No	IR
TRD	Yes	S(-)	N	N	S+	S(-)	S(-)	No	Yes	IR

S = Significant, N = Not Significant

Macroeconomic variables and each sector return are cointegrated and have long term equilibrium relationships. In most of the instances, macroeconomic variables are significant in explaining sector returns in the long term; however, it is not same in the short term and the results are shown in Table 2.

## Conclusions

- Macroeconomic variables and stock market return are cointegrated and have a long-term equilibrium relationship.
- Interest rate has a significant positive and economic growth has a significant negative relationship with ASPI, in the long term.
- Macroeconomic variables and each sector return are cointegrated and have long term equilibrium relationships.
- Most of the macroeconomic variables are significant in explaining sector returns in the long term. On the other hand, very few variables are significant in explaining sector returns in the short term.
- The results of this research are useful for the investors, to improve the value of equity investment decisions, to decide investment promotions locally and internationally, to identify how the stock market and each sector of the economy react to the changes in the macroeconomic environment, and to get an understanding as to how macroeconomic variables have an impact on the stock market and sector returns.

**Keywords:** *Cointegration; macroeconomic variables; stock market return; sector returns; VECM*

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## **Happiness and Prosperity Hybrid**



## **HAPPINESS AND PROSPERITY IS IT A “CHICKEN & EGG” PROBLEM?**

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### **Introduction**

The age-old question “Which came first, the Chicken or the Egg?” is a paradox that has been used over the years to describe similar situations where it is hard to decide what to do first or what should come first out of two possible things or actions with one feeding on the other. The most interesting quality of this paradox is that once the ball starts rolling, it certainly will be a self-propelled process where the chicken will keep giving eggs and the eggs will be giving chicks as long as the environment is suitable for hatching. Modern-day online businesses such as Ebay and Airbnb are good examples where the sellers would use the site only if they see a significant number of buyers using the site but the buyers will use it only if they can see quite a few sellers offering competitive prices and more choices. Therefore, which group would you get on board first and how? Of course, a study of the history of such businesses will show that starting small, offering irresistible deals to one group first and perseverance are some of the key ingredients of their success. That means the business owner only has to make sure that the environment is suitable for reproduction of sellers and buyers both. For the owner of the site, there is no difference between the two groups. They are all his customers using the services of his business, which is facilitating the interaction between the two groups. A buyer at one point may very well be a seller at a different point and vice-versa.

At this juncture, which is perhaps the most important after WWII, we are faced with the gruesome task of resuscitating the economic activities of the world. After virtually being in an economic coma for several months, understanding what to do first in terms of bringing happiness and prosperity back to people’s lives is of paramount importance. Though it may look like these two aspects of life go hand-in-hand, it is not an easy task to start with either one when we do not have access to both of them. Therefore, this is an attempt to analyze the philosophical aspects of the “Post COVID-19 Economic Revival” under the assumption that the goal of the revival is to bring “Happiness and Prosperity” to all (Joshnanloo, Jovanovic & Taylor, 2019)

## **Research Problem**

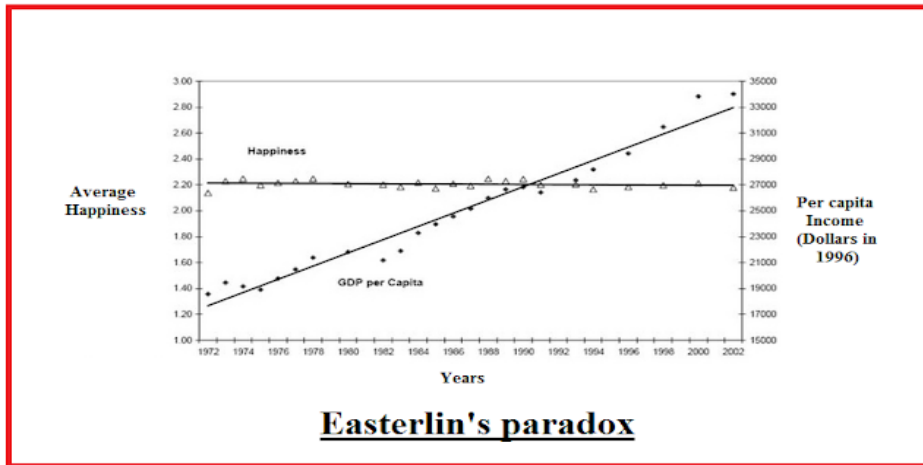
This research will address the problem of prioritizing different aspects of the revival process of the post-crisis economy while keeping the happiness and prosperity as the two main focus areas. Then the main question we should be asking ourselves is: “Does ‘Happiness’ come after ‘Prosperity’ or vice-versa?”

## **Objective**

The main objective of the research is to find key areas of focus in an efficient and sustainable economic revival plan that will lead the country to prosperity while preserving or increasing (as needed) the happiness of its citizens.

## **Methodology**

The methodology used is the systematic review of existing research findings using libraries such as Elsevier, Oxford, JSTOR and Research Gate. Happiness of a human being has been a subject of interest of philosophers, psychologists, economists and leaders of nations going back even beyond 500 BC. The two main identifiable categories of happiness, hedonism (short-term pleasure) and eudemonism (long-term well-being through actions based on ethics and moral principles) described in the *Nicomachean Ethics* by Aristotle still remain as the two aspects even the philosophers and economists from Jeremy Bentham to Amartya Sen and Angus Deaton would consider when they analyze the correlation between happiness and prosperity (Graham, 2005). Is it prosperity that leads to happiness? Looking at the existing evidence in searching for an answer to this question, it is hard to avoid the Easterlin Paradox which says that even though one may see a positive correlation or a direct proportionality between prosperity and happiness at lower measures of each, the happiness doesn't seem to improve beyond a certain level irrespective of the growth of the level of prosperity (Easterlin, 1974) (see Figure 1). This research consists of a systematic review of the recent research articles on the interdependency of happiness and prosperity. A systematic review is a process where the literature is reviewed based on pre-defined measures to filter the most appropriate and up-to-date research findings. Then the information is evaluated and analyzed based on deductive themes amalgamating the findings relevant to the objectives identified. A substantial conclusion addressing the stated research problem and/or the hypothesis will then be supported by the evidence collected.



Source: <https://www.google.com/url?sa=i&url=http%3A%2F%2Fexistentialism2015.blogspot.com%2F2015%2F09%2Fquestion-about-easterlins-paradox.html>

**Figure 01 Eastelin's paradox**

### Results and Discussion

The Merriam-Webster English Dictionary describes the word “Happy” as “favored by luck or fortune” / “enjoying or characterized by well-being and contentment”. This, of course, is a linguistic explanation in which the word(s) “contentment” and “well-being” are also used. Psychologists and Neuroscientists have made a significant progress in analyzing the neuroanatomical aspects of pleasure. But in order to measure happiness it has to be well-defined. Meaning, it should have a scientific definition that can be associated with certain quantifiers. This process has given rise to the idea of “Subjective Well-Being” (SWB) which encompasses a variety of measures of feelings of well-being, happiness and life-satisfaction. There are all kinds of different measures such as “Gross Domestic Product” (GDP) and other indicators that can be used to measure the strength of the economy. The SWB can then be compared with the GDP or any other economic indicator as necessary. What the planners have to be aware of is that even though all these existing indicators count for quantifiable economic activities they do not have the ability to measure the joy of the children at a playground or the quality of their education (Fox, 2012). In his essay “Life Without Principle” (1863), Henry David Thoreau wrote: “If a man walks in the woods for love of them half of each day, he is in danger of being regarded as a loafer; but if he spends his whole day as a speculator, shearing off those woods and making earth bald before her time, he is esteemed an industrious and enterprising citizen.”

There certainly should be a paradigm shift in planning the post-COVID-19 economy. Instead of using the same measuring sticks as GDP and other traditional indicators, we will have to develop our own creative indicators which can clearly measure the progress of our economy towards the goals we have set (not what others set for us) with our own justifiable and meaningful definitions of “happiness” and “prosperity”. The idea of creating alternatives for GDP to take “capabilities” as well as “commodities” into account was first introduced in 1980 by Amartya Sen. The first “Human Development Index” (HDI) published in 1990 put the USA in the 10<sup>th</sup> place (though it was far ahead of the top 9 countries in terms of GDP) while recognizing a few countries like Sri Lanka and Vietnam having exceptionally high living standards compared to their GDP rankings (Fox, 2012). While the policies of the creative economy support this paradigm shift and facilitate the framework for new investments in human resource development, it is very important to introduce an efficient and transparent structure for fund management including the introduction of new tax structures. Most of the foreign aid comes with conditions that would put constraints on the receiver in such a way that the receiving nation will not have any choice of building their own creative economy. In addition to that, most of the money will again go back to contributing nations through multinational corporations that have to be given the contracts to perform the work generated by their aid programs (Loewenstein, 2015).

## **Conclusion**

Though most of the strategies of economic revival would focus on happiness and prosperity in a hybrid form, it will be more sustainable and meaningful to prioritize “happiness” over “prosperity” with justifiable and meaningful definitions of both words.

A “Creative Economy” would be a better antidote to low or zero growth and/or post-disaster economy. In this creative economy, the idea of “Growth” itself may have to be redefined and the indicators do not necessarily have to be the same as what they used to be. Avoid promoting certain sectors just for the sake of growth purely to avoid the economic stagnation, but promote “creative growth” which will require a significant investment in raising the level of independent analytical and creative thinking of the general population to a higher level.

Invest heavily on Human Resource Development focusing not only on the development of skills but also the personal and spiritual development of individuals. This will facilitate opportunities to elect or appoint qualified,

capable, efficient and honest human beings to decision making positions, from principals of schools, governing boards, fund managers and administrative officers all the way to members of the parliament and the leader of the country.

Use the funds generated in the country and all the aid coming from other countries wisely in a complete transparent manner with the sole intention of bringing happiness and prosperity to all the people in the country.

**Keywords:** *Happiness; Prosperity; Economy*

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## **A STUDY OF THE DISTRICT QUOTA SYSTEM BASED UNIVERSITY ENTRANCE PROCEDURE OF THE 1970s AND ITS EFFECTS ON CONTEMPORARY SRI LANKAN SOCIETY – A HISTORICAL ANALYSIS**

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### **Introduction**

Following the free education policy introduced in the 1940s and the social welfare policies ushered in by the Sri Lankan government during the post-independence period, educational opportunities opened up for all levels of students in Sri Lanka. However, educational benefits and privileges were distributed in a geographically inequitable manner across the country during the post-independence period. For example, English language teaching facilities and laboratory facilities considered essential for the Advanced Level Science based courses were not adequately established in most of the rural areas of Sri Lanka even by the 1970s. Because of that, most students from the rural areas were unable to qualify for the science disciplines and were able to enter only the Arts faculties (Wickramasinghe, 2012, p. 83). For example, it was noticed that in 1974, thirteen out of twenty-two districts did not produce a significant number of students for the Medical and Engineering faculties (Herath et al., 1997, p. 437). The science and medical faculties were predominantly represented by students from the Western and Northern provinces as these were the main regions in which educational facilities were properly established. For example, youth from the Northern Province accounted for 27.5% of the Science based courses, though the province was home to only 7% of the total population of the country. Much the same situation prevailed in the Western Province, with a representation of 67.5% in Science based courses in 1969, in comparison to its population percentage of 26% (Heenpela, 2017). This situation caused problems in the 1970s when vast numbers of Arts graduates who were released into the society sought employment. With a crumbling socialist economy, the government found itself unable to provide adequate work opportunities for such a huge number of Arts students who had only limited skills. But in spite of the poor state of the country's economy, most of the Science graduates were able to enter the prestigious professions. Nevertheless, intense competition prevailed among job aspirants for



the limited number of jobs available in the country. The competition prevailed within groups, classes and ethnicities. The government then attempted to reduce the geographical imbalance that existed in the representation of students in the faculties by implementing the District Quota system for admission to the state universities in the 1970s. By this means the government expected to reduce the existing youth unrest. The government hoped to make special efforts and provide chances to students from the less developed districts to enter the science faculties of the universities.

### **Research Problem**

Some researchers have investigated the educational policy implementations of the 1970s in Sri Lanka. Among their observations only very few direct analyses are found regarding the District Quota system. The researches of Bandarage (2009), de Silva (1978), Siddeek (2016), and Wickramasinghe (2012) are the important ones among these. All of them who studied the nature of the District Quota system found that it resulted in changes to the ethnic composition of university students. But this research is mainly focused on investigating the other types of changes caused by the District Quota System in the universities and their society-wise impacts.

### **Objective**

The main objective of this research is to study the consequences of the District Quota System for university admission during the 1970s in Sri Lanka.

### **Methodology**

The research intends to do this by performing a content analysis. Data were collected using two primary methods. First of all, a literature survey was performed. Books, research papers, and theses were used for this purpose. Additionally, contemporary newspapers, Hansards, and some original reports published by the Ministry of Higher Education were reviewed. Further, a field survey was conducted, for which 35 respondents were selected to participate as key informants. They were selected from diverse geographical areas across the island after ascertaining they all had real life experiences regarding the issues that prevailed in the 1970s in Sri Lanka. Key informants were selected from the three major ethnic groups, which comprised Sinhalese, Tamils and Muslims.

### **Results and Discussion**

After implementing the District Quota system of selection to the universities, a large number of rural students were able to access university education. However,

students from the really backward areas like Hambantota, Polonnaruwa and Monaragala were not able to secure sufficient places in the Science faculties even after these measures were introduced. But overall, students from the majority Sinhalese community were able to establish their position firmly in the university faculties. For instance, they made up 75.4% of the Science faculties, 78% of Engineering faculties and 70.0% of Medical faculties in 1974. The percentage of Sinhala students who entered university increased in 1975 to 78.0% for the Science faculties, 83.4% for the Engineering faculties and 78.9% for the Medical faculties.

They held a very prominent place in the Arts faculties too, at 85% in 1975 (De Silva, 1978, p. 93). Some communities like the Kandyans and Muslims were also able to establish their position in the Science faculties of the universities. The percentage of Muslims in the Science faculties doubled between 1970 and 1975. They had only the minimum of opportunities to enter those faculties before the introduction of the District Quota system. Therefore, Muslims who were not able to enter the prestigious professions previously had chosen to engage in trade, business, cultivation, fishing, and so on. But now they were fortunate enough to become doctors, engineers, accountants or lawyers. In the meanwhile, Tamil representation in the universities declined sharply. Presence of Tamils in the Science faculties had dropped to 20.9% in 1974 from 25.9% in 1973 and 35.3% in 1970. Likewise, their representation in the Engineering and Medical faculties had decreased to 16.3% and 25.5%, respectively. In 1973, about 337 Tamil students qualified to enter the science faculties of universities. In 1974, that number had decreased to 294. This situation worsened in 1975. Their percentages in the Science and Medical faculties too decreased to 14.2% and 17.4%, respectively, in that year. Their overall representation in all Science disciplines had decreased to 19% in the same year (De Silva, 1978, p. 93).

University admission procedure that was introduced by the Sri Lankan government in the 1970s had the direct effect of reducing the percentage of Tamil students gaining university entrance. However, as the researcher ascertained through field interviews, even among the Tamil students it was predominantly the Vellalar (high caste Tamils living mostly in Jaffna) who accounted for the highest number of places in the faculties. Vellalar Tamils had maintained a high level of representation in the prestigious professions even during the colonial period. The reason was that the colonial rulers and Catholic organizations had established quite a number of high-quality English schools in the Jaffna peninsula. With this educational grounding the Vellalar Tamils entered the prestigious professions and dominated the science and medical faculties of the

universities. The Sinhalese, though they were the majority community in the country, constituted only a low percentage in the higher professions, even in the 1970s. Vellalar Tamils continued to maintain a significant position in the higher professions even in the 1970s, which was disproportionately high when compared to their ethnic ratio (Bandarage, 2009, p. 54). Therefore, according to my field data, the domination of Vellalar Tamils in the Science faculties was challenged by the District Quota system in the 1970s. Due to caste barriers, Tamil people of the lower castes in Jaffna were rather handicapped, with far fewer opportunities to enter the prestigious faculties in the Universities. But there is evidence that some non-Vellalar Tamil youths from remote areas were able to enter universities under the District Quota System. For example, this system benefited Tamil students from the Vanni, Batticaloa, Trincomalee and Ampara. Even a few students from Kilinochchi had entered university under the District Quota system.

Upcountry Tamil students too enjoyed the privilege of gaining entrance to the Science faculties. Therefore, most of the depressed caste Tamils had a positive view of the District Quota system as a policy based on democratic principles. However, the Vellalar leaders did not appreciate the positive aspects of the District Quota system. Instead, they kept complaining and worrying about the reduction in the benefits they had been enjoying all these days. By way of protest, they arranged a number of anti-government demonstrations in Jaffna against the university entrance procedures in the 1970s. Further, they perceived not only the Sinhalese domination but also the increase in the number of Muslims entering the university as a threat to their hegemony. Jaffna Tamils did not recognize the District Quota system as a positive development.

### Conclusions

The District Quota system can be identified as a progressive development that introduces radical but democratic changes to Sri Lankan society. Less privileged social groups are able to enjoy upward social mobility through this policy. However, this policy can also be identified as one of the significant developments that contributed to the escalation of the ethnic dispute among Sri Lankan communities.

**Keywords:** *District Quota, Education, Science, Sinhalese, Tamils*

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## **RELATIONSHIP BETWEEN UTILITY OF DRIVING, SOCIO-ECONOMIC CHARACTERISTICS AND RISK BEHAVIOR OF DRIVERS**

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### **Introduction**

Private vehicle ownership and the per capita income are positively correlated and, in developing countries, the growth of private ownership of motor vehicles along with economic growth tends to have a higher level of saturation (Medlock & Soligo, 2002). Further, the individual choice for car driving is mainly driven by motives such as minimizing journey time, avoiding negative effects related to the journey, minimising physical and psychological effort, creating personal space and minimising financial cost (Gardner & Abraham, 2007). As a result, road traffic congestion, the level of urban pollution, and road traffic crashes have become crucial issues in urban cities. The cost of accidents generates a significant loss to the economies in terms of lives and damage to vehicles and property. Approximately 1.35 million people die each year due to road accidents around the world (WHO, 2018). Road traffic crashes cost most countries 3% of their Gross Domestic Product. Vehicle accidents in Sri Lanka have become one of the major concerns at present. Deaths due to road accidents in the country reached 3,554 people which accounted for 2.8% of the total deaths in Sri Lanka in 2017 (WHO, 2020). One of the main reasons for the accident is the driving behaviour which leads to incorrect decisions. While driving, drivers get into a dilemma zone in time within which they are unable to make quick decisions on the steering of the vehicle, and the resulting errors lead to accidents (Biswas & Ghosh 2018). Therefore, it is vital to identify the factors influencing the driver decisions to reduce accident level which in turn reduces both direct costs such as hospitals, emergency care, transportation and indirect costs such as police, insurance administration, property damage, and loss of production (Garcia-Altés & Pérez, 2007).

Decision making is a cognitive process in human beings (Wang, Mao, Jin, Wang, & Guo, 2011). Drivers make decisions on the road in various situations (Muttart, 2014). Some decisions drivers make result in major accidents and fatalities. Identifying the factors which influence the decisions of the drivers is crucial in terms of reducing the cost of accidents and ensuring sustainable living and a healthier economy of a country.

Therefore, this research focuses on identifying the relationship between the utility of driving (the satisfaction level of driving a car than travelling on other modes of transport), socio-economic characteristics of the drivers, and the decisions making behaviour of the drivers.

### **Research Questions and Objectives**

Some drivers are risk-takers and some are risk-averse drivers (Breuer, Riesener, & Juliane, 2014). The first research question of this paper deals with the relationship between the utility of driving and driver behaviour. The second question inquiries into the relationship between the socio-economic characteristics of drivers and driver behaviour. Thus, the main research objective of the paper is to identify the relationship between the utility of driving and driver behaviour and its variation across driver's socio-economic characteristics.

### **Methodology**

#### **Sampling and Data Collection**

A questionnaire was designed and distributed among randomly selected 210 (Male = 186, Female = 24) car drivers within Moratuwa Divisional Secretariat. The responses of drivers on their utility of driving based on travel time, travel cost, safety, convenience, privacy, socio-economic characteristics such as gender, age, driving experience, monthly income, and working hours per week were collected. The decisions of the drivers for selected five circumstances (dependent variables) which help identify whether the driver is a risk-taker or risk-averse driver were also collected. The circumstances are listed below:

- (a) The driver stops at a traffic light and hears the incoming message/call receiving tone. Under these conditions, whether the driver reads the text / attends the call immediately ( $Y_1$ ).
- (b) The driver drives at night and the amber lights were flashing at an intersection. Under these conditions, whether the driver reduces the speed of the car while crossing the intersection ( $Y_2$ ).
- (c) The driver drives in a high traffic condition while the vehicle was in the mid of the vehicle platoon. Whether the driver maintains the proper distance between the vehicles while driving ( $Y_3$ ).
- (d) The driver drives on a rainy day and the driver sees a pedestrian crossing the street and he/she has already in the last few steps of the crossing. Under these conditions, whether the driver does not stop the car until the pedestrian finish crossing the road ( $Y_4$ ).

- (e) The driver rushes to reach a place, and become annoyed with a slow driver in the outer lane. Under these conditions, whether the driver overtakes the front car through the inside lane ( $Y_5$ ).

### Data Analysis Model Framework

Since the driver is a risk-taker or a risk-averse driver, and to predict the probability of making a riskier decision, the independent variables and the dependent variables were modelled with a binary logistics regression. In this model, the probability of making risky decisions was predicted. The functional relationship can be represented by the model given below (Elliot, 2008):

$$P(Y_i) = \frac{e^{(\beta_0 + \sum \beta_i X_i)}}{1 + e^{(\beta_0 + \sum \beta_i X_i)}}$$

$P(Y_i)$  = Probability of  $Y_i$  occurring where  $i$  equals to 1 to 5

$e$  = Natural logarithm base

$\beta_0$  = Interception at y-axis

$\beta_i$  = Regression coefficient for each  $X$

$X$  = Independent variable

Since the relationship is non-linear, the probability cannot be taken directly in the model. But that relationship can be changed to linear through converting the probabilities to “log odds” values which are the natural logarithm of odds value. Then the exponential of the log odds was taken to identify the odd ratio. Odds are a ratio of probabilities.

$$Odds = \frac{P(A)}{P(B)}$$

According to Formular 02, Odd Ratio between event A and B is explained as a ratio of the probability of event A to the probability of event B. For example, the ratio of the probability of male drivers who use a mobile phone while driving to the probability of female drivers who use a mobile phone while driving.

### Results and Discussion

The analysis results presented in Table 1 show the results of the binary logistics regression (log-odds values).

**Table 1: Summary of binary logistics regression analysis of log odd value**

<b>Independent Variables</b>	<b>Y1</b>	<b>Y2</b>	<b>Y3</b>	<b>Y4</b>	<b>Y5</b>
<b>Gender (Male)</b>	<b>5.8***</b>	<b>3.2***</b>	<b>1.9***</b>	<b>2.8***</b>	<b>7.3</b>
<b>Age(18 to 25)</b>	<b>**</b>	<b>*</b>	<b>*</b>	<b>**</b>	<b>***</b>
26 to 35 years	2.4	-2.1*	-1.5**	-1.7**	6.4***
36 to 45 years	-1.7***	-3.1**	-0.7**	-0.9*	3.3*
46 to 55 years	0.4	-1.5*	0.1	-0.1	5.7**
Above 55 years	-10.3**	-2.4**	-0.4*	-3.1**	-20.8*
<b>Driving Experience (&lt; 3 years)</b>	<b>***</b>	<b>*</b>	<b>***</b>	<b>***</b>	<b>**</b>
3 to 6 years	4.7***	0.5*	-0.5*	-2.2**	-1.8*
6 to 9 years	8.0***	-1.2*	-	-2.1***	-3.8**
9 to 12 years	-0.1*	-1.9	-2.1**	-3.1***	-3.6
More than 12 years	-5.5	-1.9*	-0.8*	-3.5***	-0.9
<b>Monthly Income (&lt;50,000)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>***</b>
50,000 to 75,000	3.7**	-0.9	0.9	1.1	6.2***
75,000 to 100,000	1.2	-2.2	0.9	-0.1	4.1***
100,000 to 150,000	4.8*	-2.3	0.2	1.2	4.1
150,000 to 250,000	-22.9	-1.5	0.6	0.9	2.3
> 250,000	-22.5	-1.5	-0.1	-1.2	1.3
<b>Working hours (0 to 20 hours)</b>	<b>***</b>	<b>**</b>	<b>**</b>	<b>-</b>	<b>***</b>
21 to 30 hours	0.6	0.7**	0.8*	0.1	-2.1
31 to 40 hours	7.6***	1.5*	1.4**	-0.5	-4.3***
41 to 50 hours	5.4***	1.8*	1.3	1.1*	4.7***
More than 50 hours	4.6***	1.6*	1.5**	0.3	2.1*
<b>Utility based on Travel time</b>	<b>-1.8***</b>	<b>-1.2**</b>	<b>-0.2*</b>	<b>-0.2*</b>	<b>-0.1*</b>
<b>Utility based on Travel cost</b>	<b>1.5</b>	<b>-0.5</b>	<b>0.1</b>	<b>-0.1</b>	<b>-0.7</b>
<b>Utility based on Safety</b>	<b>-0.2***</b>	<b>0.1</b>	<b>-0.6**</b>	<b>-0.2*</b>	<b>-0.1**</b>
<b>Utility based on Convenience</b>	<b>-0.1</b>	<b>-0.1*</b>	<b>-0.1**</b>	<b>-0.8**</b>	<b>-1.8*</b>
<b>Utility based on Privacy</b>	<b>1.7**</b>	<b>-0.1</b>	<b>1.1</b>	<b>0.1</b>	<b>0.6</b>

Source: Author's Estimations

The results of Table 1 above indicates that the relationship between the independent variable 'gender' and the dependent variable 'mobile usage intention while driving' (Y<sub>1</sub>) has a log odd value of 5.8 8 (Beta=5.8, p – value <0.01), where the independent variables are coded as 0 = "Female" and 1 = "Male". Beta value for male is given with reference to female (Beta values shows the comparison between the actual category and the reference category).. This positive highly significant value means that the risk-taking intention is



high among male drivers than female drivers. Further the estimated exponential of log odd value is  $\text{Exp}(5.8) = 330.29$  ( $p < 0.01$ ).

$$330.29 = \frac{P(\text{Mobile phone usage intention of Male drivers})}{P(\text{Mobile phone usage intention of Female drivers})}$$

The value indicates that male drivers are nearly 330 times more likely to use a mobile phone while driving than female drivers. In the same manner, the other log odd values of the independent variables can be interpreted for all the relationships of dependent and independent variables. The independent variables which have a significant log odds ratio in more circumstances (more than 4 circumstances out of 5) show that those independent variables have a significant relationship with the behavioural intentions of the driver. Under circumstance  $Y_5$ , gender is insignificant implying that overtaking from the left side is against the road traffic rules and most drivers in the sample chosen follow it.

In comparison with the drivers aged 18 to 25, risk taking intention is reducing with aging. This shows most of the young drivers make riskier decisions than the aged drivers. Concerning gender and age group, the results of the present study are aligned with the previous study by Leadbeater, Foran, & Grove-white (2008) who found major injuries and fatalities in a collision are high among male youths who drives under the influence of alcohol or any other similar substances. Compared to less experienced drivers (experience less than 3 years), the drivers who have more than 3 years' experience are less inclined to make risky decisions. The findings also confirmed the results of a previous study that claim less experienced drivers have more intention to unsafe driving behaviors (Atombo et.al, 2016). Moreover, the decisions of drivers are significantly correlated with working hours of drivers. The results indicate that the risk-taking intention of drivers increases when the working hours of drivers increase. The finding of the current study is useful for the design of vehicle insurance policies based on the age and the year of driving experience of the drivers.

The results further show that the risk-taking intention is significantly related to the utility of driving (satisfaction level of driving a car than travelling on other modes of transport) based on travel time, safety, and convenience. The results show that the drivers who satisfied with driving a car based on travel time are less prone to take risky decisions. The drivers who feel safe while driving is less likely to make risky decisions. Further, the drivers who feel convenient while driving are satisfied with driving a car, and the satisfaction leads them to be risk adverse drivers. Based on the above finding, countervailing traffic and demand management policies can be designed and implemented to reduce motor traffic accidents.

## Conclusion

This paper shows that there is a significant relationship between the drivers' decision-making behaviour with age, gender, driving experience, and working hours per week of the driver. Further the results indicated that the utility based on travel time, safety and convenience have a significant relationship with the risk-taking intention of drivers. Moreover, the risk-taking drivers are found to be male while young drivers are more inclined to make risky decisions. Further the drivers who work more hours are more likely to make risky decisions. Further the drivers who spend less time in travelling and feeling safer and more convenient are less likely to make risky decisions. The research findings are found to be supporting the conclusions of some of the results of previous research.

**Keywords:** *Decision making; risk aversion; socio-economic characteristics; utility of driving*

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## **‘FADING BEFORE THEY BLOOM’: CHILD MORTALITY IN SRI LANKA IN HOUSEHOLDERS**

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### **Introduction**

The future human capital of any country is “children”. Hence, every child in this world has a right to have a good quality life. Children are a valuable investment in a country. In 1990, 12.6 million child deaths have taken place but in 2016, it drops to 5.6 million. Basically, universal child mortality rate has declined by over half between 1990 and 2016 (Rodriguez 2016). This progress in child survival indicates the development of global health. However, at present, globally approximately 15,000 under five-year old deaths occur per day and 5.3 million annually. Majority occur in Sub-Saharan Africa and South Asia. Moreover, the Department of Census and Statistics (2016) highlighted that infant mortality or early childhood mortality is a measure of socioeconomic development of a country; also, it’s a good measure of the quality of life. Many rigorous studies on child mortality regarding household income and expenditure, household wealth and also socioeconomic determinants of child mortality have been conducted especially in the developing countries in Asian and African regions (Nyamuranga and Shin 2019), but limited scale in Sri Lanka.

### **Research Problem**

Hence, research studies on infant and child mortality are limited in a Sri Lankan context. Thus, a research gap exists regarding this subject. During the recent past, there are hardly found research papers in Sri Lankan context which has focused on socioeconomic and demographic characteristics on child mortality (Trussell and Hammerslough 1983). Thus, this study focuses to identify socioeconomic and demographic characteristics of the households on child death. Research question of the study is “what are the socioeconomic and demographic characteristics of the households affecting child death?”.

This research conducted in local context is of immense value to policy makers of Sri Lanka, as a low-middle income country especially due its developing economy. This is a opportunity to address how location of residence is related to child mortality in Sri Lanka. The following advantages can be gained from this research.

1. Government and Health sector of Sri Lanka can identify the general physical health status of the country and potential areas to further develop health

policies based on new findings.

2. Government, public and private organizations can collaborate and mutually develop health facilities in remote areas, through governmental subsidy programs and welfare benefits.

### Objective

To investigate the socioeconomic and demographic characteristic of householders affecting child mortality.

### Methodology

In this study, the quantitative approach is adopted based on data of the ‘Household Income and Expenditure Survey’ (HIES) conducted in 2016, by the DCS in Sri Lanka. This study is about how many households have experienced on child mortality in each province and their socioeconomic and demographic characteristics. The ‘STATA’ statistical software has been used to measure outcomes and generate results on gathered data. With the use of Pearson’s Chi-Square test, this study can identify any significant association among the socioeconomic and demographic variables.

Pearson’s Chi-Square formula:

$$\chi^2_c = \sum \frac{(O_i - E_i)^2}{E_i}$$

O = The observed (actual) value

E = The expected value

### Results and Discussion

According to the HIES survey, out of the 21,756 households, 147 child deaths (0.68% of the total sample population) were reported in 2016 in Sri Lanka. According to Pearson’s Chi-Square test, P-value has been considered on each variable and identified that the provinces where P-value is less than the significant level. Hence, it is closely related with child mortality. Further, it illustrates that out of the total population of households that have experienced child deaths, most of them were from the ‘Eastern Province’ which is 1.23 and the least number of child deaths have been taken place in the ‘Western Province’ with 0.36. Apart from this, ‘North Central and Uva’ are also leading provinces which have faced many child deaths cases. This finding is completely against with the findings of Rajindrajith et al. (2009) which has found western province is the leading province for child mortality in Sri Lanka. However, sufficient evidence is unavailable to conclude that ‘sectors of the country’ is associated with child mortality;

hence, the P-value is greater than the significant level.

**Table 1: Variation of child mortality on sectors and provinces of Sri Lanka**

Sector and Province-wise	Child Death Status		Total
	Child Death – Yes %	Child Death – No %	%
<b>Sector-wise comparison</b>			
Urban	0.58	99.42	100
Rural	0.68	99.32	100
Estate	0.86	99.14	100
<b>*Province-wise comparison</b>			
Western	0.36	99.64	100
Central	0.72	99.28	100
Southern	0.60	99.40	100
Northern	0.60	99.40	100
Eastern	1.23	98.77	100
North Western	0.48	99.52	100
North Central	1.17	98.94	100
Uva	1.06	98.94	100
Sabaragamuwa	0.67	99.33	100

Note: \* Differences are statistically significant at  $\alpha=0.05$  levels Pearson's Chi-Square.

Source: Authors' illustration based on the HIES 2019

Table 02 demonstrates the affected and non-affected households from child deaths based on different socioeconomic and demographic characteristics. According to the Chi-Square test, P-value has been considered on each variable and identified that the religion, ethnicity and age of the head P-values are less than the significant level; hence, these factors are closely related with child mortality. P-value of household head's sex, household head's education and household head's employment are greater than the significant level, and sufficient evidence is unavailable to conclude that these variables are associated with child mortality. There is a high possibility to have experienced child mortality among the households where the head's age is below 30 years. Sri Lankan Moors and Islam population have the highest possibility of child deaths. This would be due to maintaining higher level of fertility rate than the case of other ethnic group.

**Table 2: Demographic characteristics related to child mortality**

Demographic-wise	Child Death Status		Total %
	Child Death – Yes %	Child Death – No %	
Household head’s sex			
Male	0.63	99.37	100
Female	0.82	99.18	100
Household head’s employment level			
Gov. and semi gov.	0.30	99.70	100
Private	0.74	99.26	100
Own account worker	0.73	99.27	100
Household head’s education			
No schooling	0.00	100.00	100
Grade 1-11	0.73	99.27	100
O/L and A/L	0.39	99.61	100
Above degree	0.74	99.26	100
*Ethnicity			
Sinhalese	0.56	99.44	100
Sri Lankan/Indian Tamil	0.79	99.21	100
Sri Lankan Moors	1.43	98.57	100
Malay/Burgher/Other	0.0	100	100
*Religion			
Buddhist	0.58	99.42	100
Hindu	0.81	99.19	100
Islam	1.39	98.61	100
Roman Catholic/Other	0.49	99.51	100
*Household head’s age			
Category 01 (<30)	1.16	99.84	100
Category 02 (31-60)	0.66	99.34	100
Category 03 (61-99)	0.64	99.36	100
Total	0.68	99.32	100

Note: \* Differences are statistically significant at  $\alpha=0.05$  levels Pearson's Chi-Square.

Source: Authors' illustration based on the HIES 2019

## Conclusions

This study investigates the socioeconomic and demographic characteristics of households affected by child mortality. Findings of this study demonstrate that a person living in the Eastern Province has a high probability of experiencing child mortality. Significant relationships exist among the variables - religion, ethnicity and age of the head with child mortality. Nevertheless, province wise significant relationships were noted with regard to child mortality, mostly in the 'Eastern Province' which is 1.23 and the least number of child deaths have been taken place in the 'Western Province', which is 0.36. Sectors of the country, household head's sex, household head's education and household head's employment do not have a significant effect on child mortality. Therefore, this research study provides insights to both the government and policy makers to investigate on public health and well-being for all people in Sri Lanka. Additionally, it is recommended to improve the health facilities specially among the estate population and identified provinces that can pose a high-risk on child mortality.

**Keywords:** *Child mortality; Child survival; HIES, Householders; Under-five mortality*

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# **IMPACT OF THE GRADE FIVE SCHOLARSHIP EXAMINATION ACHIEVEMENTS ON THE PERFORMANCE OF SECONDARY SCHOOL EDUCATION IN SRI LANKA**

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## **Introduction**

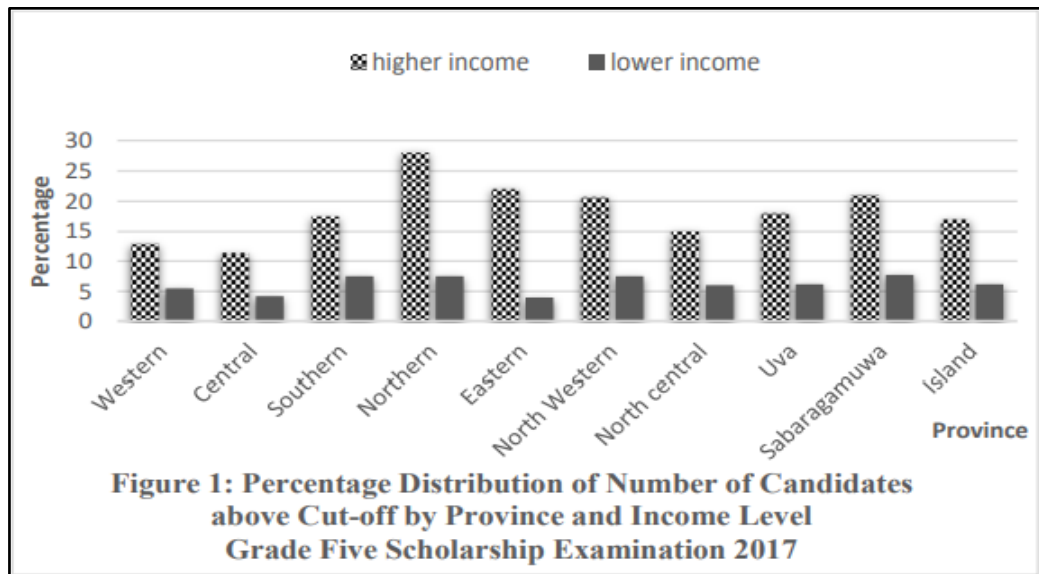
The Grade Five Scholarship Examination (G5) is a highly competitive examination conducted by the Department of Examinations of Sri Lanka for the students in the final year of primary school. (Usually ages 9–10). The G5 scholarship examination, introduced in 1948, aimed to meet two objectives, namely, admitting talented students to popular schools; and providing bursaries to brilliant but economically disadvantaged students. In recent years the examination has deviated from its prime objectives creating unnecessary stiff competition and it has also observed that in most schools, all students are being pressurized in to upgrade Grade Five Scholarship Examination results irrespective of the delivery or cognitive development of students. (Circular, 08/2019) At present the exam is taken by students in both privileged and underprivileged schools, as well as across high- and low-income groups, regardless of its original objectives. The Ministry of Education issued a circular (08/2019) stating that the Grade 5 scholarship examination is no longer mandatory and all students except for the underprivileged will not be forced to face the Grade 05 scholarship examination.

This research is intended to examine the impact of G5 examination achievements on the performance of secondary education of the child. The finding will be useful for the policy makers to decide whether the G5 examination to be continued or not, which has been a critical policy debate under educational reforms of the country.

## **Research Problem**

It has been found that the pass rate of high-income families is higher than that of low income families. (See, figure 1) According to the statistics of the Department of Examinations, only about 10% of the children who sit for the examination qualify for bursaries, or gain entry into prestigious schools. For example, it was only 9.5% in 2016 and 9.46% in 2017.

Therefore, it seems that the Grade Five Scholarship Examination has lost its basic objectives for which it was introduced. Abesekara (2019) claims that the enabling environment and the structuring of the exam does not ensure that its main target group—talented and poor students—have a fair chance of exploiting the opportunities presented, thereby rendering its goals unachievable. In the present context it has been a debated a lot and the government is in a dilemma whether this competitive exam to be continued or not. We believe that the only logical ground left is the argument that the success or failure of the achievements of the Grade Five exam will influence the performance of the students moving to the secondary school education.



Source; Departement of Examination, Sri Lanka

This research investigates whether the performance Grade Five Scholarship Examination will have impact on the performance in the secondary school education of a child.

## Objectives

The objective of this research is to examine whether the better students in the Grade Five Scholarship Examination perform better in secondary school education as well, controlled for all the other possible factors influencing the secondary level education.

## Methodology

The researcher uses a randomly selected sample of 380 students who sat for 2017 G.C.E. O/L examination and collects the primary data pertaining to the variables given in the Equation below including their Grade Five Scholarship examination marks reported five

years back in 2011. Sample comprises of nearly 72% of G.C.E O/L passed students and nearly 45% of the G5 scholarship examination passed students.

$$OL_n = C + \sum_{n=1}^{15} \beta_n X_n + e$$

where,

OL	Results	index varying from 0 to36, which is the sum of A=4, B=3, C=2, S=1, W=0
C	C	Intercept
X1	SEX	1 If male, 0 Otherwise
X2	TUTION	Private tuition supported number of subject
X3	FJOB	1 if related to Education, 0 otherwise
X4	MJOB	1 if related to Education, 0 otherwise
X5	FED	1-12 Numbers assigned by UGC- SLQF (SLQL / NVQL)
X6	MED	1-12 Numbers assigned by UGC- SLQF (SLQL / NVQL)
X7	INCOME	Family income/month
X8	FSIZE	Number of defendants excluding child
X9	SPORT	Average number of hours spent for sports per week
X10	PARTS	Average number of hours spent for performing arts per week
X11	GROUP	1 if has a study group, 0 otherwise
X12	CSIZE	Number of students in OL Class
X13	MEDIUM	1 if English, 0 Otherwise
X14	NATIONAL	1 if National school, 0 Otherwise
X15	G5	Grade 5 scholarship exam marks

The secondary data sources include the annual School Census of government schools published by the Ministry of Education for the year 2017, and the datasets on 2011 G5 scholarship exam performance. The secondary school performance of each student was measured by his/her G.C.E. O/L results converted to an index. For the cross-sectional data, the following multiple regression equation was defined incorporating the other possible variables that influence O/L performance.

## Results and discussions

Table 1 contains the estimated marginal effects of each explanatory variable to the variation in the dependent variable.

**Table 1: Estimated Results of Multiple Regressions for Equation 1**

Dependent Variable: OL

Method: Least Squares

Sample: 1 3814,

Included observations: 380

Variable	Coefficient	t-Statistic	rob.	
C	6.940	2.491	0.013	**
SEX	-1.673	-2.104	0.036	**
TUTION	2.444	1.669	0.096	*
FJOB	-1.558	-1.726	0.085	*
MJOB	0.916	0.870	0.385	
FED	0.034	0.099	0.921	
MED	0.991	2.863	0.004	***
INCOME	0.000	0.468	0.640	
FSIZE	-0.171	-0.617	0.538	
SPORT	-1.424	-5.570	0.000	***
PARTS	1.201	1.512	0.131	
GROUP	-0.003	-0.060	0.952	
CSIZE	0.013	0.326	0.745	
MEDIUM	2.693	1.920	0.056	*
NATIONAL	0.582	0.637	0.525	
G5	0.112	8.167	0.000	***
R-squared		0.643		
Adjusted R-squared		0.515		
S.E. of regression		5.715		
F-statistic		12.098		
Prob(F-statistic)		0.000		

Source: Authors' estimations

The regression results reveal that mother's occupation, fathers' education level, family income, family size, class size, involvement in performance arts, being connected to a study group, school type will have no significant influence on the secondary level educational achievement measured by O/L results. However, mother's education level, attending private tuition, and doing in English medium have significantly positive impact on the secondary level educational achievements. On contrary, student's involvement in

sports will have a significant negative influence on the secondary education. More importantly, the G5 Scholarship exam performance captured by student's total marks has statistically significant influence on the secondary level educational achievement measured by O/L results. More precisely, one additional mark obtained in G5 examination will be reflected as a raise in the O/L index value by 0.112 meaning that 10 additional marks in G5 examination will be reflected as a shift of one grade above for one subject in O/L results, i.e., for example the B-pass will be lifted to A-pass.

## **Conclusion**

This study was done on the null hypothesis that the G5 examination results of the child will have no influence on his/her achievements in the secondary education. The null hypothesis is rejected at 1% significant level favoring the alternative that the Grade Five scholarship examination has a significant impact on the child's secondary education. More precisely, controlled for all the other variables concerned, one additional mark obtained in G5 examination will be translated to raise the O/L index value by 0.112 meaning that 10 additional marks in G5 examination will be reflected as a shift of one grade above for one subject in O/L results. Therefore, despite the fact that G5 has now lost its original goals, this research strongly recommends the existence of G5 scholarship examination would be useful to improve the secondary school level academic achievements of the child. This is in contrast opposite to the Education Ministry Circular 08/2019 and to the President has made headlines in early 2020 declaring an intention by the Government to abolish the Grade Five Scholarship examination.

However, the educational policy makers and parents need to be well aware of the negative side of the excess pressure putting on children to make them motivated to pass the G5. Also, if G5 continues, the government needs to address the disparities among primary schools in physical and human resource facilities and the unequal access to educational possibilities in the city vs. suburbs.

**Keywords:** *Grade five Scholarship, OL examinations, Secondary education, Primary education*

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## **ESTIMATION OF THE OUT-OF-POCKET EXPENDITURE DURING EARLY PREGNANCY: EVIDENCE FROM RAJARATA PREGNANCY COHORT, ANURADHAPURA**

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### **Introduction and Research Background**

The cost of illness studies or burden of illness studies in health economics describe three major types of economic cost which relate to health care; the direct cost, the indirect cost, and the intangible cost (Chaikledkaew, 2011; Chandrakar et al., 2017; Yousefi et al., 2014). The direct cost can be defined as all the monetary expenses or out-of-pocket expenditure (OOPE) that occurred as a result of disease or any other health care seeking (Chandrakar et al., 2017). According to the World Health Organization (WHO), the OOPE is defined as “any direct payout by households, including gratuities and in-kind payments, to health care providers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or enhancement of the health status of individuals or population groups”.

The direct cost component is identified as an important type as it contains all the monetary payments that creates huge economic burden over household budget, leading people into poverty and indebtedness, changing the consumption pattern, misuse of health care resources and creates a barrier to access health care facilities for lower-income people (Leone et al., 2013). The direct cost or the OOPE over medical care can be divided into two groups; direct medical expenses and direct non-medical expenses. Direct medical OOPE includes the cost of the consultation, laboratory tests, treatments, drugs, and consumables. (Leone et al., 2013). Direct non-medical OOPE is comprised of the cost of traveling, food and lodging of the patient or family members/accompanying person (Acharya, 2016; Chandrakar et al., 2017; Leone et al., 2013). Evidence suggests that most of the countries with a free health care policy also have a high-level of OOPE (Acharya, 2016).

Sri Lanka exerts free government health services from the early 1900s (De Silva et al., 2016). It accommodates free health services by allocating an annual average budget of



around 163,079.6 million rupees during the last three years, which accounted for 1.6% of the GDP in 2019 (Central Bank of Sri Lanka, 2019).

There is a lack of evidence in Sri Lanka focusing on the comprehensive analysis of OOPE in pregnancy. It is reported that most pregnant mothers seek specialized care even in the absence of a clear clinical indication, especially in the private health sector at least once in their pregnancy (Agampodi et al., 2017). In Sri Lanka, for maternal care and life-threatening complications, people do not care much about the cost while seeking medical care. However, the literature suggests that due to financial difficulties pregnant mothers from low socio-economic backgrounds are unable to consult private medical care even if they intend to (Agampodi et al., 2017).

In this background, a main question remained unanswered in the Sri Lankan health care sector is whether pregnant mothers have OOPE despite having access to free health care system; thus, this reserach was conducted to explore this issue.

### **Objective/s**

The aim of this study was to determine the OOPE of pregnant mothers during the first trimester and the study focused on the following specific objectives.

- (I) To estimate the OOPE during early pregnancy
- (II) To determinethe associated factors of OOPE during early pregnancy
- (III) To identify the sources of financing for OOPE

### **Methodology**

The study was carried out as a part of a large cohort study; the Rajarata Pregnancy Cohort (RaPCo) in all 22 Medical Officer of Health (MOH) areas in Anuradhapura district. Pregnant mothers in the first trimester (n=1283) registered in the field antenatal clinics were recruited to this study as a part of the RaPCo.

The study used the first part of the survey and the findings are limited to the data related to the first trimester pregnant mothers. When compared to the other two trimesters of pregnancy, the first trimester (or the early pregnancy period) has unique health care expenses such as the cost for pregnancy identification/confirmation and the cost for the booking visit (the first clinic visits in which a number of investigations are carried out).

A pre-tested, self-administered questionnaire was used to collect data on pre-pregnancy household income and expenditure as well as the pregnancy cost during the first trimester.

Under the pregnancy cost, the data was gathered as direct medical and direct non-medical cost. Cost for consultation, cost for medicines, cost for laboratory investigations and hospital charges were considered as direct health expenses.

Travelling cost, cost for food and refreshment, cost for accompanying persons and other cost were considered as the direct non-medical cost. In the first trimester, all these direct and indirect cost were associated with pregnancy identification/confirmation, booking visit and maternal morbidities.

Data analysis was done by using the IBM SPSS Version 23 software. Descriptive statistics with mean (SD), median (IQR) was used to present the OOPE. Mann-Whitney U test and Spearman rank correlation were employed to assess the statistical significance of associated factors of OOPE.

## **Result and Discussion**

### **Sample characteristics**

The mean (SD) age of the pregnant mothers was 28.2 (5.6) years. Among the study sample, only 14.9% (n=191) of mothers were employed and most of them (56.0%, n=107) were employed in the government sector. The mean (SD) and the median (IQR) monthly income of the employed mothers were LKR 31,534.08 (18,730.50) and LKR 32,000.00 (20,000.00-36,000.00) respectively.

The mean (SD) and median (IQR) of monthly household income of the sample were LKR 51,808.11 (42,882.91) and LKR 40,000.00 (30,000.00-58,000.00) respectively. In addition, the mean (SD) and median (IQR) of monthly expenditure of the household were LKR 31,882.48 (20,628.65) and LKR 28,200.00 (19,380.00-40,000.00) respectively.

### **OOPE in the First Trimester**

Table 1 shows the mean (SD) and the median (IQR) expenses that mothers had to bear during the first trimester of pregnancy and the breakdowns for the expenses are summarized.

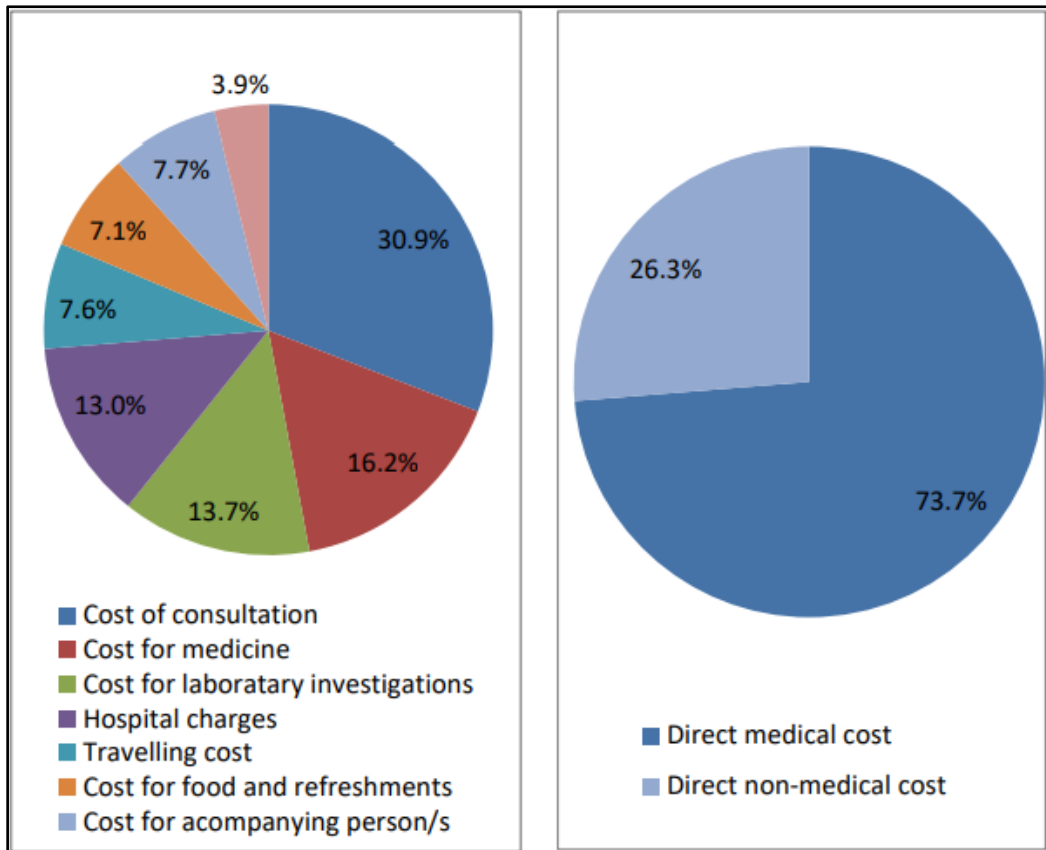
The total pregnancy cost during the first trimester over total household income is 4.8%. In addition, the total pregnancy cost over total household income for different income groups (lower income quintile one to higher income quintile five) are 11.4%, 8.8%, 5.1%, 4.7% and 2.7% respectively.

**Table 1: Out-of-pocket expenditure during the first trimester and the breakdown of expenses**

Classifications	Reasons for seeking health care and the breakdown for expenses	Number of mothers (% of the sample)	Expenses (LKR)	
			Mean (SD)	Median (IQR)
OOPE during the early pregnancy (Classification I)	Pregnancy identification/confirmation	1,283 (100.0%)	1,016.31 (2,095.9)	190.00 (50.00-850.00)
	Booking Visit	1,283 (100.0%)	1,835.26 (3,147.26)	500.00 (200.00-2,650.00)
	Maternal morbidities: for health care seeking	316 (24.6%)	2,308.03 (3,402.57)	1,074.50 (500.00-3,000.00)
	Maternal morbidities: for hospitalization	103 (8.0%)	5,834.2 (7,505.39)	4,000.00 (1,835.00-5,975.00)
	Cost for consultation	356 (27.7%)	2,882.35 (3,516.12)	2,600.00 (1,500.00-3,000.00)
Breakdown of expenses(Classification II)	Direct medical cost			
	Cost for medicines	478 (37.3%)	1,512.30 (2,214.33)	665.00 (200.00-2,000.00)
	Cost for laboratory investigations	563 (43.9%)	1,275.77 (1,914.81)	400.00 (160.00-2,500.00)
	Hospital charges	10 (0.8%)	1,210.00 (952.72)	1,000.00 (500.00-1,200.00)
	Direct non-medical cost			
	Cost for travelling	923 (71.9%)	710.64 (1,265.43)	300.00 (150.00-700.00)
	Cost for food	741 (57.8%)	661.42 (1,484.60)	300.00 (150.00-550.00)
	Cost for companions	393 (30.6%)	721.96 (1,494.94)	200.00 (100.00-500.00)
	Other cost	917 (71.5%)	361.33 (913.35)	60.00 (30.00-150.00)
Total out-of-pocket expenditure during first trimester		1,283 (100%)	2,495.58 (3,909.71)	940.00 (300.00-3,250.00)

Source: Authors' estimations

Figure 1 further illustrates the share of OOPE for direct medical and direct non-medical costs. It shows that the direct medical cost; consultation cost, cost for medicine, cost for laboratory investigation and the hospital charges were higher than the direct non-medical cost; travelling cost, cost for food and refreshments, cost for accompanying person/s and other cost, which accounted for 73.7% of cost; travelling cost, cost for food and refreshments, cost for accompanying person/s and other cost, which accounted for 73.7% of the OOPE.



Source: Authors' illustration

**Figure 1: Share of expenses of out-of-pocket expenditure during the first trimester in pregnant mothers in the sample**

### Associated Factors of OOPE during early pregnancy

We performed the Kolmogorov-Smirnov test to assess the distribution of the variable 'the total pregnancy cost'. The test result showed that the data are not normally distributed ( $p < 0.05$ ). Therefore, we used the Mann-Whitney U test, a non-parametric test to assess the statistical significance of associations.

The results show that mothers who are employed, mothers who had maternal morbidities and mothers who were in their first pregnancy had statistically significant higher OOPE than their counterparts. However, the results suggest that there was no statistically significant association between OOPE and poverty.

**Table 2: Associations of OOPE during early pregnancy**

Test Hypothesis	Mean (SD) [LKR]	Median (IQR) [LKR]	Mann-Whitney Statistics (p Value)
There is a deference between OOPE in employed mothers and others*	Employed (n <sub>1</sub> =191)	2,871.32 (3,537.54)	1,250.00 (390.00-4,375.00)
	Not employed (n <sub>2</sub> =1092)	2,429.86 (3,969.07)	905.00 (300.00-3,000.00)
There is a deference in OOPE between first pregnancy mothers and others**	First pregnancy (n <sub>1</sub> =470)	3,039.33 (4,042.22)	1,522.50 (500.00-4,185.00)
	2 <sup>nd</sup> pregnancy or above (n <sub>2</sub> =813)	2,181.24 (3,798.15)	730.00 (250.00-2,600.00)
There is a deference in OOPE between mothers who had maternal morbidities and others**	With maternal morbidities (n <sub>1</sub> =1070)	2,588.60 (3,998.36)	985.00 (335.00-3,600.00)
	Without maternal morbidities (n <sub>2</sub> =213)	2,028.32 (3,399.98)	700.00 (150.00-2,170.00)
There is a deference in OOPE between mothers who are above the national poverty line (USD 2.6 per day) and others	Below poverty line (n <sub>1</sub> =9)	2,693.89 (3,104.23)	1,120.00 (600.00-6,350.00)
	Above poverty line (n <sub>2</sub> =1274)	2,494.18 (3,915.75)	937.50 (300.00-3,250.00)
There is a deference in OOPE between mothers who are above the upper middle income countries' poverty line (USD 5.5 per day) and others	Below poverty line (n <sub>1</sub> =48)	3,003.54 (3,959.26)	995.00 (290.00-4,255.00)
	Above poverty line (n <sub>2</sub> =1235)	2,475.84 (3,908.06)	935.00 (300.00-3,235.00)

\*significant under the 0.1 level of confidence, \*\*Significant under the 0.01 level of confidence

Source: Authors' estimations

Employed mothers have high ability to spend while others are depending on the household. Evidence reported that the people with higher socio-economic status demand better and quality health care services and they prefer to go for the private health facility rather than public hospitals (Chandrakar et al., 2017; Reichmann and Kirkbride, 2008; Wagstaff, 2002; Van et al., 2007).

In addition, the OOPE of having maternal morbidities (nausea and vomiting, anemia, infections, hypertension, diabetes during pregnancy, mental health conditions, and hyperemesis gravidarum etc.) seems to be unavoidable since preventive strategies generate a higher cost, and the cost can be transferred from individuals to public or private health care service providers as a direct payment. (Dereure, 2000; Reichmann and Kirkbride, 2008; Raitanen, 2012; Chen, 2009; Ciani, 2013).

Furthermore, mothers who are in their first pregnancy have high expenses than others. It could be assumed that with the experience of the previous pregnancies, mothers may be able to adapt measures to reduce their OOPE.

Spearman rank correlation test showed that there was a positive, yet statistically not significant correlation between total monthly household income and the OOPE in the first trimester ( $r=0.011$ ,  $p=0.704$ ). However, the correlation between monthly household expenditure and the OOPE was also positive and statistically significant ( $r=0.059$ ,  $p=0.034$ ).

### **Sources of Financing for Health Expenses**

During the first trimester of pregnancy, mothers and the family have to bear health costs due to clinic visits and unexpected expenses for major health issues and emergencies. Following table shows the sources of money and the amounts allocated for out-of-pocket health expenses

Most of mothers draw money from the money allocated for day-to-day transactions and from their savings. Some mothers have to move money from investments, sell their assets (eg; gold), and from insurance. In addition, some mothers have to depend from others; by getting informal loans, aids and from the employer.

**Table 3: Sources of financing for health expenses**

Source/allocation of money	Number of mothers (%)	Amount (LKR)	
		Mean (SD)	Median (IQR)
From transcation allocation (kept for day-to-day transactions)	323 (25.2%)	4,297.69 (7,314.43)	2,500.00 (1,000.00-5,000.00)
From savings (kept for emergencies)	181 (14.1%)	4,951.10 (7,673.23)	2,500.00 (1,000.00-5,000.00)
From investment allocation (kept for invesiting in businesses)	16 (1.2%)	10,443.75 (13,165.26)	5,000.00 (3,000.00-13,500.00)
From informal loans	15 (1.2%)	12,035.71 (22,953.52)	5,000.00 (3,000.00-10,000.00)
From financial aids	10 (0.8%)	1,833.33 (661.44)	2,000.00 (1,500.00-2,000.00)
By selling assets	7 (0.5%)	16,166.67 (18,540.95)	8,000.00 (5,000.00-25,000.00)
From employer	8 (0.6%)	12,228.57 (17,325.29)	5,000.00 (2,800.00-12,000.00)
By covering insuarance	1 (0.1%)	-	-

Source: Authors' estimations

## Conclusion

Among the study sample, approximately one sixth of the mothers are employed and most of them are employed in the government sector. The mean OOPE during the first trimenster is LKR 2,495.58, which accounts for 4.8% of the monthly household income. Among the deferent income groups, the lower income groups has higher share (11.4%)

of OOPE over household income than others. According to the OOPE classification, direct health care cost has a higher portion than the direct non-medical cost during the early pregnancy. Employment status, having maternal morbidities and the first pregnancy are identified as significant associated factors of high OOPE during the early pregnancy ( $p < 0.1$ ). Further, monthly household expenditure is significantly associated with early pregnancy OOPE ( $p < 0.05$ ). The source of money comes from different allocations of the household; from transaction, savings, investments, and by selling assets.

Hence, the study findings highlight that even in the background of a free health care policy in Sri Lanka; OOPE during early pregnancy is high. Thus, further exploratory studies are needed to identify reasons for OOPE associated with maternal health care to further improve the maternal health service provision in Sri Lanka.

**Keywords:** *Anuradhapura, Cost, Early Pregnancy, Free Health, Out-of-pocket Expenditure*

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## **AGE – POVERTY NEXUS: IS IT NON-LINEAR? EVIDENCE FROM SRI LANKA**

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### **Introduction**

Poverty defined as pronounced deprivation in well-being, where well-being can be measured by an individual's possession of income, health, nutrition, education, assets, housing, and certain rights in a society such as freedom of speech (World Bank, 2000), has been recognized as one of the key development issues especially in developing countries. Sri Lanka is one the South Asian countries widely appreciated because of declining poverty rates, especially during last two decades. According to the Department of Census and Statistics of Sri Lanka, the poverty headcount index declined from 28.8% in 1996/96 to 4.1% by 2016. Moreover, in 2002, approximately 3,841,000 people were in poverty. In 2016, this had decreased 843,913. However, regional poverty disparity is significantly higher in Sri Lanka as estate and rural sectors account for remarkably higher poverty incidence compared to urban sector.

### **Objectives of the Study**

Studies such as Coulombe & McKay (1996), Amarasinghe et al. (2005), Gunewardena (2007), Ranathunga (2010), Sinnathurai & Březinová (2012), Ranathunga & Gibson (2014) and Jayathilaka *et al.* (2016) have examined the determinants of poverty in the context of Sri Lanka. However, they have assumed that there is a linear relationship between age and poverty. The linear relationship between age and poverty is not realistic most of the time. Moreover, empirical evidences on the link between age and poverty are mixed and inconclusive. Therefore, the current study aims to recognize the nature of association between age of the head of household and probability of being income poor and multidimensional poor in the context of Sri Lanka. Apart from that, other household determinants of poverty are also expected to recognize.

### **Methodology**

The analysis utilises HIES (2016) data from DCS Sri Lanka. HIES (2016) is the most comprehensive survey in Sri Lanka conducted every three years and HIES (2016) surveyed 21,756 households. Table 01 below indicates the explanation of variables.

**Table 01. Explanation on Independent Variables**

<b>Name of Independent Variables</b>	<b>Explanation</b>	<b>Type of variable</b>	<b>Categories of Categorical Variables</b>
<b>Age</b>	Age of the head of household	Continuous	-
<b>Age^2</b>	Square of the age of the head of household	Continuous	-
<b>HH Size</b>	Number of members of the household	Continuous	
<b>Gender</b>	Gender of the head of household	Dummy	1 – Male 0 – Female
<b>Ethnicity</b>	Ethnicity of the head of household	Dummy	0 – Sinhalese 1- Sri Lanka Tamil 2 – Indian Tamil 3 – Sri Lanka Moors 4 – Burgher
<b>Civil Status</b>	Civil status of the head of household	Dummy	0 – Unmarried 1 – Married 2 – Widowed 3 – Divorced 4 – Separated
<b>Education</b>	Level of education of the head of household	Dummy	0 – No Schooling 1 – Primary 2 – Secondary 3 – Tertiary 4 – Degree of above
<b>Employment Status</b>	Employment status of the head of household	Dummy	0 – Unemployed 1 – Government 2 – Semi-government 3 – Private 4 – Employer 5 – Self-employed 6 – Family worker
<b>Have Agri_Land</b>	Whether the household has agricultural lands	Dummy	1 – Yes 0 – No

<b>Disable</b>	Whether head of the household is disable	Dummy	1 – Yes 0 – No
<b>Have Remittances</b>	Whether household receive remittances	Dummy	1 – Yes 0 – No
<b>Sector</b>	Geographic sector of the household located	Dummy	0 – Urban 1 – Rural 2 – Estate
<b>Survey Year Dummy</b>	Year of the survey conducted	Dummy	0 – 2012/13 1 – 2016
<b>Province</b>	Province of the household located	Dummy	0 – Western 1 – Central 2 – Southern 3 – Northern 4 – Eastern 5 – North-western 6 – North-central 7 – Uva 8 – Sabaragamuwa

Source: Created by authors

A Probit model was employed to examine the correlates of both income and multidimensional poverty given the binary dependent variables. The general model that is estimated is:

$$Y (y = 1 \text{ or } y = 0)_i = \beta_0 + \beta_1 X_i + U_i$$

If  $Y_i$  is the poverty variable which takes the value of 1 if a household is deemed poor and zero otherwise.  $X_i$  is a vector of independent variables. The above equation was econometrically estimated to recognize determinants of both income and multidimensional poverty. Dependent variable related to income poverty was constructed by considering the Official Poverty Line (OPL) related to 2016 HIES (Rs. 4166). If monthly expenditure of any person is less than Rs. 4166, then that household is considered as a poor household. In contrast, multidimensional poor were recognized based on the Multidimensional Poverty Index (MPI) which has three dimensions (Health, Education and Living Standard) and ten indicators. People who experience deprivation in at least one third of these weighted indicators fall into the category of multidimensionally poor.  $r$

The determinants of income and multidimensional poverty were also examined by increasing the Official Poverty Line (OPL) and the deprivation score by 25% in order to check the robustness of the determinants of poverty.

Determinants	Poor (2016)	Poor (+25%) (2016)	Multidimensiona l Poor (2016)	Multidimensiona l Poor (+25%) (2016)
	dy/dx	dy/dx	dy/dx	dy/dx
Age	-0.0018*** (0.0006)	-0.0036*** (0.0008)	-0.0015*** (0.0004)	-0.0006*** (0.0002)
(Age) <sup>2</sup>	0.000013* * (0.0000)	0.000029** * (0.0000)	0.000011** (0.0000)	0.0000047** (0.0000)
Household Size	0.0134*** (0.0008)	0.0285*** (0.0011)	-0.0083*** (0.0007)	-0.0022*** (0.0004)
<b>Gender (Female is the reference group)</b>				
Male	-0.0096** (0.0044)	-0.0149** (0.0062)	0.0035 (0.0031)	0.0019 (0.0015)
<b>Ethnicity (Sinhalese is the reference group)</b>				
Sri Lanka Tamil	0.0259*** (0.0031)	0.0495*** (0.0047)	0.0104*** (0.0028)	0.0020 (0.0014)
India Tamil	0.0146* (0.0076)	0.0273** (0.0115)	0.0116** (0.0116)	0.0018 (0.0026)
Sri Lanka Moors	-0.0005 (0.0048)	0.0051 (0.0069)	0.0145*** (0.0036)	0.0015 (0.0020)
Burgher	Omitted	Omitted	0.0177 (0.0234)	Omitted
<b>Civil Status (Never Married is the reference group)</b>				
Married	-0.0101** (0.0050)	-0.0239* (0.0144)	-0.0121** (0.0054)	-0.0017 (0.0023)
Widowed	-0.0229**	-0.0348** (0.0150)	-0.0102* (0.0056)	-0.0020 (0.0025)
Divorced	-0.0451	-0.0722** (0.0352)	0.0032 (0.0112)	0.0034 (0.0045)
Separated	-0.0029	0.0030 (0.0175)	0.0021 (0.0067)	-0.0008 (0.0033)
<b>Education (No Schooling is the reference group)</b>				
Primary	-0.0158***	- 0.0436*** (0.0076)	-0.0133*** (0.0029)	-0.0037*** (0.0013)
Secondary	-0.0439***	-0.1004*** (0.0076)	-0.0522*** (0.0036)	-0.0136*** (0.0021)
Tertiary	-0.0951***	-0.1876*** (0.0115)	-0.0645*** (0.0078)	Omitted
Degree or above	Omitted	-0.1997*** (0.0263)	Omitted	Omitted
<b>Employment Status (Unemployed is the reference group)</b>				
Government	-0.0247*** (0.0091)	-0.0605*** (0.0127)	Omitted	Omitted
Semi-government	-0.0196* (0.0119)	-0.0423** (0.0165)	-0.0074 (0.0105)	0.0020 (0.0045)
Private	0.0064 (0.0041)	0.0181** (0.0060)	0.0002 (0.0035)	0.0002 (0.0022)

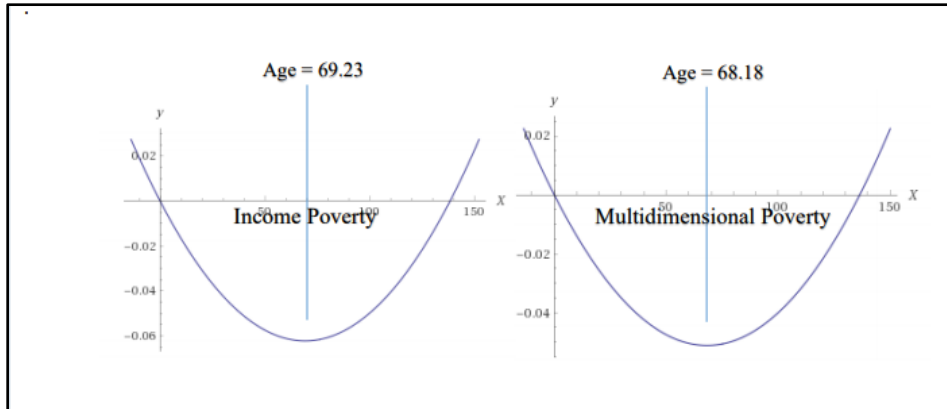
<b>Employer</b>	Omitted	-0.1697*** (0.0368)	Omitted	Omitted
<b>Self-Employment</b>	-0.0086** (0.0043)	-0.0063 (0.0061)	-0.0045 (0.0039)	-0.0029 (0.0028)
<b>Family Worker</b>	0.0012 (0.0165)	0.0127 (0.0236)	Omitted	Omitted
<b>Having Agriculture Lands (Not Having is the reference group)</b>				
<b>Have Agri land</b>	0.0023** (0.0000)	0.00001** (0.0000)	-0.0000321** (0.0000)	0.0000 (0.0000)
<b>Disability (None of Household Member is Disable is the reference group)</b>				
<b>Disable</b>	0.0124** (0.0049)	0.0185** (0.0073)	0.0665*** (0.0034)	0.0153*** (0.0024)
<b>Remittances (No Remittances is the reference group)</b>				
<b>receive Remittances</b>	-0.0264*** (0.0059)	-0.0512*** (0.0081)	-0.0146*** (0.0045)	-0.0039 (0.0027)
<b>Sector (Urban is the reference group)</b>				
<b>Rural</b>	0.0324*** (0.0049)	0.0802*** (0.0070)	0.0073** (0.0036)	0.0038 (0.0024)
<b>Estate</b>	0.0211*** (0.0082)	0.0772*** (0.0121)	0.0175*** (0.0058)	0.0045 (0.0032)
<b>Prob &gt; chi2</b>	0.0000	0.0000	0.0000	0.0000
<b>Pseudo R<sup>2</sup></b>	0.1465	0.1556	0.4123	0.3990
<b>Number of Observations</b>	21,756	21,756	21,756	21,756

Source: Calculated by authors based on HIES (2016).

## Results and Discussion

Table 02 above indicates that age of the head of household is an important correlate of household poverty. Moreover, considering column two and four, a non-linear relationship between age and income and multidimensional poverty is observed respectively since the estimated coefficients on both the 'Age' and '(Age)<sup>2</sup>' variables are statistically significant. It implies that households' probability of being poor decreases up to some extent with age of the head of household and thereafter increases with the age.

This finding is consistent with the findings of Coulombe & McKay (1996) and De Silva (2008) in the context of Mauritania and Sri Lanka, respectively. As figure 01 depicts, the probability of being both income and multidimensional poverty increase with age after age-thresholds 69.23 and 68.18 years respectively.



Note: X-axis in the graph indicates age of the head of household.

Source: Created by authors based estimated Probit Regression

**Figure 01: Non-linear Relationship between Age and Poverty**

Specifically, it implies that the probabilities of being income poor and multidimensionally poor decrease with age till 69.23 years and 68.18 years respectively and increase after that. In fact, older people are more likely to suffer from health issues and are less likely to engage with the workforce. Specifically, Sri Lanka's retirement age is generally 60-65 years.

In addition to age, factors such as household size, household with members with a disability and having a female-headed household, ethnicity, education, employment status, having agricultural lands, receiving remittances, disability nature of the head of household and location of living are also recognized as key determinants of household poverty in Sri Lanka. These findings are consistent with De Silva (2008), Gunatilaka *et al.* (2010), Deepawansa *et al.* (2011), Ranathunga & Gibson (2014) and Jayathilaka *et al.* (2016). Moreover, the estimated models are overly statistically significant and also have considerably higher pseudo  $R^2$  values.

### Conclusions and Recommendations

The results clearly indicates that there is a non-linear relationship between the age of head of household and the probabilities of being income and multidimensional poverty in Sri Lanka. Moreover, the study determines that the probabilities of being income poor and multidimensionally poor decrease with age till 69.23 years and 68.18 years respectively and increase after that. Hence, the households which headed by the people over 68 years have higher probability of being poor. Apart from that age, other households factors such as size of

household, education, ethnicity, employment status, marital status, sector of living (urban, rural and estate), disability nature of the head of household, having agricultural lands and receiving remittances are also recognized as crucial drivers of both income and multidimensional poverty in Sri Lanka. The study strongly recommends implementing appropriate policies and safety net programs which focus on the households which are headed by elderly people.

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## **Transferring Agricultural Technology**



## **OPPORTUNITIES AVAILABLE AND CONSTRAINTS FACED BY PADDY FARMERS TO USE ECO-FRIENDLY TECHNOLOGIES DEVELOPED AGAINST THE CHEMICAL FERTILIZER**

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### **Introduction**

Sri Lanka is facing serious socio-economic and environment-ecology related problems pertaining to the use of chemical fertilizer (CF). For example, from one hand, these reduce the soil fertility drastically as farmers use to apply CF in excessive amounts in agricultural lands. Not only that but also foreign expenses occur in Rs. multimillions to import CF into the country every year, on the other hand. In fact, a large percentage of CF imported has been used in the paddy farming (Herath *et al.*, 2015). All these stresses the importance of transforming to an “organic culture” in farming. This study reveals the outcome of a farmer perception analysis with regard to the use of two specific Eco-Friendly Technologies (EFTs) developed for paddy farming in order to minimize the usage of inorganic fertilizer, including “Bio-fertilizer” (BF) and “Bio-char” (BC). The former was formulated using microbial inoculants that improve nutrient availability in soils and the latter was produced from rice husk using simple pyrolysis technique (Dharmakeerthi, 2015).

### **Research problem**

Introducing those EFTs produced to the market so that they can perform better over and above the CF can be considered as a crucial decision to make. In addition to those chemical and physical analyses, conducting of complete socio-economic assessments on the opportunities available for and the constraints faced by farmers and other key stakeholders using these products is of paramount importance. In the light of this, this study attempted to fulfil that gap in the literature.

## Objectives

The main objective of this study was to assess the perceptions of paddy farmers who are currently engaged with the adoption of certain EFTs, including the ‘Bio-fertilizer’ - developed utilizing Plant Growth Promoting Rhizobacteria to stimulate nutrient accumulation, and ‘Bio-char’ - used to produce slow release Nitrogen fertilizer to improve soil fertility and reduce CF usage, where the opportunities available for (i.e. “potential benefits”) and constraints faced by those adopters in replace of chemical fertilizers were of special interest.

## Methodology

**Table 1. Attitudinal Statements Classified Under the Six Criteria**

Criteria	Notation	Statement	MIS
(1) Regulation (REG)	REG1	Guidance and advice needed in handling the product package (ex- through agrarian service centers, agriculture instructors)	2.57
	REG2	Need of prior knowledge and acceptance of regulatory bodies on field conditions and technology	-3.44
	CST1	Management of the workload associated with the use of EFTs	3.35
	CST2	Labor requirement and management	3.53
(2) Cost of Application (CST)	CST3	Need of using heavy machinery to support the procedure of applying EFTs in the field	2.40
	CST4	Storage cost and space requirement for the EFTs	2.35
	CST5	Wastage/ over utilization of resources	3.83
	CST6	Expenses related to soil treatments to maintain soil health and fertility	3.85
(3) Effect on the Environment (ENV)	ENV1	Potential damage to the surrounding environment	3.57
	ENV2	Possible human wellbeing and safety matters resulted by the use of EFTs	3.66
	ENV3	Priority given to the eco system safety and sustainability	3.60
	ENV4	Disposal of waste materials after use of EFTs	3.19
(4) Expected Performance (PER)	PER1	Possibility of improving productivity of paddy fields	3.53
	PER2	Chances of enhancing predictability of paddy production	3.49
	PER3	Ability to be integrated with other technologies in paddy farming	3.10
	PER4	Capability of forecasting the optimum fertilizer recommendations for paddy fields based on external conditions. (rain, temperature)	3.25
(5) Availability of Related Services (SER)	SER1	Requirement of external services to get information on whether to decide on EFT application	-3.54
	SER2	Need of abundance in technology with the related farmer communities to apply EFTs	2.55
(6) Level of Acceptance (ACP)	ACP1	Risk level of diminishing the current yield	2.90
	ACP2	Durability of EFTs after opening the package	3.33

Source: Author's estimation

Identification of key areas on which the farmer perceptions to be examined was based on “Expert Perception Analysis” carried out by Chandrasiri *et al.* (2018). There were 20 attitudinal statements derived to represent six major criteria given in Column (1) of Table 1 above.

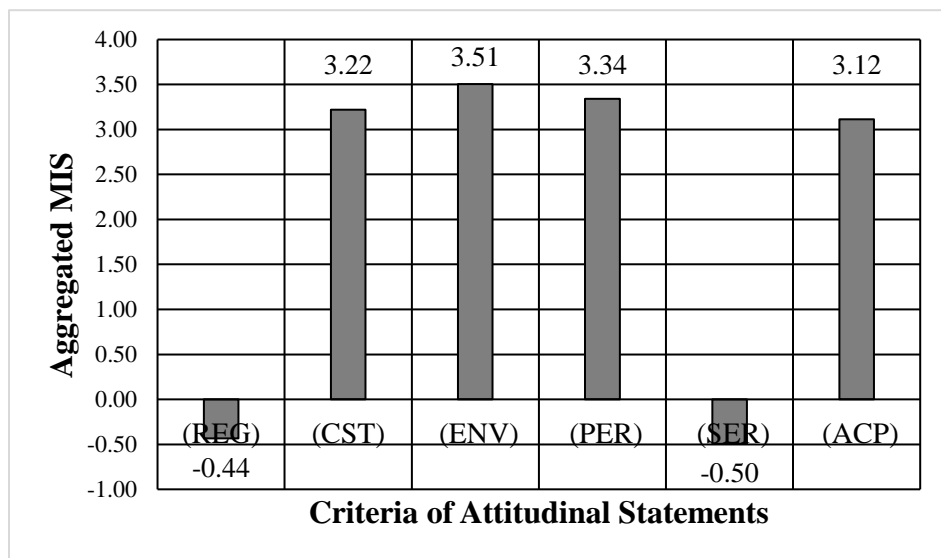
## Results and Discussion

### Descriptive Statistics of the Sample

The majority of farmers were males (71%) between the ages of 35 to 65 years. Almost two thirds (64%) of them had experience over 20 years in paddy farming and the use of fertilizers and other agronomic practices. The highest education level for most of them (40%) was the GCE (O/L) and the majority of farmers own and operate with 2 to 5 acres of land.

### Identification of opportunities and constraints

The MIS values derived for 20 statements were reported in last column in Table 1. The Aggregate MIS for 6 Criteria in concern were illustrated in Figure 1.



Source: Authors' illustration

**Figure 1. Aggregate Mean Importance Score**

As the values of MIS taken into account individually, the five key areas in concern include expenses required to maintain soil health (CST6), reducing wastage of materials (CST5), better conditions on human and environmental well-being (ENV2), priority given to the eco-systems (ENV3) and controlling

potential damage to the surroundings (ENV1). It highlights that the farmers consider those positive and negative effects of EFTs vs. CF on Environment (ENV) in the first place (i.e. 3.51). In fact, they have recognized the EFTs as an opportunity to minimize the damages arising from CF to the environment. The expected Performance (PER) was taken as the next most important criterion, where the respondents, in general, valued EFTs over and above the CF (3.34). Cost (CST) has also considered important (3.22), and they believed that EFTs would be able to reduce the cost of applications of fertilizer significantly, unless 'subsidies' and other incentives alter the markets. Two criteria were considered poorly perform with regard to the use of EFTs, i.e. Regulation (REG) (- 0.44) and related Services (SER) (-0.50) highlighting that they are "in favour of" CF at present.

### **Conclusions**

The outcome of the analysis, which uses the perceptions of paddy farmers on opportunities available and constraints faced in terms of the use of EFTs against the CF, highlights the fact that they "truly value the good side of" those EFTs, especially their positive effects on the environment and performance. Yet, they are clearly concerned about the economic aspects associated with moving into the adoption of such technologies, because, at present, they judged that the existing regulatory and facilitative policy environment to adopt those EFTs is not encouraging. In the light of this, it is important that public regulatory institutions and others stand for EFTs should generate both short-term and direct private and market-based incentives, over and above their counterpart, for farmers to shift into those EFTs.

**Keywords:** *Chemical fertilizer, Constraints; Eco-Friendly Technologies; Perceptions, Paddy Farming*

### **Acknowledgement**

The National Research Council (NRC) of Sri Lanka for financial assistance under the project: 'Development of Eco-Friendly Farming Technologies to Minimize Inorganic Fertilizer Usage While Maintaining Adequate Productivity and Improving Soil Fertility' (NRC-TO 16-07) and all the respondents for their valuable contribution to provide data/information.

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## **AGRI-TECHNOLOGY ADOPTION IN THE CONTEXT OF SRI LANKA: A RELATIONAL STUDY**

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### **Introduction**

Non adherence to timely structural reforms is one of the causes for the economic stagnation of the country. In order to circumvent the middle-income trap and achieve high income status, it is essential to expedite the necessary reforms whilst focusing on improving productivity and efficiency. During the 2018/2019 period, the growth of agriculture related economic activities recorded only 0.4 percent and contribution to the country's GDP was stagnant around Rs.170Bn, whereas the Sri Lanka prosperity index has been increased to 0.783 in 2018 (CBSL, 2020a; CBSL 2020b). Although the production of several agricultural crops including paddy were increased in 2018; tea, rubber, fisheries and sugar production were declined while the agricultural sector accounted for one fourth of the employed population of the country (CBSL, 2019). Therefore, the necessity of high labor requirement could be addressed whilst improving productivity with a higher level of adoption of agri-technology (AAT).

### **Research Problem**

Numerous research studies have highlighted that in the Sri Lankan context, AAT is considerably low (Athambawa et al., 2011 & 2017). Nevertheless, there had been the introduction of various production technologies and management techniques time to time (Athambawa et al., 2017; Beevi et al., 2017). Hence, this study postulated to identify primarily the effect of innovation (INO) and perceived ease of use (PEOU) on the adoption of agri-technology (AAT).

### **Objectives**

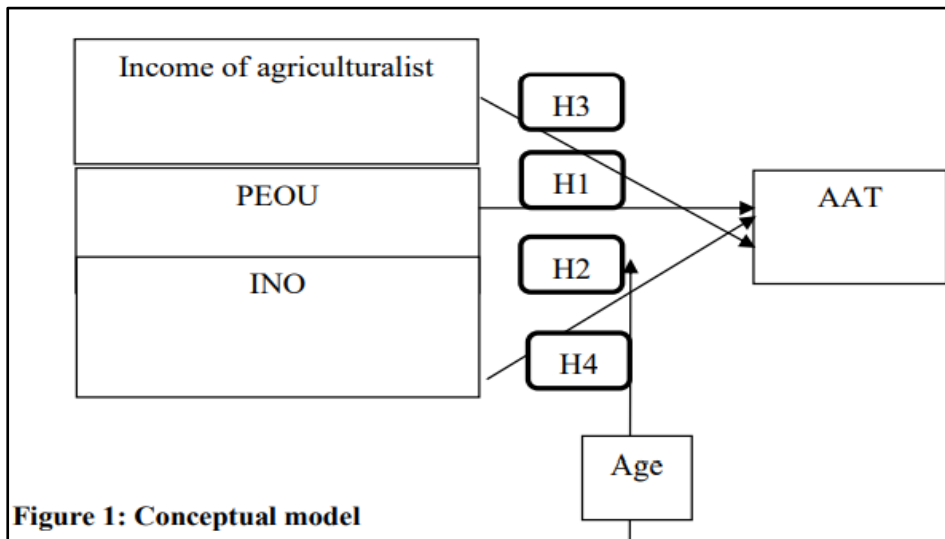
To identify the effect of INO on AAT

To evaluate the influence of PEOU on AAT

To identify any differences/similarities in AAT, considering different income categories of agriculturalists.

To evaluate the moderation effect of age in between relationship of INO & AAT.





Technology acceptance model (TAM) has been used to explain technology adoption in different sectors such as e-banking, education, tourism, healthcare, agricultural and etc. in which there are two main variables namely, PU and PEOU (Bagozzi, Davis & Warshaw 1992). Several researches supported the prevalence of a positive relationship between PEOU and the adoption of technology in different fields including agriculture (Nayanajith et al., 2020; Verma & Sinha, 2016). Compatibility, relative advantage and simplicity constructs indicated a positive relationship towards technology adoption (Moghaddam & Salehi, 2010; Tornatzky & Klein, 1982). The attributes related to demographic factors such as: gender, age, educational level, and monthly income were significantly influential variables on the acceptance of innovative services (Gayan Nayanajith et al., 2019). There are moderating effects of demographic variables such as respondents' age towards the adoption of technology with regard to e-services (Yu, 2012; Yoon & Occeña, 2015). Accordingly following hypotheses were proposed,

H<sub>1</sub>1- PEOU and AAT are positively related

H<sub>1</sub>2- INO and AAT are positively related

H<sub>1</sub>3- AAT between lower income category agriculturalists and higher income category agriculturalists, is different.

H<sub>1</sub>4- Age moderates the relationship of INO and AAT.

## Methodology

Deductive methodology and quantitative method, have been followed. A questionnaire survey was conducted and respondents were selected on a multi-level cluster sampling method as per provinces/districts and major cities (Nevertheless, only the Western, Uva and Southern provinces were considered for the sample selection). Data collected via self-administered questionnaires from the individual respondents. 400 questionnaires were distributed and 271 duly completed questionnaires (67.75%) were considered for the final data analysis. INO is a latent variable and there are several constructs that determine the INO such as relative advantage, simplicity, trialability, observability and etc. Hence, PCA was conducted on 24 items of INO. Subsequently, reliability analysis was performed using Cronbach's alpha. To determine the relationship, Pearson's correlation coefficient was used. Hierarchical regression analysis was performed to investigate the coefficients and explainability of the model. ANOVA with planned contrasts used to determine the differences in AAT in different income categories. The trend was determined by the ANOVA trend analysis. Similarly, Hayes' process was used to analyze the moderating effect.

## Results and Discussion

IBM SPSS version 20 with Hayes's process version 3.4 was used for analysis. The initial analysis demonstrated that most of the demographic characteristics of the population are being replicated by the sample.

Principle component analysis (PCA) was conducted on the 24 items of INO variable with orthogonal rotation. The rotation method used was varimax. KMO measure and Bartlett's test of sphericity  $\chi^2$ , were performed (Field, 2017). Scree plot and Kaiser's criterion were also checked. Table 1 shows the factor loadings and identification of the components of INO.

**Table 1: Summary of PCA results of INO items (N=271)**

	Rotated factor loading			
	Relative advantage	Simplicity	Trialability	Observability
No. of items	8	8	4	4
Eigen values	7.32	1.91	1.32	1.24
Percentage of variance	31.40	7.91	5.82	5.77

Note: Only the factor loadings over 0.5 given in the table

Source: Authors' estimation

Cronbach's alpha values were higher than 0.7 for INO, PEOU and AAT. Subsequent, Pearson correlation analysis revealed that AAT indicates a positive relationship with both INO ( $r = 0.875$ ) and PEOU ( $r = 0.916$ ) variables whilst both the relationships were significant at .01 level (1-tailed).

Afterwards, a multiple regression analysis was conducted using a hierarchical method to predict the degree to which independent variables; PEOU and INO affect AAT (Table 2). In accordance with model 1, the overall variance of AAT explained by INO is 76.2% as per the adjusted R square figure and model 1 is statistically significant.

In accordance with model 2, the overall variance of AAT explained by INO and PEOU is 87.4% and model 2 is also statistically significant. To determine the cases which are influencing the regression model, case-wise diagnostics were checked and are in order.

In line with the correlation findings, regression results also supported the significant positive relationship of INO and PEOU on AAT in the present research context, as per the significant beta values shown in the table supporting both the first and second hypotheses.

**Table 2: Regression output**

	<i>t</i>	<i>Sig.</i>	$\square$	<i>F</i> Change	<i>df</i>	<i>Sig.</i> <i>F</i> Change e	Adj. <i>R</i> <sup>2</sup>
Model 1				881.14	1	0.000	0.765
(Constant)	26.29	0.000	2.108				
INO	29.68	0.000	0.621				
Model 2				232.27	1	0.000	0.874
(Constant)	17.29	0.000	1.339				
INO	08.62	0.000	0.249				
PEOU	15.24	0.000	0.496				

Dependent variable: AAT

Source: Author's estimation

In order to examine the third hypothesis, one-way ANOVA with planned contrasts was performed. There was a significant effect of income on AAT,  $F(2, 268) = 244.01$ ,  $p < 0.05$ ,  $\omega = 0.80$ .

Secondly, there was a significant linear trend as well,  $F(1, 268) = 459.97$ ,  $p < 0.01$ ,  $\omega = 0.78$ , indicating that as the income increases AAT also increases proportionately. Finally, planned contrasts revealed that having a higher income (middle and high-income levels) significantly increased AAT compared to having a lower income,  $t(268) = 21.80$ ,  $p < 0.05$  (1-tailed),  $r = 0.80$ , and that having a high income significantly increased AAT compared to having a middle-income,  $t(268) = 10.53$ ,  $p < 0.05$  (1-tailed),  $r = 0.54$  (lower income group; income less than Rs.50,000/-, higher income group contains both the middle-income group-Rs.50,000/- to Rs.100,000/- and high-income group-above Rs.100,000/-).

Moderation analysis has demonstrated a moderation effect attributable to the significant interaction of INO and age, and the interaction is highly significant,  $b = -0.23$ , 95% confidence interval (CI) (-0.32, -0.14),  $t = -5.09$ ,  $p < 0.01$ , indicating that the relationship between INO and AAT is moderated by age whilst supporting the fourth hypothesis. Elaborating that the relatively younger agriculturalists (aged less than 25 years), there is a significantly higher positive relationship exists between INO and AAT,  $b = 0.77$ , 95% CI (0.69, 0.85),  $t = 19.32$ ,  $p < 0.01$ .

## Conclusion

The significance of the research is that the contribution to practical aspects of AAT, particularly in the developing country's perspective by incorporating interrelated models on technology adoption and innovation. Data analysis supported the hypotheses. Hence, as suggested by the findings which are in line with the previous researches, it could be noted that in order to facilitate a higher level of adoption in agri-technology, it is paramount to concentrate more on uplifting the perceived ease of use feature among the agriculturalists in tandem with innovation aspect concurrently, whilst a particular emphasis is being given to relative advantage, simplicity, trialability and observability concerns of the agriculturalists (Tsai et al., 2018). Therefore, it is recommended to the marketers of agri-technology service providers, to capitalize on agriculturalists' awareness on PEOU in conjunction with innovation characteristics such as relative advantage, in particular. Research findings are beneficial for the agri-technology service providers to execute segmenting, targeting and profiling their customers with the assistance of previously discussed factors alongside differentiation on demographic characteristics. Due to time and resource constraints, research is limited to a cross-sectional, quantitative study. Finally, it is proposed to conduct qualitative studies for in depth analysis of the discussed aspects in search of novel findings.

**Keywords:** *Agriculture; Income, Innovation; Sri Lanka; Technology*

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## **STAKEHOLDER PREFERENCES ON PROMOTIONAL INSTRUMENTS TO PRODUCE AND UTILIZE ORGANIC FERTILIZER**

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### **Introduction**

Negative impacts associated with high and indiscriminate use of chemical fertilizer in agriculture, in particularly on the environment are reported in the recent years. Further, cost of imports of chemical fertilizer has become a huge burden to the government. For example, the total import bill for importing chemical fertilizer to Sri Lanka in 2018 was US\$ 262 million (Annual Report of Ministry of Finance, 2018).

Globally, the production and marketing of organic food and agricultural inputs have been expanded remarkably over the past years. The common term of ‘organic fertilizer’ is predominantly in use to demarcate one of the key inputs utilized in organic systems and with the concepts like smart agriculture. The use of organic fertilizers as a key input has become increasingly popular among the farming communities. This is considered as a result of changes to the perceptions of stakeholders in the agri-food value chains over and above that for chemical fertilizers.

Revealing of factors that trigger or constraint the transformation from ‘chemical fertilizer’ to a culture of production and utilization of ‘organic fertilizer’ is warranted, because a better understanding of stakeholder perceptions on promotional instruments.

This is important in any attempt to promote the production and use of organic fertilizer profitably and sustainably. Further, such understanding can foster a better discussion of the reasons that currently constraint the production of a ‘standardized organic fertilizer’, and to formulate an appropriate policy environment facilitating such action.

## **Research Problem**

Continuous use of chemical fertilizers causes numerous adverse effects to the environment. Accepting new agricultural technologies that support shifting from the chemical fertilizer-based agriculture to an organic agriculture system can be considered as an answer to mitigate significant negative impacts associated with current practices. In this regard, there exists a gap about the most preferred promotional instruments by stakeholders in the organic fertilizer value chain, and this study attempted to fulfil that gap in the literature.

## **Objectives**

The objective of this study was to assess the perceptions of stakeholders along the organic fertilizer value chain for identifying the most preferred promotional instruments in the production and use of standard organic fertilizer.

## **Methodology**

The first step towards empirical analysis was to select a comprehensive list of promotional instruments and include them into an appropriate theoretical framework. A systematic review of literature from both local and global point of view was carried out in this connection.

A structured questionnaire was formulated and personal interviews were conducted with 140 key stakeholders associated with the organic fertilizer value chain covering the Western and North-Western provinces in Sri Lanka. In this process, an emphasize was paid to deal with 'information-rich cases', and to fulfill this requirement, the purposive sampling techniques were adopted to select the respondents. In addition to the structured questions on demographic and other vital information on characteristics of organic fertilizer and different agricultural practices, the questionnaire was supplemented with 20 attitudinal statements explaining various promotional instruments work in this connection. Each statement was evaluated against a 10-point Likert scale ranging from 'extremely unimportant' (0) to 'extremely important' (10).

The data from all respondents on these statements (i.e. 140 x 20 matrix) were subjected to the Confirmatory Factor Analysis techniques, including the tests of 'Scale Reliability' and the 'Unidimensionality' (Jayasinghe-Mudalige and Henson, 2006) to test for their 'Validity' and 'Reliability'. Once they were established, the responses were used to derive a Mean Opinion Score (MOS) for each statement.



## **Results and Discussion**

### **Descriptive Statistics of the Sample**

Eight two percent of respondents were Males. Over 35 years of age and studied up to GCE (A/L) were the majority recording 85% and 36% respectively. Out of the seven types of stakeholders (Producer, value addition, storage, wholesaler, retailer, farmer, extension service) in the sample, 29 percent of them hold two or more positions in the organic fertilizer value chain and 53% percent of respondents have been engaged in the practices over 10 years.

### **Outcome of Exploratory Factor Analysis**

The output of Scale Reliability Analysis reveal that the Cronbach's Alpha value was 0.9. This reflects the fact that those scales were "internally consistent", since this value was greater than 0.7 to make that claim (Nunnally, 1978). The value from Kaiser-Meyer-Olkin (KMO) test was 0.85 (i.e.  $\geq 0.5$ ) and it confirmed that the sample is adequate. The Bartlett's Test of Sphericity with significant level of  $p < 0.005$  confirms that the variables have "patterned relationship".

Based on the Eigen values ( $\geq 1$ ) and an outcome of Scree Plot, there were four significant factors which explained 81.4% of the variance of promotional instruments (Table 1).

### **Outcome of Mean Opinion Scores (MOS)**

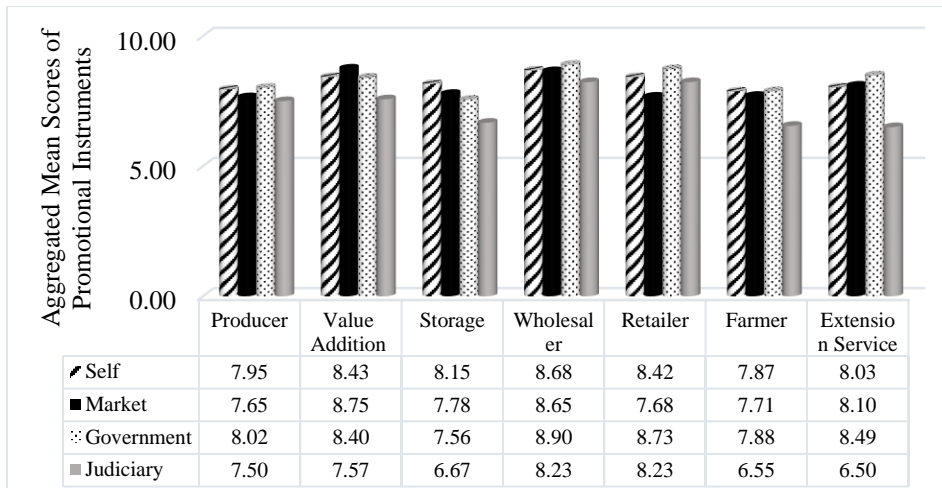
When considering the MOS values without separating data into the types of stakeholders, 'Capacity building / Training' (8.74) was the most preferred promotional instrument by stakeholders. This was followed by 'Better communication on research findings in farmer- friendly language' (8.59) and 'Information on market / price conditions' (8.56).

Based on the Aggregated Mean Score values of promotional instruments, Producers (8.02), Wholesalers (8.90), Retailers (8.73), Farmers (7.88) and Extension service providers (8.49) showed their highest preference for those promotional instruments oriented from the 'Government' (Figure 1). Nevertheless, those stakeholders in the value addition sector, especially at the higher orders, highly favored on 'Market' oriented promotional instruments (8.75) and those very much concern on the storage facilities were highly focused on 'Self' oriented promotional instruments (8.15).

**Table 1. Outcome of exploratory factor analysis**

Statement	Factor Number	Eigenvalue	Label	Factor Loading
1. Information on weather/ climate conditions	1	1.96	Self	0.64
2. Storage facilities				0.63
3. Waste disposal mechanism				0.57
4. Processing facilities				0.56
5. Investment in knowledge acquisition				0.55
6. Information on market/price conditions	2	1.49	Market	0.54
7. Price volatility				0.53
8. Establish supply management system/boards				0.51
9. System for better communication among the supply chain				0.50
10. Information on variety of inputs	3	7.15	Government	0.71
11. Extension services				0.70
12. Capacity building/training				0.70
13. Agricultural credit				0.69
14. Subsidy mechanism based on organic fertilizer				0.68
15. Output price guarantee				0.67
16. Government regulations				0.66
17. Product insurance				0.64
18. Better communication on research findings in farmer-friendly language				0.60
19. Provide assistance to mitigate risk				0.59
20. Release land use restrictions	4	1.22	Judiciary	0.58

Source: Authors' estimation



Source: Authors' estimation

**Figure 1. Aggregated mean opinion score values of promotional instruments**

## Conclusions

The majority of people involved with the organic fertilizer business show their preference on 'government' oriented promotional instruments. In the light of this, we may propose that a valid and reliable national institution-based regulatory approach should be established to safeguard their wishes, however, with a minimum burden to the taxpayers. To make sure that happens, a combination of both regulatory and facilitative mechanism and tools must be placed. Therefore, it is recommended that the provision of information through private-public partnerships, and then setting up of most needed quality standards with incentive-based voluntary participation to quality assurance mechanisms. Beyond that for those who do not comply, certain mandatory regulatory standards must be established as such safeguard the soil, environment and human health protection standards.

**Keywords:** *Organic fertilizer; Promotional instruments, Stakeholder preferences*

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# **TECH-INNOVATION KNOWLEDGE AND ACQUISITION EXTENT GAPS OF TECHNOLOGICAL INNOVATION BY THE INTERNATIONALIZED TECH- BASED TEA SMES IN NUWARA ELIYA DISTRICT OF SRI LANKA**

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## **Introduction**

At present, more rapid phase of technological innovation drive is on the surface where there is a huge demand from the tech based corporate and small-scale tea enterprises in Sri Lanka as well as in the world through extension services. In Sri Lanka's context, the Tea Research Institute (TRI) undertakes research and development activities on all the aspects of tea cultivation, tech-innovation development and transfer procedures plus delivers extension services for the tea sector in Sri Lanka. By being the main body, the TRI is serving as the primary source of technical information provider to the industry where responsible for disseminating scientific info, tech info and know-how, tech-innovation and transfer to the sector.

These things are done through the extension wing of the TRI where lots of documented particulars are existed. Though these things are existed, the level of tech-innovation knowledge and the acquisition extent of these agricultural tech-innovation by the Tech- based Tea SMEs category is proportionately low hence the Nuwara Eliya District is being highly victimized as more Tech- based Tea SMEs are situated in this district (Agricultural Activities in Sri Lanka, 2018). This research study was conducted with the main objective of assessing the Tech-Innovation knowledge and Acquisition extents and gaps of recommended agricultural tech-innovation of the Tech based Tea SMEs in Nuwara Eliya District of Sri Lanka.

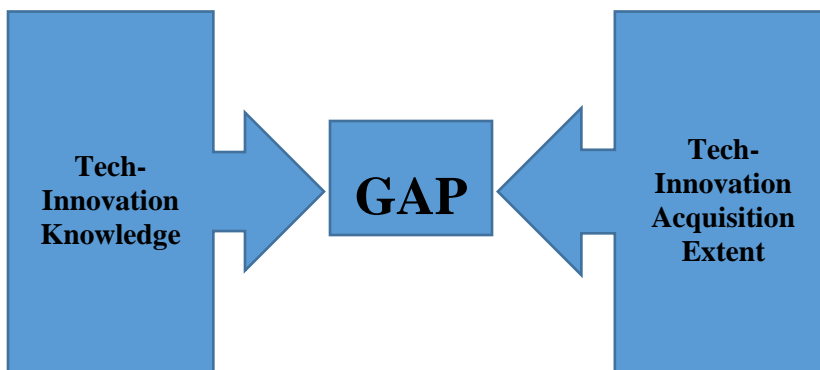
## **Main Objective**

Assessing the Tech-Innovation knowledge and acquisition extents and gaps of recommended agricultural tech-innovation of the Tech based Tea SMEs in Nuwara Eliya District of Sri Lanka.

## Methodology

The up-country tea growing region has the highest percentage (39%) of Tech based Tea SMEs hence the major proportion (48%) of the tea extent among the four regions (Up Country, Mid Country, Uva and Low Country). Due to this, the study selected the 'Up Country' category where Nuwara Eliya District comes under the main district under the 'Up Country' category where higher more concentration on tech-based Tea SMEs. Sample survey was adopted for the study. Out of the total number of 125 internationalized tech-based Tea SMEs in Nuwara Eliya District, 72 were selected. Initially, the population was stratified into two as high yielding and low yielding estates hence 27 high yielding and 40 low yielding estates were finally selected for data collection based on proportionate random sampling method. Primary and Secondary data were collected.

## Conceptual Framework



Source: Author developed

## Measurement of Tech-Innovation Knowledge and Acquisition Extent

### Tech-Innovation Knowledge

Tech-Innovation Knowledge is defined as those behaviors and test situations that emphasized the remembering either by recognition or recall of ideas, materials or phenomena. Tech-innovation knowledge is one of the important components of behavior and it plays a vital role in the acquisition extent of improved practices (Bloom et al 1985). The tech-innovation knowledge index of a respondent was calculated using the following formula

Tech-Innovation Knowledge Index = (Score Obtained by the Respondent / Possible maximum score) \* 100

Based on the scores, respondents were classified into low, medium and high in their tech-innovation knowledge level by using the cumulative frequency method based on mean and standard error. The tech-innovation knowledge levels of respondents on individual technologies were also analyzed. The agricultural tech-innovation disseminated through the extension service was used for the tech-innovation knowledge test.

### Acquisition Extent

'The utilization and the practical application of tech-innovation/practices by the internationalized tech-based Tea SMEs during the last cropping year' is operationalized under the acquisition extent. The extent of acquisition refers to the hectares in which a particular technological innovation/practice is acquired in a particular tea small or medium scale estate out of the potential extent (hectares) (Bhutia, 1975)

Extent of Acquisition = (Actual Acquisition Extent / Potential Extent for Acquisition) \* 100

Based on the field realities of the small and medium scale tea plantations, acquisition extents of tech- innovation/practices were classified into four categories and assigned a score accordingly as follows.

**Table 1: Acquisition extents of tech- innovation/practices and assigned scores**

SI No	Acquisition extent Category	Extent of Acquisition	Score
1	Full Acquisition	>60%	4
2	Partial Acquisition	20-60%	3
3	Less Acquisition	<20%	2
4	Nil Acquisition	0%	1

Source: Author developed

The acquisition extent index for individual respondents was calculated using the following formula

Acquisition Index =(Score Obtained by the Respondent/Possible maximum score) \* 100

The acquisition extent of individual technologies was analyzed to identify using a percentage analysis. Acquisition extent mean scores were also calculated for individual technologies in order to further distinguish and compare acquisition extent of individual technologies.

### **Data Analysis**

Data collected from the respondents were coded and assigned scores wherever required in order to make the data meaningful and were subjected to analyze using the following analytical procedures using SPSS 25.0. Confidence interval method was used to work out cut off points for classifying the respondents into three categories as high, medium and low with respect to their tech-innovation knowledge and acquisition extents. This was done based on mean ( $\bar{X}$ ) + or - 1.9 SE (Standard Error) as suggested by Fisher (2002) and categorized the respondents as follows:

Low Group = Below  $\bar{X} - 1.96 \text{ SE}$

Medium Group = Between  $\bar{X} - 1.96 \text{ SE}$  and  $\bar{X} + 1.96 \text{ SE}$

High Group = Above  $\bar{X} + 1.96 \text{ SE}$

Cumulative Frequency Distribution and Percentage Analysis were used to quantify low, medium and high groups and to calculate index for tech-innovation knowledge and acquisition.

An independent 't' test was performed to study the variation/compare tech-innovation knowledge and acquisition extents between Owners and Workers.

Ranking method was used to prioritize constraints based on mean scores/percentages, suggestions and other aspects studied with respect to opportunities for private extension.

### **Results and Discussion**

#### **Overall tech-innovation knowledge level of internationalized tech based Tea SME Owners and Workers**

The Table 1 depicts that 46% of internationalized tech-based Tea SME Owners and 32% of the Workers were in the high tech-innovation knowledge category whereas 21% and 33% of the Owners and Workers were in the medium level of tech-innovation knowledge, respectively. Similarly, 33% and 42% of the Owners

and Workers were in the low tech-innovation knowledge level category respectively.

**Table 1: Distribution of Owners and Workers according to the overall tech-innovation knowledge level on Technological Innovation**

SL.No	Category	Owners Percentage	Workers Percentage
1	Low	33	35
2.	Medium	21	33
3.	High	46	32
	<b>Total</b>	<b>100</b>	<b>100</b>
	Mean Awareness Index	77.84	52.09
	Mean difference(GAP)	26.87	
	't' Value	2.869*	

Source: Derived through the analysis

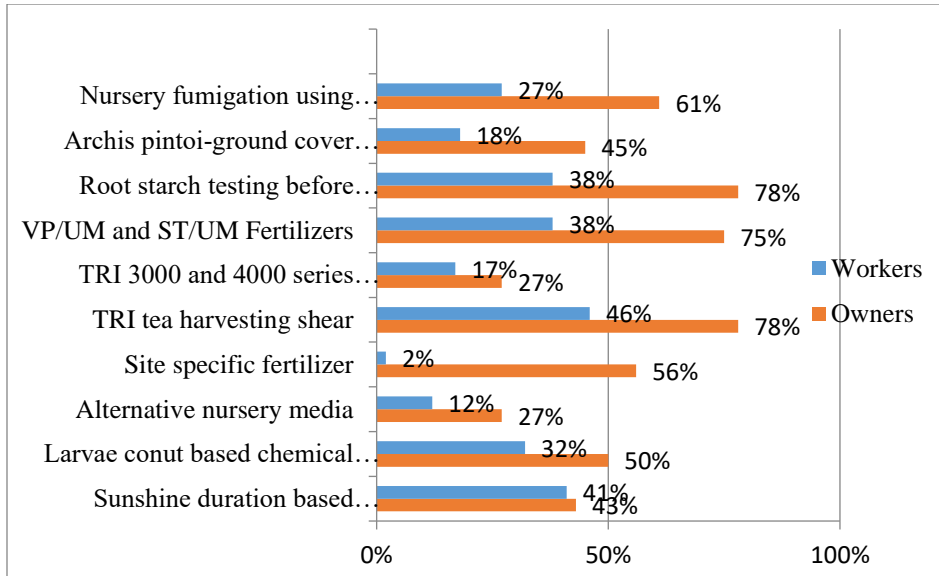
The mean tech-innovation knowledge index of internationalized tech-based Tea SME Owners (77.84) was higher than that of Workers (52.09) with a difference of 25.75.

The 't' test value being significant at 1% level indicating that the tech-innovation knowledge level of Owners on Technological Innovation was higher than that of the Workers with a gap of about 26%.

### **Technological Innovation wise Tech-innovation knowledge level**

The Technological Innovation wise Tech-innovation knowledge level of internationalized tech based Tea SME Owners and Workers were analyzed and the percentage results are presented in Figure 2.





Source: Derived through the analysis

**Figure 1. Technological Innovation wise Knowledge levels of internationalized tech-based Tea SME Owners and Workers**

### Overall Acquisition Extents of Technological Innovation

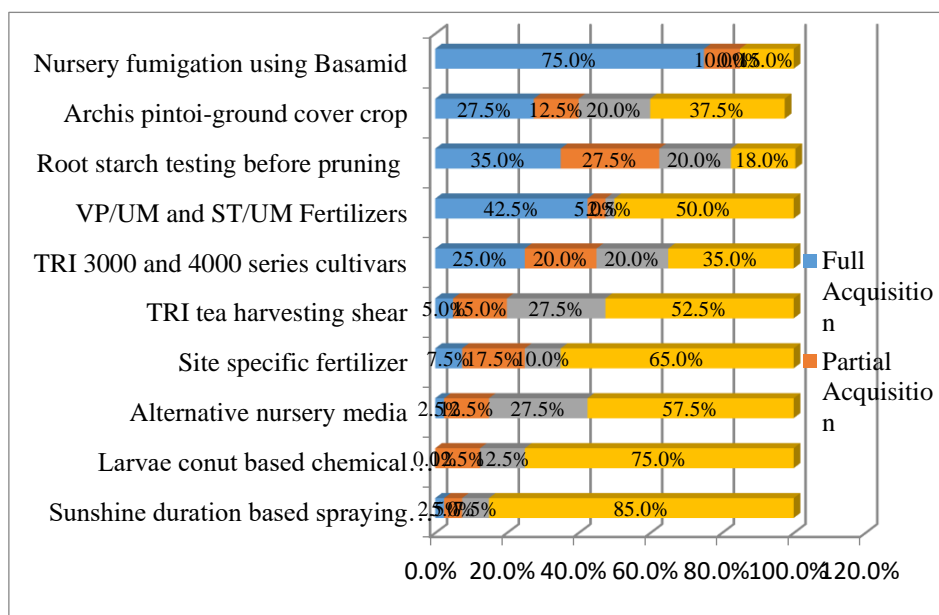
The Table 2 demonstrates that greater proportion 43% of the internationalized tech- based Tea SMEs had low acquisition extent while 39% had high level of acquisition extent. Medium level of acquisition extent was evident in 22% of the estates. Further, it shows that the mean acquisition extent index (55.00) was in the higher side resulted technology acquisition extent gap of 45%.

**Table 2: Distribution of overall Acquisition extents of internationalized tech based Tea SMEs**

Acquisition Extents	Percentage of estates adopted
Low	43
Medium	22
High	35
Total	100
Mean acquisition extent index	55.00
Technology acquisition extent gaps	45.00

Source: Source: Derived through the analysis

## Extent of Acquisition of Technological Innovation



Source: Authors' estimation

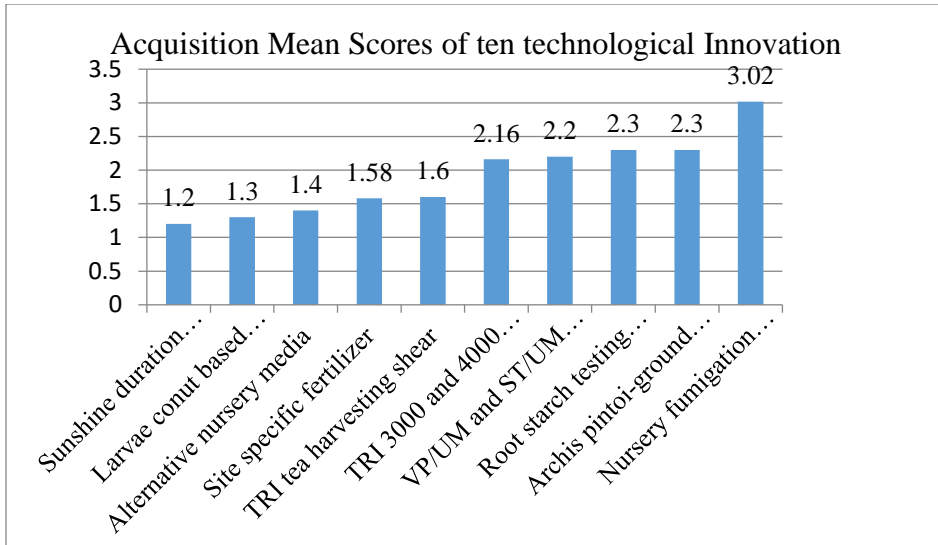
**Figure 2: Acquisition extents of the ten technological innovation by the**

### Internationalized tech-based Tea SMEs

The results show a wide variation among technological innovation with respect to their acquisition extents. Furthermore, mean scores for acquisition extent of the ten technological innovation were calculated in order to distinguish and compare the acquisition extent between technologies.

The acquisition extent mean was calculated for each of the technological innovation and they are arranged in the descending order of their mean scores hence presented in Figure 3.

Average mean score of the ten technological innovation was 2.23. It can be concluded that the acquisition extents of five technological innovation out of ten, i.e. TRI tea harvesting shear, site specific fertilizers, soil substitutes for tea nurseries, tortrix counting method to schedule spraying and Sunshine based blister blight disease control schedule were below the average.



Source: Derived through the analysis

**Figure 3: Distributions of technological innovation according to the Acquisition mean scores of internationalized tech-based Tea SMEs**

### Reasons for less and non-acquisition extent of technological innovation

The exploration of the reasons for less/not adopting the technological innovation from the perspectives of Internationalized tech based Tea SME Owners and Workers revealed that, among the many reasons for less/nil acquisition extent of technological innovation, the lack of awareness and interest on the technologies by the clientele system, poor performance of the technologies in field conditions, concurrent socio-economic situation, complex nature of some technologies, recommended technologies not being within the policies of plantation companies, lack of skill and expertise to implement technologies at field level and unavailability of materials/equipment were the major reasons were the major reasons.

### Conclusion and Policy Implications

Findings of the study reveal that there is a wide gap between Internationalized tech- based Tea SME Owners and and Workers in Nuwara Eliya District in terms tech-innovation knowledge on Technological Innovation. The Technological Innovation acquisition extent in the sector is 55% which means that there is a 45% gap in technology acquisition extent in internationalized tech-based Tea SMEs in Nuwara Eliya District of Sri Lanka.

The findings inference the need of improving the present extension and dissemination system to enhance tech-innovation knowledge and acquisition extent of both the Owners and workers of the internationalized tech-based Tea SMEs in Nuwara Eliya District in order to exploit the real advantages of the up-to-date Technological Innovation. In the view to meet the increasing technology needs of the sector, there is an urgent need of energizing the TRI and its extension approaches. Recommended tech-innovation dissemination models can be executed in a more practical manner

**Keywords:** *Tech-Innovation Knowledge Gap, Acquisition Gap, Tea Tech- SMEs*

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# **FARMERS' ATTITUDE TOWARDS CHEMICAL LEASING FOR SUSTAINABILITY AND ENVIRONMENTAL PROTECTION**

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## **Introduction**

Agrochemicals are known to be causing complications to both environment and human health (Wimalawansa & Wimalawansa, 2014). Chemical leasing (ChL) models are being proposed to reduce this damage. ChL is “*a service-oriented business model, that shifts the focus from increasing sales volume of chemicals towards a value-added approach.*” Here, responsibilities of the producer and service provider are captured in the entire life cycle (UNIDO, 2019).

## **Research Problem**

Current business models of chemicals are where the producers, want to sell higher volumes of produce while buyers expect lesser chemicals in the produce they buy (Jakl & Schwager, 2008; Schwager et al., 2017). This model triggers greater applications of agrochemicals, which is harmful.

Agricultural ChL can improve farmers' efficiency and decrease their ecological impacts (Akkaya et al., 2020). Chemical provider and the user can gain cost savings by adopting this concept (Jakl & Schwager, 2008; Lozano et al., 2013). But, ChL is still a novel concept for Sri Lankan Agriculture. But if practiced, farmers would reap the benefits in terms of reduced cost and less damage to the environment. If farmers are preferring this concept, then this could be applied as a business model, benefitting all. Thus, measuring the farmers' attitudes towards ChL is important.

The literature does not adequately cover ChL and agriculture. The purposes of this research are to determine the farmer's willingness to adopt chemical leasing and to suggest a suitable model for agrochemical leasing for farmers in Sri Lanka.

## Methodology

The research is focused on conventional paddy farmers. As this is a pilot project for examine the farmers perspective of the ChL concept, 100 paddy farmers in Homagama DS Division from 4 *Grama Niladhari* Divisions were randomly selected. The study used a deductive approach with survey strategy to collect data during July-August, 2020 with a pretested interviewer administered questionnaire.

## Willingness to adopt ChL

The factors for the willingness to adopt were obtained through a Likert scale. Liu & Zhang, (2011) has mentioned the factors of willingness to adopt (WTA) alongside with the new technology adoption (9 attributes) using factor analysis.

$$WTA = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e_1$$

$x$  variables are determined from the principal component analysis.  $\beta$ 's are the parameter estimates.

## Sustainability of ChL approach

According to Schwager, et al., (2017) in order to demonstrate the sustainability approach of ChL, five sustainability standards were created in 2009. Their fundamental objectives were to make ecological and financial enhancements quantifiable, and to secure the positive picture of ChL and preventing the misuse of the term ChL for example for non-sufficient exercises. Equation for the sustainability approach (SA) of the chemical leasing:

$$SA = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e_2$$

(In the equation Environment friendliness -  $X_1$ , Cost effectiveness -  $X_2$ , Profitability -  $X_3$ , Cost reduction -  $X_4$ )

## Environment protection of ChL approach

The aspects mentioned in the UNIDO's SIRM approach are used to build up the environment protection attributes. Equation for the environment protection approach (EPA) in chemical leasing:

$$EPA = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e_3$$

( $X_1$ : Using overdoses;  $X_2$ : Threats to public health;  $X_3$ : Pollution of ground water;  $X_4$ : Solution to the pollution;  $X_5$ : Health concerns of farmers: these were measured with likert scales)

## Results and Discussion

### General Information Regarding the Consumption of Agrochemicals

All the sampled farmers use Agrochemicals. Herbicides and insecticides were used by majority of them. Fungicides were used by 17.1% of farmers. Agrochemicals were mostly brought from regional shops (69.7%). Agrochemicals were applied 14 days after planting seeds by 52.6% of the farmers. When there were few pests seen in the field 86.6% of farmers decided to apply agrochemicals. Suitability for the crop is considered mostly (37%) by the farmers when purchasing agrochemicals. Agrochemicals are applied to the field after 14 days of laying the seeds even there is no sign of a pest. This practice was followed by majority of the farmers (65.8%). Connected to the above practice, agrochemicals are applied at the young age of the crop by majority of farmers (72%).

### Willingness to Adopt

There were 11 factors, analysed using principal component analysis and yielded 3 factors for the equation (1) is displayed in the Table 1. They explain a total of 63.54% of the variance for the considered variables.

**Table 1: Extracted Components for WTA**

Component Number	Variable	Label	Variance explained
<b>Component 1</b>	$X_1$	Cost and quality	38.744%
<b>Component 2</b>	$X_2$	Environmental concern	16.430%
<b>Component 3</b>	$X_3$	Handling chemicals	8.359%

Source: Authors' estimation

In order to analyse the relationship with willingness to adopt with the above factors Structural Equation Modelling (SEM) was used. A path analysis was done. Willingness to adopt ChL is mainly governed by the farmers' environment concern according to the analysis. Cost and quality factor have 0.06 impact on

the willingness to adopt (Gallagher et al., 2008). This suggest that the current cost and the quality of the yield are somewhat acceptable for the farmers. Handling of chemicals has near to none impact on the willingness to adopt ChL. Farmers are depending on the experience they got; they do not see any harm from the practices they are doing.

### **Contribution of Chemical Leasing in the Approach of Sustainability**

SEM analysis reveals, when sustainability changes by 1 standard deviation (SD), environment friendliness changes in 0.30 SD and the cost effectiveness changes in 0.27 SD. Profitability had only 0.07 changes in SD and cost reduction had 0.10 changes in SD for the sustainability approach. Sustainability of the current model is mainly determined by the environment friendliness and the cost effectiveness of the model. Profitability and cost reduction factors do not have a considerable impact on the sustainability approach of the farmers. This result is somewhat similar to Tatlidil et al., (2009) and Atteh, (1984) but contradictory to Wei et al., (2007).

### **Contribution of Chemical Leasing for Environmental Protection – Farmers' Perspectives**

SEM reveals, using overdoses had -0.12 changes in SD on environmental protection when the environment friendliness is determined by the pollution of the ground water; Solution to the pollution had -0.08 changes in SD; Health concerns of the farmer had 0.13 changes in SD; Threatening public health had 0.58 changes in SD, and pollution of ground water had 0.35 changes in SD on the environmental protection.

### **Conclusions**

Agrochemicals have become a necessity for the paddy farming at the cost of environment. ChL will reduce the over usage of agrochemicals. All most all conventional paddy farmers use agrochemicals. Majority of them buys agrochemicals from regional shops. If there is a new situation in the field, they consult agricultural extension officer or the peer farmers. At the same time majority of the farmers are highly dependent on the recommendation, seller provides.

In sustainability approach, farmers are more interested in being cost effective and to increase their profit. Addressing those two aspects would give better implementation ability to the concept agrochemical leasing. Considering



environmental protection approach, farmers are most enthusiastic on reducing the ground water pollution caused by the agrochemicals. Since they have less awareness on the reading toxicity levels and disposal methods, farmers are willing to go for a different model of using agrochemicals. Most importantly, most of them are subsistence farmers they are willing to reduce agrochemical consumption because they have the idea that agrochemicals might deteriorate their health.

**Keywords:** *Agrochemicals, Chemical leasing, Environmental protection, Sustainability, Willingness to adopt*

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## **Reorienting Sri Lankan Agriculture**



## **FORECASTING WEEKLY AND MONTHLY OPEN MARKET AVERAGE RETAIL PRICES OF GREEN CHILIES IN COLOMBO**

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### **Introduction**

The cultivation of green chili in Sri Lanka is playing a major role in the agriculture industry. According to the Department of Agriculture, the potential yield of green chili is low mainly due to many environmental changes. It has been a reason for observing the high prices of this crop during the adverse seasons. Therefore, such uncertainties in the price behavior need to be discussed through proper statistical analysis. This study has been focused on the fluctuation of open market average retail prices of green chili in Colombo, Sri Lanka. Many researchers have predicted various commodity prices including Luo et al (2013), who has considered the seasonal variations in monthly prices of cucumber in wholesale China's market. The results indicated that the Seasonal Autoregressive Integrated Moving Average (SARIMA), ARIMA (1,0,1)(1,1,1)<sub>[12]</sub> model fitted the cucumber market prices with an average fitting error of 0.17. Rathnayake et al (2016) has conducted a comparative study of monthly wholesale prices of green-chili and tomato in Sri Lanka, using time series analysis. The results indicated that the quadratic model is the best trend model for both series with the lowest Mean Absolute Percentage Error (MAPE), Mean Absolute Deviation (MAD) and Mean Squared Deviation (MSD) values compared to growth curve and linear trend. However, this study has been conducted considering weekly prices for closely monitoring the price variations. It will provide rewards for all the parties who are interested in the price fluctuations of green chili.

### **Research problem**

According to the review done by Hector Kobbekaduwa Agrarian Research Institute (2018), supply from major green chili production areas have decreased during November 2018. The target extent of green chili cultivation in Yala was 10703 hectares. However, at the end of November, the actual cultivation was 42% of the expected extent. Hence, the retail price of green chili was increased by 53%

compared to the same period of the previous year. Furthermore, high retail price fluctuations can be observed every year. Therefore, this study focuses on identifying and forecasting the behavior of the green chili prices to overcome the aforementioned dilemma.

## **Objective**

The objective of this study is to identify the behavior of price variations, modeling and forecasting weekly and monthly open market average retail prices of green chili in Colombo, Sri Lanka using appropriate univariate time series models.

## **Methodology**

Green chili prices were obtained from the official web site of the Department of Census and Statistics, Sri Lanka. Monthly average retail prices of green chili were collected from January 2009 to December 2018, and weekly average retail prices of green chili were collected from 1<sup>st</sup> week of January 2011 to the 4<sup>th</sup> week of December 2018. The first 80% in both datasets were used for fitting the models and the remaining 20% were used for testing the fitted models separately. A descriptive analysis was done to identify the nature of the original datasets. There were no missing values in both datasets and the original datasets of monthly and weekly prices were used for modeling. Two separate models have been fitted for monthly and weekly datasets. Augmented Dickey-Fuller (ADF) test, Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test, and Phillips-Perron (PP) tests were used to determine the stationarity of the series and the stationarity of the residuals was identified using the Ljung-Box Q statistic test. Furthermore, transformations and differencing techniques were applied to convert series into stationary. Several models were fitted by considering the lags obtained from Autocorrelation Function (ACF) and Partial Autocorrelation Function (PACF) for both series. Models that had the minimum Akaike Information Criterion (AIC) were selected as the best models separately for both datasets. Assumptions of heteroscedasticity, autocorrelation, and normality were tested by using Autoregressive Conditional Heteroscedasticity (ARCH) test, correlogram of residuals, and Jarque-Bera test respectively. Selected two models have been used for forecasting the monthly and weekly average retail prices of green chili. Performances of the forecasted values were evaluated by using Root Mean Squared Error (RMSE) and MAPE.

## Results and Discussion

The Mean value of both monthly and weekly green chili prices is Rs.320.67 per kg and the maximum and minimum weekly prices are Rs.964.36 per kg and Rs.116.71 per kg respectively.

- *Time series model to forecast monthly green chilies prices*

From available 120 observations, the first 96 were used to develop the model. The remaining 24 observations were allocated to check the accuracy of the fitted model.

As a preliminary step in determining whether a series is stationary or not, three basic unit-root tests were performed. The results of the above three tests showed that the series was not stationary at the 5% level of significance. Therefore, the logarithm of the first differenced monthly price series [ $d(\log(\text{price}))$ ] was considered and the stationarity of the series was re-examined. The results of the above three tests showed that  $d(\log(\text{price}))$  series is stationary at a 5% level of significance. The ACF and PACF of  $d(\log(\text{price}))$  showed that the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> lags in both plots are significant and that there is no seasonal pattern. Hence, different Autoregressive Integrated Moving Average (ARIMA) models were fitted for the  $d(\log(\text{price}))$  series and AIC values of each model were examined.

Among all candidate models, ARIMA (2,1,2) was selected as the better model with the minimum AIC value of 0.1554 and a coefficient of determination ( $R^2$ ) value of 54.34%.

The adequacy of the fitted model was evaluated using the recent 20% of data. The p-value of the ARCH test was 0.9125 which is greater than 0.05. Therefore, residuals did not violate the assumption of heteroscedasticity at a 5% level of significance. According to the Ljung-Box test, p-values were greater than 0.05 which indicated there was no autocorrelation at a 5% level of significance. Moreover, it was evidenced that the residuals followed a white noise distribution (i.e. stationary). Jarque-Bera test for the normality of residuals indicated that the p-value (0.1967) was greater than 0.05 which implies error terms were normally distributed. Hence, the ARIMA (2,1,2) model was used to predict green chilies prices for the remaining dataset. The MAPE of the model is 26.2588, while the RMSE and MAE of the model are 128.8443 and 101.1879 respectively.

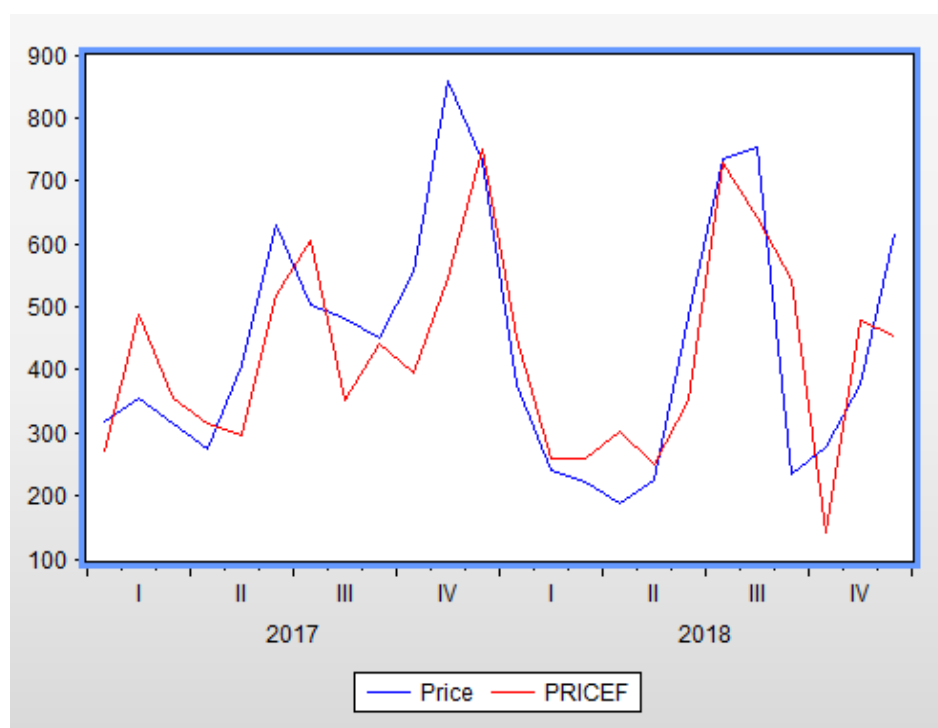
Table 1 illustrates few instances of actual and forecasted values for monthly prices, while Figure 1 illustrates the behavior of actual versus fitted values of

green chilies prices for the testing dataset and it indicates that the fitted model captures the behavior of the test data.

**Table 1: Actual and forecasted values of monthly prices for the first five months of the test data set**

Month	Actual value (Price in Rupees per kg)	Forecasted value (Price in Rupees per kg)
January 2017	317.71	270.83
February 2017	355.69	487.25
March 2017	315.74	353.64
April 2017	274.96	315.83
May 2017	406.71	296.43

Source: Author's estimation



Source: Author's estimation

**Figure 1: Actual value (Price) Vs Fitted value (PRICEF) graph for monthly green chilies prices**



- *Time series model to forecast weekly green chilies prices*

From available 384 observations of green chilies prices, the first 307 records (first 80%) of the weekly average retail prices were used for fitting the model and the remaining 77 records were used for testing the fitted model.

Results from the three unit-root tests showed that the series was not stationary at the 5% level of significance. There was a slight upward trend, non-constant variability and a clear seasonal pattern in the original dataset. Therefore, the logarithm of the first differenced weekly price series [ $d(\log(\text{price}))$ ] was considered and the stationarity of the series was re-examined. The results of the above three tests showed that  $d(\log(\text{price}))$  series is stationary at a 5% level of significance. Furthermore, ACF, PACF and WO tests were used to identify the seasonality as 24. The first seasonal difference of the  $d(\log(\text{price}))$  series was applied and rechecked the stationary. The series was identified as stationary and the following results can be seen in the correlogram, The ACF sector lags 24, 48 as seasonally and lags 1, 2, 3 identified as Non-seasonal lags. The PACF sector lags 24, 48, 72 as seasonally and lag 1 identified as Non-seasonal lag. Among all candidate models, ARIMA (1,1,3)(1,1,1)<sub>[24]</sub> was selected as the better model with the minimum AIC value of -0.9671 and  $R^2$  value of 45.18%.

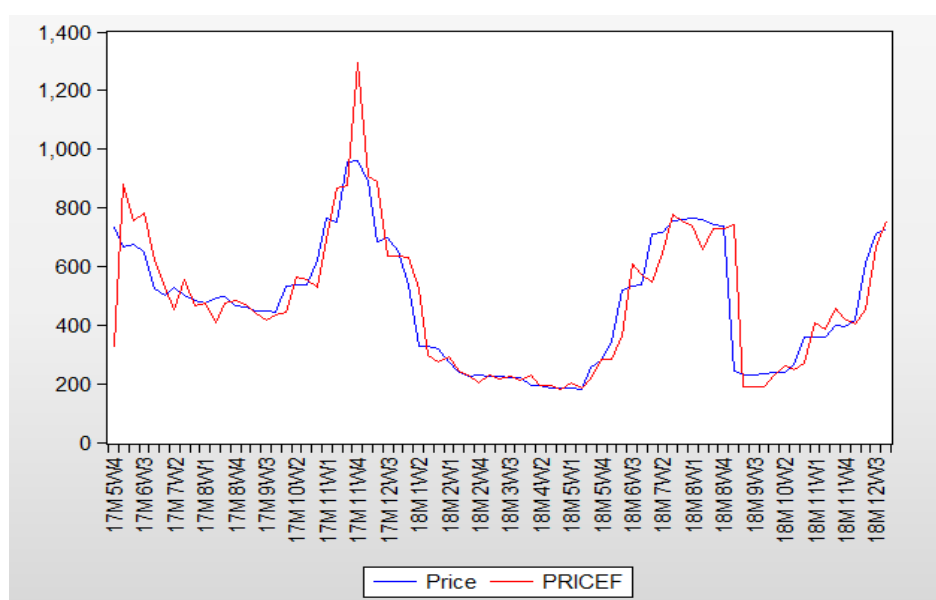
Fitted ARIMA (1,1,3)(1,1,1)<sub>[24]</sub> model was evaluated for the model adequacy. The assumption of heteroscedasticity was not violated with the p-value of 0.9699 from the ARCH test at a 5% level of significance. As the p values were greater than 0.05 in the Ljung-Box test, it indicated the absence of autocorrelation in residuals. Meanwhile, it implied the presence of white noise behavior of error terms. Even though the assumption of normality of error terms is violated (p value=0.0001) for high volatile data, the fitted model can be used in forecasting (Aryani et al., 2018). Therefore, this model was used to predict green chilies prices of the remaining dataset. The model exhibits 13.8721, 108.1580 and 63.8518 of MAPE, RMSE and MAE respectively.

Table 2 illustrates a few instances of actual and forecasted values for weekly prices. The behavior of actual versus fitted values of green chilies prices for the testing dataset is illustrated in Figure 2 and it represents that the fitted model explains the fluctuations of the test data.

**Table 2: Actual and forecasted values of weekly prices for the first five weeks of the test data set**

Week	Actual value (Price in Rupees per kg)	Forecasted value (Price in Rupees per kg)
Week 4 May 2017	733.33	325.82
Week 1 June 2017	668.06	878.80
Week 2 June 2017	673.61	753.57
Week 3 June 2017	649.51	783.54
Week 4 June 2017	522.36	621.63

Source: Authors' estimation



Source: Authors's estimation

**Figure 2: Actual value (Price) Vs Fitted value (PRICEF) graph for weekly prices of green chilies**

## Conclusion

ARIMA (2,1,2) model was identified as the better model with minimum AIC value among the candidate models to forecast monthly average retail prices of green chilies in Sri Lanka. The RMSE and MAPE values of this model were 128.84 and 26.26 respectively. This model satisfied all three assumptions of heteroscedasticity, autocorrelation, and normality of the residuals. Moreover, the assumption of the stationarity of the residuals was satisfied. To increase the

accuracy of the forecasted values, another model was assumed using weekly average retail prices.

To predict weekly average retail prices of green chilies in Sri Lanka, ARIMA (1,1,3)(1,1,1)<sub>[24]</sub> was selected as the better model with a minimum AIC value among the candidate models. Furthermore, this model has the minimum RMSE and MAPE values over the model fitted for monthly average retail prices, which were 108.1580 and 13.8721 respectively. Contrarily, though only the assumption of the normal distribution of the residuals was violated in this model, the stationary assumption of the residuals which was tested using the Ljung-Box test was not violated.

Practically, forecasting retail prices of green chilies on a monthly and weekly basis provides a more precise idea about the price variations than forecasting over extended periods. From the consumers' point of view, forecasting of weekly prices is more sensible as green chili is a perishable agricultural crop whereas forecasting of monthly prices is more advantageous in monitoring and decision making on retail prices. As future studies, machine learning techniques such as artificial neural network models are supposed to be used in achieving more accurate forecasting models.

**Keywords:** *Akaike Information Criterion (AIC); Autoregressive Integrated Moving Average (ARIMA); Mean Absolute Percentage Error (MAE); Seasonal Autoregressive Integrated Moving Average (SARIMA)*

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## AN ANALYSIS OF COLOMBO OPEN MARKET AVERAGE RETAIL PRICES OF BIG ONIONS IN SRI LANKA USING TIME SERIES FORECASTING TECHNIQUES

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### **Introduction**

The cultivation of vegetable crops plays a key role in the Sri Lankan economy because it provides a large scale of opportunities for farmers who are in rural areas. Along with the other vegetable crops, big onion has become a prominent cash crop among the farmers in Sri Lanka due to high profitability and high returns within a short period. Currently, the local big onion production manages only 20% of the total consumption of the country. The annual requirement of big onion is 280,000 MT. According to the Sri Lanka Customs data, 232,318 MT are of this total requirement is imported because the domestic production is not enough to meet the total demand for big onions in the country. A comparative study is very important to identify the price fluctuations in big onion. In Sri Lanka, no published researches were found on forecasting Colombo open market average retail prices of big onion nevertheless many researchers have forecast various commodity prices. This study has attempted to forecast the average retail prices of big onion at Colombo open market, Sri Lanka using the Seasonal Autoregressive Integrated Moving Average (SARIMA) approach. Rathnayake et al., (2016) and Luo et al., (2013) have recommended that the SARIMA models are found to be better for univariate time series modeling when the series shows a seasonal pattern. Moreover, Abdul-Rahim & Zariyawati, (2011) and Arshad, Awad, & Hameed, (2012) have suggested Autoregressive Distributed Lag (ARDL) models as another preferable approach to investigate the long-run and short-run relationships among the variables.

### **Research problem**

Ministry of Finance, Sri Lanka has announced that the special commodity tax on imported big onions has been increased by twenty rupees with effect from May 2019. Ministry has decided to increase levies on big onion to enable the local farmers to get a better price for their products and as a step to protect the local farmers. As a result, the local big onion market has gained a high price as imports decreased. Big onion market prices have been increased rapidly even though the local big onion

productions are being received into the local market. This study is focused on forecasting the monthly Colombo open market average retail prices of big onion which helps to identify price fluctuations sooner.

The objective of the study is to find a proper forecasting model to identify the price fluctuations and the behavior of monthly Colombo open market average retail prices of big onions using both univariate and multivariate time series analysis techniques.

### **Methodology**

For the study, time series data on monthly Colombo open market average retail prices of big onion and red onion from December 2006 to June 2019 were obtained from the official website of the Department of Census and Statistics, Sri Lanka. Exchange rates were obtained from the official website of the Central Bank, Sri Lanka. A preliminary analysis was done to identify the nature of the original data. First 85% of the data from December 2006 to July 2017 were used for fitting the models and the remaining 15% of the data from August 2017 to June 2019 were used for testing the fitted model. 151 of total observations were considered for the analysis. The unit root tests were applied to check the stationary of the series. A differencing technique was applied to convert the non-stationary series into stationary. Several models were fitted using both univariate and multivariate time series analysis techniques. The models which had the minimum Akaike Information Criterion (AIC) was selected as the best models separately for both univariate and multivariate time series models. The assumptions of heteroscedasticity, autocorrelation, and normality were checked after fitting the model by using the Autoregressive Conditional Heteroscedasticity (ARCH) test, correlogram of residuals, and Jarque-Bera test respectively. In the multivariate approach, model adequacy was tested using the above-mentioned model adequacy tests along with additional tests which use to identify the structural stability of the fitted model. The selected model has been used for forecasting and performances of the forecasted values were evaluated using the Mean Absolute Percentage Error (MAPE) and the Root Mean Squared Error (RMSE).

### **Results and Discussion**

Summary statistics from the preliminary analysis provide information about the data. Minimum and the maximum monthly Colombo open market average retail prices of big onion are 50.59 rupees per kilogram and 172.69 rupees per kilogram respectively. Time series modeling was developed under the assumption of stationary. Therefore, monthly average retail prices of big onions were tested using unit root tests such as Augmented Dicky-Fuller (ADF) test, Phillips-Perron (PP) test, and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test. Among the three tests, only the KPSS test was

indicated that the level series is not stationary at 5% level of significance. The ACF plot provided evidence of the presence of seasonal variation. Therefore, the first seasonal difference was applied and reexamined for the stationary using the aforementioned unit root tests. All tests indicated that the first seasonal differenced series is stationary at 5% level of significance.

According to the ACF plot, lag 1, 2, and 3 are significant at 5% level of significance. Therefore, those have been used as the order of non-seasonal moving average terms. PACF plot showed that lag 1 as the only non-seasonal autoregressive lag which is significant at 5% level of significance. In both ACF and PACF plots, the 12<sup>th</sup> seasonal lag is significant at 5% level of significance and it has been used for both seasonal autoregressive term and seasonal moving average term. The SARIMA models were fitted and AIC values of every model were examined. Among all models in Table 1, ARIMA (1, 0, 1) (1, 1, 1)<sub>[12]</sub> was selected as the best model which has the minimum AIC value and its coefficient of determination ( $R^2$ ) is 75.95%.

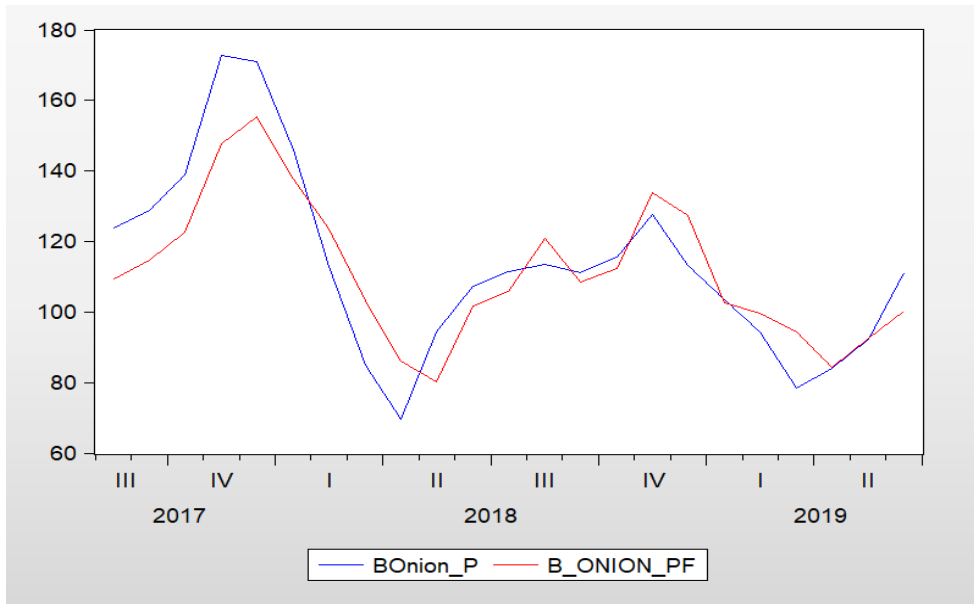
The selected model was then subjected to diagnostic checking to validate the adequacy of the estimated model before carrying out forecasting. The fitted model was undertaken with the ARCH test, correlogram of residuals, and Jarque-Bera test to evaluate the adequacy. The model satisfied all the assumptions except normality. According to Aryani et al., (2018), the normality assumption is violated in most of the time series models but forecasting can be done considering the fitted model. Table 1 contains a few instances of actual values and forecasted values of monthly Colombo open market average retail prices of big onions.

**Table 1: Actual values and forecasted values of monthly Colombo open market average retail prices of big onion using ARIMA (1,0,1) (1,1,1)<sub>[12]</sub> model**

<i>p</i>	Actual value (Price in Rupees per kg)	Forecasted value (Price in Rupees per kg)
Aug-17	123.81	109.45
Sep-17	128.87	114.57
Oct-17	138.73	122.70
Nov-17	172.92	147.72
Dec-17	170.99	155.32
Jan-18	145.99	137.76
Feb-18	112.85	123.46

Source: Authors' estimation

In Figure 1, actual and forecasted values of big onion prices have been visualized for the testing dataset. The RMSE of the fitted model is 12.0215 while MAPE is 9.1384.



Source: Authors' estimations

**Figure 1: Actual values (BOnion\_P) vs. forecasted values (B\_Onion\_PF) graph for ARIMA (1, 0, 1) (1, 1, 1) [12] model**

Secondly, a multivariate time series analysis was carried out. Exchange rate and monthly average retail prices of red onion had the highest correlation with monthly average retail prices of big onions. Table 2 contains the correlation matrix of the selected variables for the analysis.

**Table 2: Correlation matrix of the selected variables**

	Big Onion Price	Exchange Rate	Red Onion Price
Big Onion Price	1	0.5149	0.6699
Exchange Rate	0.5149	1	0.4557
Red Onion Price	0.6699	0.4557	1

Source: Authors' estimation

The stationarity of the series was tested using unit root tests. Table 3 contains the summary of the stationary test outputs for the variables.



**Table 3: Results of the unit root tests**

	ADF Test			PP Test			KPSS Test		
	Level Series	1st difference	Remarks	Level Series	1st difference	Remarks	Level Series	1st difference	Remarks
Exchange rate	0.9720	0.0000	I(1)	0.9730	0.0000	I(1)	1.2591	0.1421	I(1)
Red onion price	0.0422	0.0000	I(1)	0.0599	0.0000	I(1)	0.5778	0.2817	I(1)

\*Represent stationary at 5 percent level for ADF test and PP test while 0.4630 for KPSS test respectively.

Source: Author's estimation

According to the tests, all the variables are stationary in order 1 at 5% level of significance. Log transformations of all selected series have been considered for the analysis to meet the assumptions of inferential statistics. According to Pesaran, Hashem & Shin, Yongcheol. (1995), ARDL model has an additional advantage of yielding consistent estimates of the long-run coefficients that are irrespective of whether the underlying regressors are I(1) or I(0). Therefore, an ARDL model has been fitted as the next approach.

According to the bound test, the null hypothesis of no long-run relationship was rejected at 5% level of significance because of the computed F-statistic (9.9097) is greater than the upper bound of F-statistic. It implies that there is a long-run relationship between the variables. The ARDL (1, 0, 3) has been selected as the best model.

According to the long-run coefficients, exchange rate is the most significant factor and its effect is significant at 5% level of significance. Coefficient (1.0889) of the exchange rate shows that when increasing the exchange rate form 1 unit, it increases the big onion monthly average retail price by 1.0889 in the long-run. Coefficients of the variables in the error correction representation show the short-run elasticity. The coefficient of error correction term ( $-0.3576$ ) is significant at 5% level. A highly significant negative sign of the error correction term emphasizes the existence of a long-run relationship among the variables. Nevertheless, the speed of adjustment from the previous year's disequilibrium is only 35.76%.

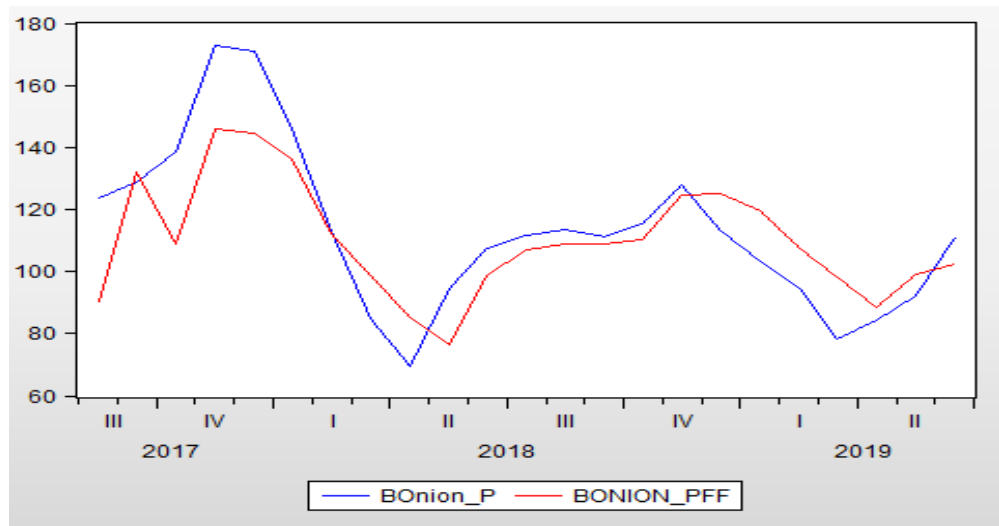
The stability of the model was tested using the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) tests. The model is structurally stable since both plots are within the critical limit of

5% level of significance. The model was satisfied with the aforementioned basic assumptions of time series analysis except normality. According to the experts (Giles, 2013), forecasting can be done using ARDL models even though the normality assumption is violated. Table 2 contains a few of actual values and forecasted values of monthly Colombo open market average retail prices of big onions using the fitted model.

**Table 4: Actual values and forecasted values of monthly Colombo open market average retail prices of big onion using ARDL (1, 0, 3) model**

	Actual value (Price in Rupees per kg)	Forecasted value (Price in Rupees per kg)
Aug-17	123.81	90.26
Sep-17	128.87	132.25
Oct-17	138.73	105.92
Nov-17	172.92	145.89
Dec-17	170.99	144.75
Jan-18	145.99	136.42
Feb-18	112.85	111.94

Source: Authors' estimation



Source: Authors' estimation

**Figure 2: Actual values (BOnion\_P) vs. forecasted values (B\_Onion\_PFF) graph for ARDL (1, 0, 3) model**

The behavior of actual and forecasted values of big onion prices is visualized for the test dataset in Figure 2. RMSE and MAPE of the fitted model are 15.5622 and 11.2504 respectively.

## Conclusion

The fitted models were used for forecasting monthly Colombo open market average retail prices of big onion in Sri Lanka. The ARIMA (1, 0, 1) (1, 1, 1)<sub>[12]</sub> model was identified as the best model which had the minimum AIC value. The RMSE and MAPE values of this model were 12.0215 while 9.1384 respectively. The RMSE and MAPE of fitted ARDL (1, 0, 3) is 15.5622 and 11.2504 respectively. Both models were satisfied all the assumptions except the normality of the residuals. According to the measures of the forecasting error, it implies that the SARIMA model provides more accurate predictions than selected ARDL model due to the minimum error but the performance of the ARDL model can be improved using some other correlated variables. As future proceedings, Feed-forward neural network which is the most widely used model for time series forecasting can be implemented to achieve more accurate models.

**Keywords:** *Autoregressive Distributed Lag (ARDL); Seasonal Autoregressive Integrated Moving Average (SARIMA); Time Series Analysis (TSA); Root Mean Squared Error (RMSE)*

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# **ECONOMIES OF SCALE IN PADDY FARMING IN THE MAJOR SETTLEMENT SCHEMES IN SRI LANKA: A CASE OF HURULUWEWA AGRICULTURE COLONIZATION SCHEME**

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## **Introduction**

In terms of agriculture, ‘economies of scale’ refer to the ability of a farmer to increase production by expanding the farm size with a fixed or relatively low increase in production costs. In Sri Lankan agriculture, reducing the production cost and increasing farm size is a debatable topic due to the constant nature of the land resources devoted to agriculture at the aggregate level and structural rigidities or inflexibility in the land market (Samaratunga, 2010). Also, informal land fragmentation is one of the issues in agriculture colonization schemes.

Weerahewa (2004), and Thibbotuwawa and Weerahewa (2004) confirmed the positive relationship between the scale of cultivation, and productivity and competitiveness in paddy farming. Bandara (2008) emphasized the cost of production difference between small-scale and large-scale farming, noting the capital-intensive nature of large-scale farming. Studying economies of scale in agriculture, Samaratunga (2010) noted the small size of the farm as a cause of low agricultural income of farm households. This research evidence justifies large scale farming in the country as it generates economies of scale and thereby support to generate adequate agricultural income (Wickramaarachchi and Weerahewa, 2018; Sheng et al., 2019; Bhatt and Bhat, 2014). Further, such findings support the agricultural land market liberalization. In this backdrop, one topical subject which recently gained interest among scholars to address the issue of the economic viability of paddy farming is the scale of economies. Accordingly, this paper aims to test the hypothesis that large paddy farms generate economies of scale in terms of paddy farming in the agriculture colonization schemes.

## **Methodology**

The ‘Huruluwewa Agriculture Colonization Scheme (HACS)’ was chosen as a study setting to generate primary data for quantitative analysis. Data was primarily drawn from an empirical survey covering 145 farm households by giving equal probabilities

to all farm households to be in the sample. The secondary data for the study is drawn from available reports in the irrigation department at the scheme and published research articles on the subject.

The study uses the Quintile Regression Model (QRM) as expressed by Koenker and Bassett (1978) and applied by Savastano and Scandizzo (2017), to study the relationship between farm size and acreage production of paddy farming.

$$y_i = \beta_0^q + \beta_1^q x_i + \beta_2^q x_i^2 + \gamma^q Z_i + u_i$$

Where  $y_i$  is the paddy production of  $i^{th}$  farm,  $x_i$  is the size of the  $i^{th}$  farm,  $Z_i$  is the set of other scale variables, and  $u_i$  is the random disturbance term. The parameters  $\beta_0^q, \beta_1^q, \beta_2^q$  and  $\gamma^q$  are in  $q^{th}$  quantile of acreage production.

Minimization of the sum of absolute deviations from an arbitrarily chosen quantiles of farm productivity across different paddy farms gives the parameter vector  $[\beta_0^q \ \beta_1^q \ \beta_2^q \ \gamma^q]$ . This sum of absolute deviations can be presented as follows:

$$\text{Minimize } \sum_i |y_i^q - [\beta_0^q + \beta_1^q x_i + \beta_2^q x_i^2 + \sum_j \gamma_j^q z_{ij}]|$$

Where  $y_i^q$  is the acreage productivity of paddy farm  $i$  at quantile  $q$ , ( $i=1,2,\dots,n$ );  $x_i$  is farm size, and  $z_{ij}$  is the covariate  $j$  for farm  $i$  ( $j = 1,2,\dots,k$ ).

The solution for the above equation can be found by reviewing the equation as a linear programming problem over the entire sample (Chamberlain, 1994), and solving for values of the parameters and each quantile. Those parameters show the direction of the effects of farm size on productivity, and the largeness of that effect compared to different quantiles.

## Results and discussion

Quantile regression was performed for 0.1, 0.2, 0.3, ..., 0.9 quantiles in this study, and we obtained the output as in Table 1.

Here, the impact of other scale variables ( $Z$ ) was distinguished as  $Z1$  (Labor expenditure) and  $Z2$  (Capital expenditure). The most interesting results are the coefficients  $Z1$  and  $Z2$ . The magnitude of the impact of  $Z1$  on acreage paddy production has decreased as the acreage paddy production moves from 0.8 quantile to those in the 0.9 quantile.  $Z1$  is more significant in 0.9 quantile than 0.8. The

magnitude of the impact of Z2 on the dependent variable increased when acreage paddy production moved from the 0.6 quantile to 0.9 quantile. Same as the Z1, Z2 is more significant in 0.9 quantile than the lower quantiles.

**Table 1: Slope equality test result for the determinants of acreage production**

Test summary	Chi-Sq. Statistic	Chi-Sq.	d.f.	Prob.
Wald Test	57.28870		32	0.0039

Source: Author's estimation based on field survey data

Table 2 presents the results of the slope equality test for the determinants of acreage productions. The Chi-square statistics value of 57.288 is statistically significant at the 0.95 confidence level. The test results conclude that the coefficients differ across quantile values.

**Table 2: Quantile analysis: Dependent variable acreage paddy production**

	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
<b>Constant</b>	1083.734 (0.003)*	2009.482 (0.000)*	2037.567 (0.000)*	2502.075 (0.000)*	2544.351 (0.000)*	2567.888 (0.000)*	2718 (0.000)*	2697.411 (0.000)*	2659.4 (0.000)*
<b>Farm Size</b>	-369.626 (0.153)	-881.663 (0.000)*	-912.614 (0.000)*	-1106.02 (0.000)*	-1130.33 (0.000)*	-1154.97 (0.000)*	-1204.82 (0.000)*	-1163.17 (0.000)*	-817.476 (0.090)
<b>Farm Size<sup>2</sup></b>	32.51574 (0.441)	103.5837 (0.003)*	105.3565 (0.003)*	129.2652 (0.000)*	129.2553 (0.000)*	128.9047 (0.000)*	136.1803 (0.000)*	120.0795 (0.000)*	52.61627 (0.507)
<b>Z1 (Labor)</b>	-0.00225 (0.692)	-5.16E-05 (0.992)	-0.00415 (0.466)	-0.00072 (0.898)	-0.00505 (0.344)	-0.00603 (0.262)	-0.00861 (0.098)	-0.01154 (0.039)**	-0.02369 (0.004)*
<b>Z2 (Capital)</b>	0.005631 (0.288)	0.004104 (0.426)	0.00762 (0.125)	0.00539 (0.276)	0.008368 (0.062)	0.011025 (0.024)**	0.012453 (0.031)**	0.015493 (0.079)	0.021179 (0.000)*

Note: Parentheses are P values, \* Significant at 1% level, \*\* Significant at 5% level

Source: Author's estimation based on field survey data

The QRM outputs support us in discussing the heterogeneity nature of acreage production with farm size. The government reduced the size of the plot allocated to farmers with the time by considering the less efficiency of land use due to the incapability of managing a large plot by a single farmer. However, all settlers were given the equal size of land in the agricultural settlement schemes in the dry zone. Nevertheless, heterogeneity in the variable of land size arose due to the informal land

fragmentation in the schemes. The Land Development Ordinance of 1935 established regulatory provisions with limitations, preventing transfer, mortgage, sale, or subdivision of holdings. The provision of the minimum-subdivision of holdings has resulted in informal land fragmentation in the scheme due to the pressure of second and third generations of the scheme.

Particularly, until the 7<sup>th</sup> quantile, the conditional mean value of farm size gets worst, and then it improves, indicating the potentiality in large size farms in improving acreage production. The field interviews with farmers revealed that informality in land ownership had created a series of issues in farm management such as water management at the farm level, agriculture subsidy related matters, and pest and disease control. They reported farmer conflicts due to informal land fragmentation and lower cost-effectiveness of the use of farm machinery by the farmers. Thus, possible reasons for the worsening status of the conditional mean value of farm size until the 7<sup>th</sup> quantile may be due to the informal land fragmentation since the conditional mean value of farm size until the 7<sup>th</sup> quantile improves the condition. Mostly, farmers in the 7<sup>th</sup>, 8<sup>th</sup>, and 9<sup>th</sup> quantiles are relatively large-scale farmers with better ability in farm resource management due to relatively low or no informality in land ownership.

Thus, informality in the land ownership in the lower quantiles is the main reason for worsening conditions of farm size and acreage production relationships. Thapa (2007), Sundqvist and Andersson (2006), and Ahmad and Qureshi (1999) have cited the ability of intensive use of farm inputs with small size.

Second, how do we interpret the negative conditional mean value of variable Z1 (labor expenditure) and the positive value of variable Z2 (capital expenditure)?

It shows that until the 7<sup>th</sup> quantile, the coefficient of variable Z1 is not significant, but, from the 7<sup>th</sup> quantile, it is significant, though the impact on acreage production is negative. This indicates the need to deviate from the labor-intensive nature of farming to capital intensive nature – more mechanization - to derive higher productivity in paddy farming. The quantile results on variable Z2 – capital expenditure – further supported this explanation. It shows that the coefficient of variable Z2 is significant with positive and in an improving status from the 5<sup>th</sup> quantile upward, indicating the need for capital intensive nature of farming to derive higher farm productivity. Moreover, these findings can relate to quantile results of variable farm size as many works of literature have noted the effectiveness of extending the farm mechanization with a large farm.



## Conclusion

The results of quantile regression revealed a negative relationship between farm size and acreage production in paddy farms in the scheme in all quantiles. Still, the condition improves from the 7<sup>th</sup> quantile and the negative conditional mean value of variables labor and capital, but significant since 7<sup>th</sup> and 5<sup>th</sup> quantiles, respectively. The study identified less productivity of land use in the lower quantiles due to the informality in land ownership. Because the informality of land ownership creates a series of issues in farm management such as water management at the farm level, agriculture subsidy related matters, and pest and disease control. This is contradicting to some findings of other works that indicate high intensity in the use of resources at small farm settings.

Further, the study confirmed resource use inefficiency in informal small farm settings and decreasing trend of returns when the farm size decline from the initially recognized optimum level. Thus, the investigation first concludes that informal land fragmentation into small farm sizes has negatively affected the derivation of the scale of economies in paddy farming in the agriculture colonization schemes. The second conclusion is that the labor-intensive nature of the paddy farm is less effective at the upper quantiles, and thus, capital intensive farming – farm mechanization – is encouraged. Thus, the policies should be formulated to address the informality in the land ownership and issues created by the informal land fragmentations in the colonization schemes.

**Keywords:** *Agriculture colonization schemes; Cost of production; Economies of scale; Informal land fragmentation; Productivity*

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## **POLICY SUPPORT FOR PADDY AND OTHER FOOD CROPS IN SRI LANKA: HOW LARGE ARE THE TRANSFERS TO FARM PRODUCERS?**

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### **Introduction**

COVID-19 is a pressing global concern and its economic repercussions began impacting Sri Lanka at all levels in March 2020. Agriculture has been least affected by the COVID-19 outbreak in the world, the most impacts likely were larger on labor-intensive food crops including fruits, vegetables, dairy products, and meat processing (Kim et al, 2020). The same pattern, according to van Buitenlandse Zaken, (2020), is visible in Sri Lanka too. It is inevitable that to achieve success during the post-COVID-19 era, production and distribution of agri-food in the local, regional, national, and international supply chain levels need to be supported (Hossain, 2020). The government of Sri Lanka speed up the implementation of its National Food Production (NFP) program to increase the production of paddy and other food crops in the period following COVID-19 as a part of its support package. Since food production is distorted in Sri Lanka through a myriad of input and output taxes and subsidies, decisions to expand food crop cultivation could have some significant implications on the taxpayers. The magnitude of such effects is dependent on the degree of protection given to each sector.

A number of authors evaluated the degree of protection provided by the government of Sri Lanka on the food crop sector and comparative advantage of food crops. Shilpi (1996) computed Domestic Resource Cost (DRC) for paddy and found that Sri Lanka does not have a

comparative advantage in paddy production. In contrast, Kikuchi et al (2002) found that while the comparative advantage of rice production is declining over time, it is a socially profitable activity in major irrigation regimes. Weerahewa et al (2003) showed that paddy cultivation in larger holdings is economically profitable. The objective of this study is to analyze and compare the social returns of paddy and six other food crops in Sri Lanka using a Policy Analysis Matrix (PAM) framework.

### Methods of Analyses

The PAM framework was introduced by Monke and Pearson (1989) to measure social profitability and transfer from tax payers to a production activity. The PAM is widely employed in policy research, which enables the researcher to bring out the distortions and inefficacies of a policy. The PAM framework is shown in Table 1.

**Table 1. Framework of Policy Analysis Matrix (PAM)**

Items	Revenue	Cost		Profit
		Tradable Inputs	Non-Tradable Inputs	
Market Price	A	B	C	D
Social Price	E	F	G	H
Divergence	I	J	K	L

Note: Private profit  $D = A - (B + C)$ ; Social profit  $H = E - (F + G)$ ; Output transfer  $I = A - E$ ; Input transfer  $J = B - F$ ; Factor transfer  $K = C - G$ ; Net transfer  $L = D - H$  or  $L = I - J - K$ ; Domestic Resource Cost  $DRC = \frac{G}{E-F}$ ; Nomial Protection Coefficient  $NPC = \frac{A}{E}$ ; Effective Protection Coefficient  $EPC = \frac{(A-B)}{(E-F)}$  ; Tax Payer Cost  $TPC = I - J$ .

Source: Adopted from Monke and Pearson (1989)

The rows define profitability as the difference between income and costs, whereas the columns measure the effects of the difference in incomes, costs, and profits arising from distorting policies and market failures. The indicators commonly extracted from PAM are given below:

Nominal Protection Coefficient (NPC) shows the divergence between the market price and social price.  $NPC > 1$  shows that producers are protected through output market distortions.

Effective Protection Coefficient (EPC) is the ratio of value-added in world prices (A-B) to value-added in social prices (E-F).  $EPC > 1$  shows that producers are protected through output and input market distortions.

Domestic Resource Cost (DRC) is the ratio of the social cost of non-tradable inputs of producing a particular product to the net foreign exchange earned by producing the good domestically.  $DRC < 1$  shows comparative advantage in producing a product, and  $DRC > 1$  demonstrates comparative disadvantage.

Tax Payer Cost (TPC) is the difference between the divergence of revenue and divergence of tradable input costs. The positive value shows taxpayers are transferring the amount equivalent to TPC to produce a particular product.

### **Data Sources**

It is noteworthy to state that among the seven crops chosen only paddy, maize, potato and big onion are included in the NFP program while bitter gourd, cabbage, and pole bean are not supported by the NFP program and all seven crops used similar types of inputs for the cultivation and hence increase in cultivations in one crop reduces the resources available for the cultivation of another. For calculation, two types of prices were needed: private and shadow or social. Private price data needed for the study was obtained from the cost of cultivation of agriculture crops (COC) database of the Department of Agriculture (DOA), Sri Lanka for *Yala* 2018 in the major irrigated area. The latest COC data was available for 2018. Seed, fertilizers, pesticide and weedicide were taken as tradable inputs and land, labor and capital were considered as non-tradable inputs. Free on Board (FOB) price for bitter gourd, cabbage and pole bean, i.e., exportable, and Cost Insurance and Freight (CIF) for paddy, maize, potato, and big onion, i.e., the importable, were used as the social price of outputs. Moreover, CIF price for fertilizers, pesticides, weedicides

and seeds were used as social prices. They were sourced from the International Trade Center and the World Bank. In the case of non-tradable inputs, 25 percent of revenue and shadow wage were assumed as social costs of land and labor respectively and the opportunity cost of capital was computed using Shadow Exchange Rate Factor (SERF).

## Results and Discussion

The results revealed that the cultivation of all seven food crops is privately profitable, bitter gourd, and cabbage being higher, while only production of paddy, bitter gourd, cabbage and pole bean were socially profitable activity bitter gourd and cabbage being higher because the social revenue of outputs was much higher than their private revenue (Table 2).

**Table 2: Divergence in revenue, costs and returns of paddy and OFC Yala, 2018.**

	(Rs./ac)	Paddy	Maize	Potato	Big onion	Bitter gourd	Cabbage	Pole bean
<b>Revenue</b>	Private	88,948	93,933	563,596	414,050	678,634	532,224	405,350
	Social	130,133	92,078	343,793	330,041	1,104,457	1,050,551	473,700
<b>Cost of tradable inputs</b>	Private	13,189	17,614	202,274	48,590	54,255	116,885	48,271
	Social	42,101	22,103	284,058	59,391	50,695	114,532	84,767
<b>Cost of domestic inputs</b>	Private	29,865	56,082	157,836	176,833	165,567	130,271	135,510
	Social	54,587	76,819	291,453	271,505	327,532	257,488	230,647
<b>Total cost</b>	Private	43,054	73,696	360,110	225,423	219,822	247,156	183,781
	Social	96,688	98,922	575,512	330,895	378,228	372,020	315,415
<b>Profitability</b>	Private	45,894	20,237	203,486	188,627	458,812	285,068	221,569
	Social	33,445	-6,844	-231,718	-855	726,229	678,531	158,286
<b>TPC</b>		-12,273	6,344	301,587	94,810	-429,382	-520,680	-31,854

Source: Author calculations based on Cost of Cultivation of Agriculture Crops database of the Department of Agriculture, Sri Lanka (2018).

However, the market prices of paddy, bitter gourd, cabbage, and pole bean were lower compared to world market equivalent prices. This illustrates that the measures taken by the government have been protected buyers at the expense of producer. The prices of potato, big

onion, and maize made a contrary case; it was found that the government had subsidized producers by taxing consumers.

The results show that, EPCs was greater than NPCs for paddy, maize, potato, big onion, and pole bean. The highest difference was observed for potato. The difference between NPC and EPC for paddy is due to the subsidy given to seed and fertilizer, and for maize, potato, big onion, and pole bean, it is due to the subsidy given to fertilizer highly in potato (Table 3). The analysis demonstrates that the government has taxed seeds and fertilizers for bitter gourd and cabbage producers.

**Table 3: PAM results for paddy and OFC in Yala, 2018.**

Indicators	Paddy	Maize	Potato	Big onion	Cabbage	Bitter gourd	Pole bean
<b>NPC</b>	0.68	1.02	1.64	1.25	0.61	0.51	0.86
<b>EPC</b>	0.86	1.09	6.05	1.35	0.59	0.44	0.92
<b>DRC</b>	0.62	1.10	4.88	1.00	0.31	0.28	0.59

Source: Author calculations based on the Cost of Cultivation of Agriculture Crops database of the Department of Agriculture, Sri Lanka (2018).

The Domestic Resource Cost (DRC) ratio was lesser than one for cabbage, bitter gourd, pole bean and paddy and greater than one for maize, potato and big onion.

It shows that Sri Lanka has a comparative advantage in producing cabbage, bitter gourd, pole bean and paddy, because producers utilized scarce resources efficiently in the producing these crops, but has comparative disadvantage in producing maize, potato, and big onion.

Moreover, the analysis clearly indicates that taxpayers have transferred large sums for the cultivation of potato, big onion, and maize by subsidizing fertilizer. The highest transfer was recorded for potato followed by big onion (Table 2).



## Conclusion

These results indicated that in order to expand the cultivation of maize, potato, and big onion the taxpayer will have to bear costs largely owing to the existing subsidies on fertilizers and seeds. In contrast, the cultivation of cabbage, bitter gourd, and pole bean, which currently are not included in the NFP program, provide some benefits to the society when the cultivation of the same is expanded. The inclusion of the later in the NFP program and providing market intelligence to reach export markets are recommended.

**Keywords:** *COVID-19; Domestic Resource Cost; National Food Production program; Nominal Protection Cost; Social Profit*

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## **IMPROVING WORKER SAFETY IN AGRO-PROCESSING: A BEHAVIORAL ECONOMICS APPROACH THROUGH NUDGING**

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### **Introduction**

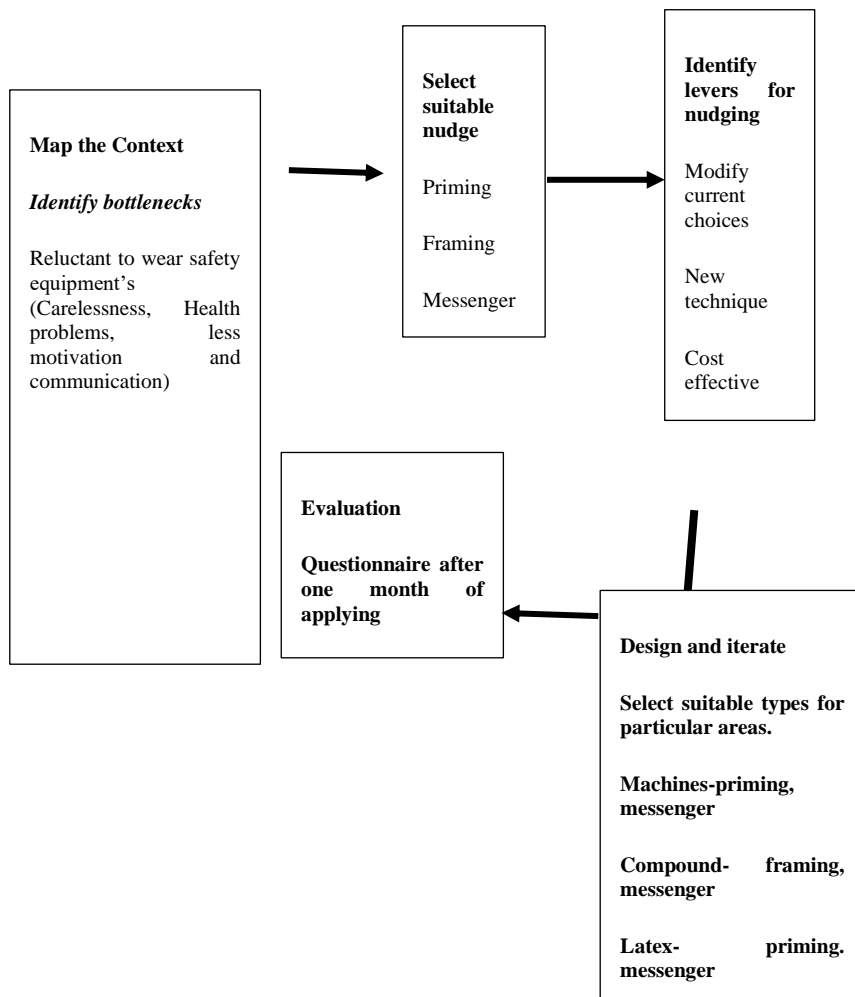
Health and safety in agriculture is important. Farmers and laborers deal with chemicals, machineries and involves in various dangerous operations agriculture and processing. In food and agro based industries, many injuries occur due to careless behavior. Many researches have been conducted on changing behaviors of the workers through behavioral changes with immediate or delayed incentives. Economic experiments help to identify psychological factors in decision making, and are done in controlled environment (Hobbs & Mooney, 2016). Nudging techniques is such a technique experimented to change behaviors. According to Thaler and Sunstein (2008), nudge is “any aspect of the choice architecture that alters people behavior in a predictable way without forbidding any options on significantly changing their social and economic behavior.

The purpose of this study is to improve identified safety management practices through nudging at the a agro-based processing plant. Specifically, to identify the measures that are not been adopted by employees, to come up with the effective nudging techniques to overcome the lapses and to design the study, and finally measure the compliance rates after implementing the nudges.

### **Methodology**

According to the Lindhout and Reniers (2017) suitable steps for nudging was identified and based on Ly *et al*'s (2013) guidelines, the selected nudging techniques were classified. According to Ly *et al.*, (2013) nudges can be classified into 4 dimensions according to their characteristics. There are a few steps to use before and after applying nudging technique. The techniques used in this study were selected based on the following criteria: Type of population (socio demographic factors, attitudes, knowledge); Location where implement the techniques; and Situation or certain behavior that intend to adopt. Nudging techniques that were applied in this study are;

1. **Messenger:** People are more likely to act on information when messenger (person who provide information) has similar characteristics to themselves. Supervisors and safety officers act as messengers to give information on safety measures for workers.
2. **Framing:** In case of an issue expressed as a profit or loss, people prefer a certain profit and take risk in the face of loss.
3. **Priming:** Display of an image or message on safety measures.



**Figure 1: Nudging process (Lindhout and Reniers (2017))**

## **Data Collection**

Observations and discussions were used to collect data for first three objectives. Discussions with supervisors and leaders in the plant were about the current situation of safety measures and compliancy rate of safety policies. Observations were done for the adoptability to safety measures. After recognizing the problems on adoptability, solutions and strategies were identified with the ideas of supervisors and leaders. After applying nudging techniques to the plant, structured questionnaire was used collect data on 91 workers in a agro-processing firm randomly. There was high level of internal consistency for all 3 values (Cronbach's  $\alpha > 0.7$ ), indicating excellent reliability (compliance rate, safety satisfaction, and effectiveness of nudging types).

## **Results and Discussion**

### **Socio economic analysis**

When considering socio demographic factors of employees 94.5% of employees are males, because the plant has more heavy work. About 78% of employees are from latex and 22% are in compound sections. Mean age of employees is 28.49 years and mean experience is 4.81 years. Most of employees are in age of 22. Most of employees are included in worker level which contain 82.4% of employees 9.9% of leaders and 7.7% of employees are machine operators. Workers have to engage in more latex related works and are exposed to heat in the machinery.

### **Safety measures that are not adopted by employees.**

According to the collected data main reason for accidents is not wearing PPE. Though PPE is mandatory in latex processing, many do not follow it. There are higher percentage of eye related accidents due to avoiding goggles. Carelessness of the employees is also considered to one of the main reasons (37.03%). Firm's accident record also highlights this issue. Reluctance and lesser experience are also some factors for non-compliancy of safety standards (Elapatha and Mahaliyanaarachchi, 2016).

### **Strategies and methods to overcome this problem**

Reminding about safety measures to be followed is the main strategy proposed by employees. When those advices/signs are visible to employees, they are being nudged to follow those. Best way to make visible is to display sign boards and pictures related to safety measures. Employees are motivated on safety measure

when their subordinates and supervisors give instructions. There are four types of sign boards in the plant. Two of them comes under priming and other two types were framing. From that one sign board indicates positive and other indicate negative framing. Sign boards had motivated the employees to adopt and follow safety measures in plant. According to the Dolan *et al.*, (2012); Lindhout and Reniers (2017) mainly framing and priming have done positive impact on behavioral changes.

### **Assessing the level of compliancy after applying nudging techniques.**

Table 1 presents the compliance level to safety measures in the processing plant after applying nudging techniques. Compliance level has measured under 8 criteria mentioned as Table 1. Compliance level of occupational health and safety had been measured by this technique in Kadasah, (2015). In this study there is an effectiveness from nudging techniques because there are high mean values in the compliance level. Compliance on safety measure is investigated through 3 dimensions which are productivity, priority and adoptability on safety measure (Table 1).

**Table 1: Compliance level of employees after applying nudging techniques**

	Mean	Std. Deviation	Compliance level
Increased efficiency	4.20	.600	Excellent
Timely completion	3.90	.651	Good
Understanding importance of safety	4.56	.499	Excellent
Increased use of PPE	4.68	.469	Excellent
Act as a reminder to adopt safety measures.	4.58	.496	Excellent
Understanding the bad effects when not adopting safety measures	4.56	.600	Excellent
Following safety standards in process has increased	4.09	.463	Good
Accident rate has decreased	3.99	.459	Good
<b>Means of Compliancy</b>			
Productivity	3.8791	.62955	
Adaptability	3.6264	.50878	
Priority	4.4945	.52438	
<b>Comparison of Nudging techniques-means</b>			
Messenger	4.1795	.45625	
Framing	4.5641	.39657	
priming	4.4945	.43987	

Source: Author's estimation

Mean value of **priority** is the highest which indicate mean value of 4.49. Workers have prioritized the safety measures after applying nudging techniques and they had gained the knowledge of how importance of safety measures. When employees give priority to safety measures productivity have increased. Second large mean value indicate by the productivity. The last section of Table 1 indicates the mean values of each nudging techniques. This indicate workers' attitudes on nudging techniques that were applied in the plant. When comparing the means, highest mean value was for messenger (4.17) and the least was priming (4.49) which has moderate effect on people. Emrich *et al.*, (2017) have used priming on food consumption as traffic light labels. In both studies priming makes a positive effect on reducing unhealthy food. Correlation between food consumption and food labels were evaluated in those studies.

## Conclusion

This study looked into the application of selected nudging techniques to improve worker safety at agro-based processing plant. Compliance level of safety instruction improved to a satisfactory level applying nudging techniques, including the usage of PPE. Since there are small differences in mean values, framing can be considered as a effective nudging technique among applied 3 techniques. Further employers are more reliable on negative framing than positive framing. This study provides evidence that even though the improvements are subtle, but nudging can be effectively used to change identified behaviours. This study was a pilot study using nudging concept in behavioural economics, thus repeated studies should be performed using different nudges. Since there is a limitation in randomization, better conclusion can be taken by further and extended studies on nudging techniques.

**Keywords:** *Agricultural Processing, Behavioral economics, Framing, Health and safety, Labor, Messenger, Nudging, Priming*

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## **Strategic Investment for Future**



# **AN EVALUATION ON THE ECONOMIC PRODUCTIVITY AND RISK MARGIN OF THE ENERGY TRANSITION TO CLEAN ENERGY FOR EFFECTIVE STRATEGIC INVESTMENT**

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## **Introduction Background**

Global crude oil demand in 2019 stoked at 100.1 million barrels per day. More than a 50 percent is consumed by OECD countries (Market Report Series: Oil 2019 – Analysis - IEA, 2020). Though comparatively Sri Lanka consumes a minor proportion of the world energy still created 3226 million USD to outflow for crude oil imports in 2017 (Sri Lanka Energy sustainable authority, 2017). Most of the energy needs of the country are fulfilled by fossil fuel which emits a higher proportion of carbon creating a climb in higher carbon dioxide levels in the atmosphere. It traps sun's heat accelerating greenhouse effect. Therefore, extreme weather conditions are apparent. According to NASA, a higher proportion of the scientific community believes that man-made impacts have exacerbated climate change evoking physical threats of severe weather conditions. All the hazards are neither equally spread nor everyone on the same level of risk. Yet in fact, the world is going through all these environmental hazards. Every individual, firms and governments are directly and indirectly impacted due to these catastrophes.

At present, the world supply chains are intermingled. Addressing these climatic changes are crucial. It is important to examine how businesses can handle these different risks. Long-term climate changes are not being predicted and incorporated into decision-making processes. Investors are not specifically discussing the actual physical risk within the portfolios. Most of the time this may be attributed to incomplete data collection. Considering any investor with economic, social and governance (ESG) refers to three core factors that would overlay those factors in assessing the sustainability and societal effect on investment (Inderst & Stewart, 2018). Any physical catastrophe may easily impact either the supply chain or the company's assets directly. This poses enormous challenges, as well as massive opportunities for the global economy.

## **Research Problem**

The research problem is focused on assessing the risk the businesses could undergo with the continued use of fossil fuel for energy generation and how could we mitigate from the transition of the energy consumption towards cleaner energy.

## **Objectives**

The study was conducted

- To identify the main drivers of climate risk that have emerged in the global context due to the higher consumption of fossil fuel-based energy generation.
- Examine the risk arouse for business due to accelerating climatic changes.
- Analyzing techniques to manage the transition risk from fossil fuel to renewable energy sources.
- To investigate the future and sketch pathways for the transition to low carbon for a more sustainable and inclusive global economy.

## **Methodology**

The study was focused on analyzing comprehensive literature and classifying prevailing researches on the economic productivity of the transformation of energy grid towards renewables. There is a limited study focused on the analysis the overall energy levels of the top performing countries in the market. Besides, the study has generated analyzed results based on the climate risk assessment that has mapped physical risks into their fiscal and economic indicators. A major issue was that the physical risk is not yet identified as a concept throughout all the investor portfolios. In incorporating these physical risks into financial modeling, it is difficult to determine the future cost of climate risk, since it is an amorphous term. Granulating them down to manageable levels like carbon risk, property vulnerability to physical risks have incorporated important findings.

## **Results and Discussion**

The study predominantly assesses the literature and concludes the level of risk in continued use of non-renewable energy sources. The gap within the current energy usage and the environment protection was dominantly identified in the major country portfolios. The backwardness in incorporating this into the

investment decisions was commonly identified. The profit motive has replaced the strategic investment behaviors. Important action to mitigate fossil fuel consumption is to be resilient. Resilience in a world which is rapidly evolving can improve productivity.

The gap discusses on the requirement of more attention on the investment flow. Since, it defines the present and future rates of the economy. The best example is China who introduced economies of scale in photovoltaic solar power generation in 2017, installed in its own country, even above the world's aggregate solar generation (Aalbu et al., 2020). Today, a few major European utilities are struggling to withstand the infiltration of excessive cheap solar power into their electric grids. This will affect all sectors, from big firms to small firms that make up inputs to these firms. The transition risk draws business world's hyper-competitiveness, people must navigate in changing an unfamiliar countryside. Hence it is overly critical that investors are best placed.

In considering the literature, a common factor identified was that most of the governments have been working the transition to a lower global carbon economy for 20 years. This has generated a real risk for corporations because they could strand the possessing assets. Ultimately, the useful life of those properties will therefore be less than expected. This raises concerns for banks and other types of investors who for 20 to 30 years of the future are effectively investing in those properties. Following the decision of the G20 minister to follow the most recent recommendation from the Climate Disclosure by the Task Force (Hansen, Eckstein, Bals & Weischer, 2020).

In overall, it was identified that the pressure generated from continuous usage of non-renewable energy sources could push companies and foreign banks and institutions to disclose better financial risks. That is a stronger evolution. The more they communicate, the more open they are about their governance structure, policies, risk management framework and key performance indicators (KPI), which gives the shareholders more trust on the governance systems, risk management systems to express trust in the in-depth knowledge on client strategies (Risk Management & Corporate Governance, 2016).

Many studies highlighted on the perception of climate risk in global investment. The more concern has been focused could offer better long-term returns. Since, this is not only an ecological concern but also an investment concern. The regulations of some corporations create risk when they are unable to handle it in

the new climate. Often, it can create stranded assets. That is a global problem. The long-term climate risk investment could provide better yields.

## **Conclusion**

During the past few years, the shift from fossil fuels to renewable energy has been accelerating. Mainly, the cost of generating wind and solar based energy are falling, even below new fossil fired plants cost. It is a shift from centralized to decentralized energy grid. Sri Lanka has a combined total installed generating capacity of 4,017 megawatts (MW) for localized energy supplies in 2016. At the same time, rooftop solar photovoltaic and wind plants in Hambanthota, along with a higher proportion mastered by hydroelectricity, play a considerable role in electricity generation. It was a phenomenon worldwide. With the national goals for electricity set in Europe. Germany's push for clean energies in target markets has reduced the prices.

The prices of new renewable energies have also been smaller than those of fossil fuel. Fundamental economics drive that. Renewable energy potentials are enormous. Because of the global phenomenon, many countries suffering from electricity shortage are in transit. The primary lever for energy system is the decarbonization of the energy system. This is a potential situation. However, it does not always happen instantly. Uncertainty is the main problem that stands together with renewable energy.

Also, many other issues concerning market interconnection, transmission and distribution are crucial to better use of energy storage and smart data for demand-side management. Clearing these existing problems may establish existence for renewable energy while phasing out the current high sources of carbon. The guiding force is economics. Various countries can attain different levels. The transition to clean energy does not happen overnight, the phenomenon in the world is vulnerable. The most crucial is when businesses inform their investors on their mechanism of handling the new trend; the kind of risk they will disclose. This is crucial on climate related topics. There are a variety of businesses that are beginning with pilot approach. Companies must have a strategy and adequate capacity for risk management with rapidly changing world of energy.

**Keywords:** *Climate Change; Energy transition; Fossil Fuel Transition; Investment Risk; Strategic Investment, Clean Energy*

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## **SRI LANKAN CONSTRUCTION INDUSTRY AND ITS DOMESTIC FOOTPRINT**

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### **Introduction**

The construction industry is an essential driver of an economy's infrastructure development, a pre-requisite for its productive capacity building. The influence of the industry is on all other domains of economic activity, ranging from residential constructions up to large scale social and economic infrastructure projects; the development of such domains would depend on contributions and outputs coming from construction activity (Ramachandra & Rameezdeen, 2006). In this respect, construction activity contributes to the Gross Domestic Product (GDP); both directly as an industry generating its value-added, and indirectly, as a driver of value-added in other productive sectors by being an essential component the economy's Gross Domestic Capital Formation (GDCF). In 2018, for instance, the construction sector's contribution to the country's GDP stood at 6.8%, while construction inputs in the GDCF were at 37.65%. Therefore, the performance of the construction industry is vital for Sri Lanka's economic growth, while it also mirrors the pattern of the country's development path.

The construction industry was traditionally known to be essentially a domestic activity because of two main reasons: (a) the outputs of the activity were not traded across the border and almost exclusively consumed (or used) locally, and (b) the inputs, including material, labour, and entrepreneurship, were sourced essentially from local suppliers. Thus, the development of construction activities was not yielding significant implications on the nation's Balance of Payments.

However, with the opening of the economy and more so with the advent of neoliberal policies in international trade, capital, and finance flows, this traditional status-quo gradually changed. While the "local usability" nature of construction output largely remained unchanged, the input side gradually evolved towards increased importation of inputs, not only construction material, but also capital, entrepreneurship and even labour.

Economic implications of this trend could be profound as it could induce significant bearing on the nation's external finance, as well as on the domestic value-added and indigenous technological advancement; thus, is important to be examined at length.

## **Objectives**

This study was conducted to deep dive into the trends observed in the construction industry of Sri Lanka during the recent years. It examined the prevailing condition of the industry and its evolution, with particular focus on the foreign input intensity of the economy's construction value-added, and its ramified implications.

## **Material and Methods**

The construction sector is referred to as a "barometer" of economic development (Wijerathne, 2019). Healthy functioning of the sector is important for the smooth progress in the socio-economic development process. Sri Lankan construction sector has shown signs of growth in the post-civil disturbance era; recent trends of growth in the supply of locally produced as well as imported cement, a pre-requisite for the sustenance of the construction sector, reflects this trend (Gunawardhana & Jayalath, 2017). Many impediments that constrain Sri Lankan construction sector growth impetus have been observed. First, the trends of the economy itself (Weddikara & Devappriya, 2002), including Governmental policy changes, particularly on taxation of imports (Wijerathne, 2019), and on its role shifted from investor to facilitator (Weddikara & Devappriya, 2002), and also the delays in payments to contractors (Karunaratne & Silva, 2020) have been identified as notable constraints. Second, high construction costs driven by ever-increasing prices of construction material and by skilled worker shortages coupled with high labour wages, appeared a significant frictional factor (Gunawardhana & Jayalath, 2017), (Wijerathne, 2019). Third, low construction volume, technological lags, capital shortages have been found handicapping the sector. In addition, socio-economic stress, institutional weaknesses, inadequate resources, and investment plans, and various other sociological, economic, and political constraints also have been cited.

Furthermore, the pressure exerted from foreign construction companies is another challenge the Sri Lankan construction companies are confronted with. Lesser costs these foreign firms appeared experiencing could have been enabled by various incentives accorded by their mother countries (Wijerathne, 2019) including concessionary working capital, and low-cost construction machinery,

resulting in unfair competition<sup>4</sup>. This has put local firms at a further disadvantage when those have already been suffering from a deficiency in terms of technology, management, finances, and quality of local inputs (Weddikara & Devappriya, 2002).

The situation appears to have been further aggravated (a) by low priced imports to the country, enabled through tax or custom duty concessions accorded under foreign investment promotion schemes or international trade agreements, (b) by corruption and favours accorded to foreign firms at policy and economic management levels, and (c) also by the soft power of foreign parties exerted through foreign aid (Dailynews, 2019).

It is in this conjuncture that researchers have discussed the importance of encouraging local construction companies through appropriate policy changes (Weddikara & Devappriya, 2002). Some even suggest that a local preference in contract accordance should be put in place to the tune of 30%-40% of the giant projects to prevent the downfall of the local construction industry, and also have suggested encouraging the local supply of inputs (Karunaratne & Silva, 2020), (Dailynews, 2019).<sup>5</sup>

Though have not been explicit, what has been advocated in these strategic suggestions appears to be a call for reduced *foreign dependence* of Sri Lanka's construction sector, or an enhanced "*domestic foot-print*" (Warwick, 2018). In this perception, it becomes important to study macroeconomic and sectoral parameters to mirror the sector's import intensity, and also possible trends of evolution over the years; for which purpose the present research was conducted.

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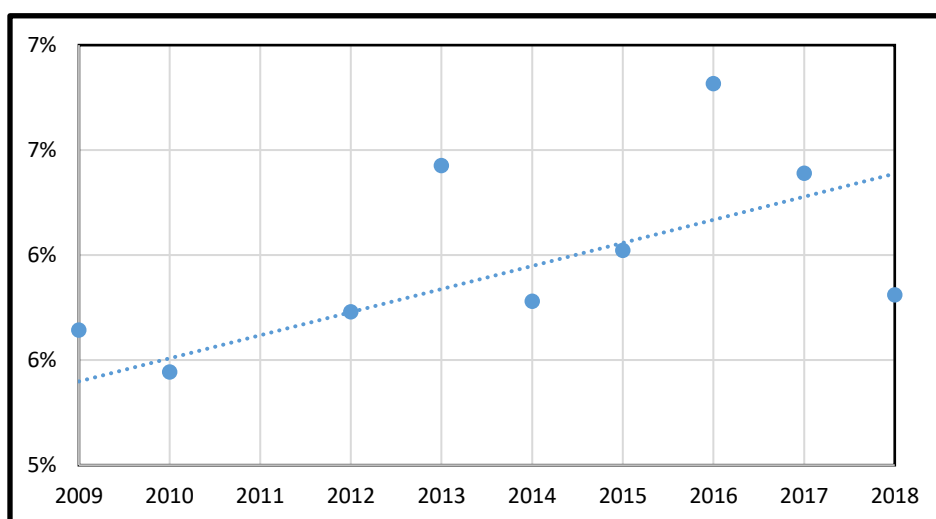
<sup>4</sup> , For instance, Chinese Government accord subsidies to their contractors bidding for projects abroad (Themorning, 2018), and it is no surprise therefore that the Chinese construction firms have been found with 30% lesser costs compared to local construction companies, and thus, are always at an advantage to win bids for contracts (Wijerathne, 2019).

<sup>5</sup> Approximately 35%-40% of the industry activity, both in volume and value, are under the purview of Chinese contractors. Chinese labour and Chinese building material are used by these contractors, exerting pressure on Sri Lankan currency. Most of the Sri Lankan contractors are out- bid in most of the instances due to the subsidies accorded to Chinese firms by the Chinese government. (Themorning, 2018). The ultimate motive within the next three years is to increase their share of the Sri Lankan construction industry (with their own inputs materials and labour) up to 70%. (TOI, 2018).

Several indicators, including the share of total imports, its Balance of Trade (BoT) ratio, and the Terms of Trade (ToT) ratio of construction services, were estimated for the period from 1987 to 2018 in order to mirror “foreign dependence” of the construction sector of the Sri Lankan economy. Data required for the analysis were sourced from Annual Reports of the Central Bank of Sri Lanka published for various years. Tabular and graphical methods were adopted in analysing and presenting results.

## Analysis and Results

At the outset, the most fundamental indicator, namely, the share of the construction sector in Sri Lanka’s total imports in the post-conflict period was analysed; results are depicted in Figure 1



Source: Authors’ estimation

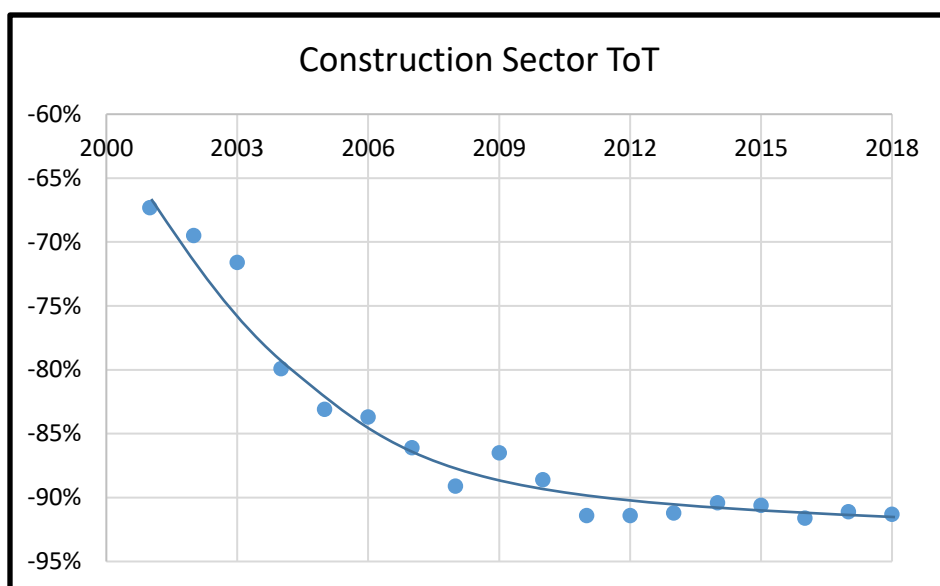
**Figure 1: Construction sector share of total imports of goods and services**

It is clear from this pattern that the Construction goods and service imports have been occupying an increasingly larger share in the economy’s total imports. This indicates the increasing burden the country’s balance of payments is bearing owing to construction sector developments.

The study focused next on the evolution of construction sector Terms of Trade (ToT), represented by the following indicator:

$$\text{Construction Sector ToT} = \frac{X \text{ of Constr Goods and Services} - M \text{ of Constr Goods and Services}}{X \text{ of Constr Goods and Services} + M \text{ of Constr Goods and Services}}$$

Noteworthy in Figure 2 that the Terms of Trade of Construction sector goods and services has been undergoing a persistent unhealthy evolution over the past two decades. While the isolated up-turn in 2009 could possibly be attributed to the end of civil disturbances, its reversal once again from 2010 onwards indicates a general pattern of decline.



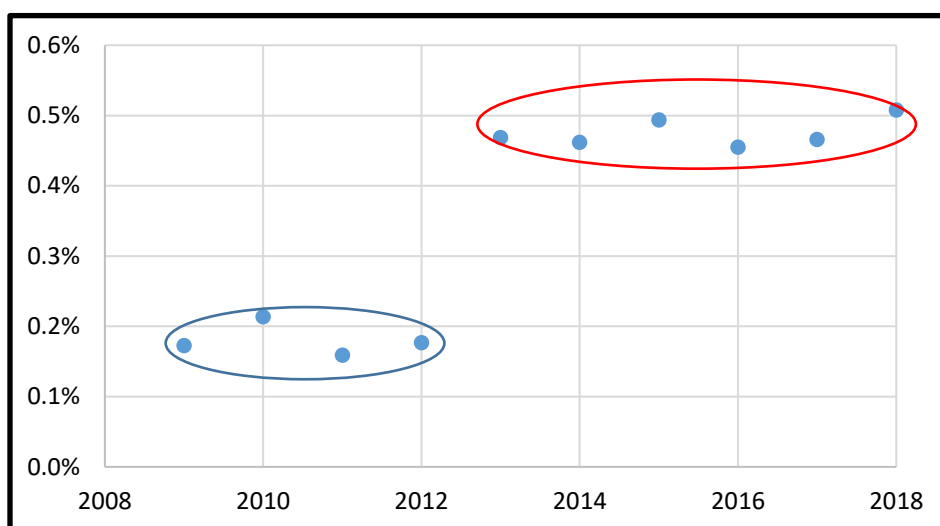
Source: Authors' estimations

**Figure 2: Evolution of the Construction sector Terms of Trade Ratio**

The study attempted to understand how the import intensity of the sectoral activities evolved, by examining total sectoral imports as a ratio of the sectoral Gross Value Added, the results are depicted in Figure 3.

The fact that Sri Lanka's construction sector has gradually become more "import intensive" during the study period is evidenced through these patterns. Particularly note worthy are the two distinctive "import intensity levels of GDP" prevailed before and after 2013, while there has been a gradual decline in Construction sector Terms of Trade during the past two decades. Construction sectoral value-added has become more than twice import intensive after 2013 compared to the level prevailed before that year. While causes of this curious leap need further investigation through future research, it could be hypothesised that (a) the post-conflict infrastructure development drive of the Government, executed largely through foreign contractors hired on bilateral credit where no

competitive bidding was permitted and (b) material had to be sourced from the donor countries, could have been behind this unhealthy shift.



Source: Authors' estimations

**Figure 3: Total sectoral imports as a ratio of the sectoral Gross Value-Added**

### Conclusions and Recommendations

The results of the study indicates that the pattern of evolution of the Sri Lankan construction industry has not been towards increased national self-reliance, but in the direction of increased foreign dependence. Construction sector's Terms of Trade undergoing a decline and its imports as a ratio of the sector's value-added having had an upward leap indicate that the economy's construction demand is increasingly met by imported inputs, both in terms of material and construction services.

While the causes behind this unhealthy trend, and micro-level reflections of their impacts would have to be investigated through detailed and profound research, it brings to light the fact that the national economy is being deprived of the opportunity of deriving maximum benefits from construction sector activities. A sector that possesses the potential of generating positive input-output effects on other economic sectors (Ramachandra & Rameezdeen, 2006) appears to have not been sufficiently geared to produce growth-pulling economic multiplier effects within the national economy, as many such effects have got leaked out. For the Keynesian multiplier to generate the maximum extent of domestic economic fruits, the effective demand, pushed forward through investment, should accrue

to Sri Lankan contractors and domestic material producers, and not to foreign contractors and suppliers.

Thus, the research leads to a suggestive inference that trade policies pertaining to construction sector has not been successful in generating sufficiently high forward and backward linkages within the national economy, and has thereby not been able to produce maximum investment productivity in terms of domestic value-added. The resultant perils become further harmful as most of the large-scale construction projects undertaken have been funded through borrowings in foreign currency, and inadequate domestic value creation through such project implementation would make the economic burden of such foreign debt on future generations much heavier.

The outcomes of the research, therefore, enable recommendation that the policy makers should review in detail the input-output relationships the construction sector could have with the broader national economy, and stimulate such domestic activities to reap maximum multiplier effect from construction sector investment. This emphasises the importance of the sector's "domestic foot-print", and calls for an appropriate policy shift towards national preference when sourcing construction services and material inputs, while ensuring greatest possible investment deployment efficacy sought through thorough appraisal of development projects and effective process of procurement, particularly concerning public investment.

**Keywords:** *Sri Lanka's Construction sector; Domestic Footprint; Foreign Dependence; Terms of Trade; Value Addition*

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## URBAN RESIDENTS' WILLINGNESS-TO-PAY FOR "GREEN SPACES" IN THE COLOMBO METROPOLITAN AREA

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### Introduction

Problems associated with the provision of accommodation with standard facilities and proximity to the places those provide essential services such as education and health and lack of suitable lands for urban development have, amongst others, become critical issues for the administrative bodies in many cities, or in other words, urban areas characterized by high population density, in the world, and Colombo metropolitan area has no exception. Due to convenience in accessing to the place of work and rich infrastructure connecting that with the place one lives, the demand for urban living is increasing, and notably the demand for those "high-rise apartments" has been increased incessantly. The people in need and those administrative bodies in supply are now considered "vertical living" as a remedy to overcome these issues (Samaratunga *et al.*, 2014).

Recreation, social interaction, aesthetics, cultural heritage and ecological functions are deliberated as important variables that determine the level of sustainability in once attempt to develop urban areas. It has been proved that the infill developments without proper planning for more public 'green space' can decrease the standards of living (Haaland *et al.*, 2015). Increasing the number of apartment construction projects in the urban areas has led to minimize the availability of "urban green spaces", i.e., any vegetation found in an urban environment, including parks, open spaces, residential gardens, or street trees etc.

### Research Problem

Urban green space is linking with the health and well-being of a human. When living in an apartment located in an urban area, increase in mental stress, health conflicts due to physical inactivity and environmental consequences are raised. Although the development of urban green spaces was documented as a solution to mitigate those negative aspects, the attitudes and perceptions of residents

towards this trend are largely unknown to the policymakers and general public. In this shed of light, it has become a necessity to state the preferences of the urban residents towards green spaces in an urban area.

### Specific Objective

This study was aimed to examine empirically the Willingness-To-Pay (WTP) of those residents in urban apartments that show the characteristics of ‘vertical living’ to implement an appropriate process to establish “Green Spaces” close to their place of living.

### Methodology

Choice experiment (CE) techniques were selected to estimate the WTP of those targeted respondents, which is a common method used under the Stated Preference (SP) methods to deal with this type of economic problem. After a thorough review of the literature on this technique, a “Choice Set” was developed by the researcher with key Attributes and corresponding attribute Levels (Chau et al., 2010) (Table 1).

**Table 1. Attributes and levels, coefficients and corresponding p value resulting from CE**

Attributes	Levels	Coefficient	P value
Knowledge on green spacing	Low*	0.11	0.78
	High		
Availability of space for physical activities	Greater than or equal 1.5m <sup>2</sup>	0.79	0.05***
	Less than 1.5m <sup>2</sup> *		
Indoor air quality and noise level	Unacceptable*	-0.21	0.59
	Acceptable		
Distance to the nearest green spaces	Less than or equal 1.5km	1.34	0.00***
	Greater than 1.5km*		
Designing new or development of existing mechanism to establish green spaces	By own*	0.02	0.95
	By developer		
Management fee	Rs. 5,000	-7.9*10 <sup>-4</sup>	0.05***
	Rs. 6,000		

Note: \*Base level, \*\*\*significant at 95% confidence level

Source: Udalamaththa (2020)

Following the Full Factorial Design, 64 possible alternatives were derived to represent 06 Attributes selected, and 02 attribute Levels were included for each attribute. The choices were reduced into 16 possible combinations by way of orthogonalization procedure to eliminate empirical issues associated with model estimation. Those combinations were, in turn, blocked into 08 different versions and 02 options were included under each technique.

The primary data to estimate WTP were collected from those permanent residents living in apartments (n=88) established in the Colombo metropolitan area and close to the capital city of Sri Jayewardenepura. Each respondent was interviewed personally by using a structured questionnaire from July to September 2019, where the respondent was provided with a “Choice Card” (i.e., 1 out of 8 cards prepared with varied combinations). The Conditional Logistic Regression (CLR) techniques were applied to obtain the estimates, and in turn, to calculate the Marginal Willingness to Pay (MWTP).

## **Results and Discussion**

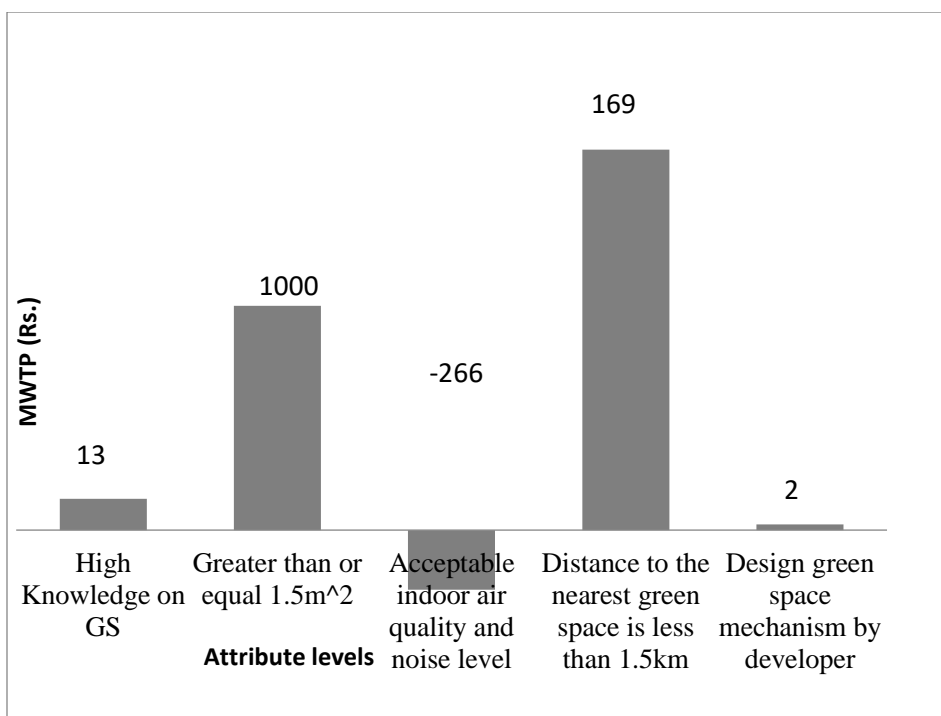
### **Descriptive Statistics of the Sample**

The majority of respondents were Males (56%) and between the Ages of 20 to 40 years. Almost two third (68%) of them were the owners of the residence. Nearly 75 percent of them were married and employed full-time and 50 percent of respondents completed education up to University level.

### **The outcome of the choice experiment**

Table 1 depicts the values of coefficients and corresponding ‘p’ values resulting from Choice Experiment. It highlights that three out of six Attributes were significant, i.e., those representing the facts that: “Management fee”; “Availability of space for physical activity”, and “Distance to the nearest green space”. It can be seen that four Attributes were positively affecting the preferred choice, and the attribute affecting negatively include “Indoor air quality and noise level”.

Figure 1 depicts that the highest value of WTP was recorded for the “Distance to the nearest green space”, which was less than 1.5 km from the place they live. The lowest value was obtained by “Air quality and noise level”. This elaborates the fact that, currently, the respondents, in general, “accept” the level of noise and indoor air quality, and they were willing to take the attribute, if it provides free of charge only.



Source: Udalamaththa (2020)

**Figure 1: MWTP values of attributes**

## Conclusions

The analysis results suggest that the urban residents in the Colombo metropolitan area who experience the highest population density and the lack of space for leisure are willing to pay for establishing green space, if they were close to their accommodation (i.e. easy accessibility) and which provides the taste of a natural environment. Their attitudes toward the concept and practice of sustainable development, and more specifically, to protect ‘green spaces’ of the city were positive.

From a policy point of view, this underlines the fact that public authorities can design and develop green spaces combining those urban apartments and the residents of the area can be ‘taxed’ for which to cover up the cost in a well-designed incentive-based regulatory mechanism.

**Keywords:** *Choice experiment; Marginal Willingness- To- Pay (MWTP); Urban green spacing, vertical living*

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# **PUBLIC INVESTMENT PRODUCTIVITY AS A PATH FOR SRI LANKA TO ESCAPE FROM MIDDLE INCOME TRAP: REFLECTIONS FROM ANALYSES OF TRANSPORT SECTOR PROJECTS**

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## **Introduction**

Development economists have identified that there is a tendency of “frictions” being applied to the growth process when developing economies are within the middle-income bracket (many definitions as to what the limits are). This tendency of growth slow-down approaching the boundaries of the high-income level is called middle income trap. Sri Lankan situ – durations taken to cross from low-income to lower Middle-Income, and Lower Middle Income to High Middle Income, demonstrating the country also faced with the same effect. Surmounting this barrier therefore appears requiring a strategic approach, as conventional growth pushing activities and policies look incapable of handling this problem, as demonstrated by many international experiences. This paper presents findings of a research conducted to examine what slowing-down effects that could possibly have been active in the Sri Lankan growth process in the recent past, and how those could possibly be addressed through a strategic approach, focusing its attention on the aspect of investment, one of the important drivers of economic growth, and particularly on public investment.

## **Research problem**

Middle income trap is a situation in which a country’s income per capita stagnates below a certain level (Eryilmaza & Eryilmaza, 2015). This “problem” has been widely addressed in literature, and many scholars have identified “investment” as key to surmounting it. Investing more in education, and research, in developing industrial comparative advantage, in industrial upgrading, in diversifying businesses, for instance, have been highlighted (Eryilmaza & Eryilmaza, 2015). The main focus of these analyses appears to be “investing more”; but only a little emphasis has been given to “productivity aspect” of those investments. This stands a significant gap in the present development discourse, particularly when

large amounts of resources are spent on public investments seeking a Keynesian-type growth push.

### Objectives

The aforesaid significant gap in the prevailing development discourse has been addressed in the present research, and this paper sheds light on this important dimension of “Investment productivity”, regarding which, there appears to be a vacuum in Sri Lankan literature. The research aimed at examining the investment effect on growth, with particular focus on public investment in transport sector projects, and studying the associated weaknesses in view of fathoming the extent of “friction” that the inadequate investment productivity might have been causing against the growth process in Sri Lanka.

### Materials and Methods

Investment has been a focus of discussion among economists in almost all ideological schools. For instance, “centrality of investment” in the growth process could be found emphasized by both Keynes and Kalecki. The role played by investment in determining effective demand, and thus national savings as well as national output and income has been widely discussed in economic analytical literature (LOÂPEZ & MOTT, 1999). Classical economists also recognise how instrumental investment would be in determining output and in exerting pressure on key aspects such as employment (Alexiou , Tsaliki , & Tsoulfidis, 2016). Neo-classicalists also have advanced the concept that investment would be responsible for creation of business cycles in a free market economy (Mukherjee, 2008). In that light, the present research addressed the “investment productivity” aspect focusing its analysis on the post-conflict Sri Lanka, and examined the capital deployment efficacy in the public sector in view of fathoming the bearing it could have on the growth of national product.

In this analysis, capital is considered an essential factor of value creation and how productive capital as a factor of production in an economy would depend on the efficacy of incremental investments which over the years build the capital stock. Incremental Capital/Output Ratio (ICOR), a parameter related to the Harrod – Domar growth model (Middlebury, 2012) and representing this relationship, would be low when investment productivity is high, and vice-versa.

$$ICOR = \frac{1}{\text{Investment Productivity}} = \frac{1}{g/[I/Y]} = \frac{[I/Y]}{g}$$

(I/Y), in the above equation, represents the “Investment ratio” or the economy’s Gross Domestic Capital Formation (or Investment) as a share of its Gross Domestic Product, while “g” standing for GDP growth rate. Given a particular level of ICOR, a rather stable parameter, this relationship establishes the extent to which the “investment rate” in an economy could influence its “growth rate”, possibly “trapped” in a given income level (Pettinger, 2019).

To empirically analyse “capital deployment efficacy” in public investment in Sri Lanka during the post-Conflict decade (from 2009 to 2019), several transport sector development projects were selected and “investment made” on those projects, sourced from literature, were appraised to apprehend their “reasonableness”. Any excessive capital deployment, over and above the capital expenditure at which those capital assets could have been realised, was estimated. Such over expenditure would reflect “high” ICOR (or low investment productivity) than what actually prevails in the economy as estimated using secondary data sourced from the annual Reports of the Central bank of Sri Lanka.

Next, a “shadow real ICOR” was estimated based on the true value of investment ploughed into creating the capital assets, and based on which, the potential growth impetus was worked out under the scenario that the total Government capital expenditure made were “truly invested” without any over-expenditures, wastages or leakages. Thus, the growth rate differential, foregone in the economy owing to “capital deployment inefficacy”, could be estimated assuming scenarios of different scales of capital deployment inefficacy prevailing in the overall public investment portfolio in Sri Lanka.

### **Analysis, Results and Discussion**

First, the study examined several large-scale infrastructure development projects in the transport sector, particularly in highways and railways. In order to gather information pertaining to the recorded expenditures as well as the levels of expenditures at which those projects could have actually been realized. Secondary data on alternative projects, proposals, and international and local bench-marking based on similar projects, were used for this purpose.

Table 1 summarizes the results of this analysis, in which recorded as well as realizable expenditures are compared.



**Table 1: Capital expenditures incurred and costs of alternatives - Transport Sector**

Project	Expenditure Incurred in the project (Country of origin of the Contractor)	Capital Expenditure on the best alternative through which the capital assets could have been generated		Estimated Capital Saving (%)
		Cost and Alternative	Possible saving	
Northern line Railway Signaling (average per Station)	USD 3 Mn (India)	USD 0.3 Mn (Charged by Sub contractor)	USD 2.7 Mn	90.0%
Matara-Beliatta Railway Signaling (Average per Station)	USD 3.5 Mn (China)	USD 0.3 Mn (At local cost at Narahenpita)	USD 3.2 Mn	91.4%
Mannar Line Rail Track Reconstruction (Average per km)	USD 2.2 Mn (India)	USD 0.5 Mn (Local, Vavuniya to Omantahi)	USD 1.7 Mn	77.3%
Omanthai-Pallai Rail Track Reconstruction (Average per km)	USD 1.9 Mn (India)	USD 0.5 Mn (Local, Vavuniya to Omanthai)	USD 1.4 Mn	73.7%
Pallai-Kankasanthurai Rail Track Reconstruction (Average per km)	USD 2.6 Mn (India)	USD 0.5 Mn (Local, Vavuniya to Omanthai)	USD 2.1 Mn	80.8%
Matara- Beliatta Railway new construction (Average per km)	USD 9.2 Mn (China)	USD 4.8 Mn (CECB Alt 4 & 6 for Battaramulla Railway)	USD 4.3 Mn	47.0%
Road Construction – Surface Technology : DBST (per m-km)	Rs 16 Mn (Foreign, no bid Competition)	Rs 2.6 Mn (Local)	Rs 13.4 Mn	83.8%
Road Construction – Surface Technology: SBST (per m-km)	Rs 7.3 Mn (Foreign, no bid competition)	Rs 2.3 Mn (Local)	Rs 5.0 Mn	68.5%
Road Construction – Surface Technology: Asphalt(per m-km)	Rs 15 Mn (Foreign, no bid competition)	Rs 5.0 Mn (Local)	Rs 10.0 Mn	66.7%

Source: Authors' estimations using information from secondary sources

The above analytical results indicate that Sri Lanka's transport project costs could have been at least 77% lower had the alternatives been properly examined and competitive bid contract awarding been practiced. This implies that the same projects could have been realized at one-fourth the capital expenditure that has been incurred. Quite apart from secondary economics and multiplier effects that could have been realized had the projects been locally executed by national enterprises, the mere excess of capital expenditure itself of that substantial scale becomes a waste and an added burden on public debt (as most have been executed

on foreign borrowings). The adverse effect of this capital deployment inefficacy on growth is likely to be significant.

To estimate this effect, the ICOR worked out on actual capital expenditure records in public accounts was compared against an estimated “shadow real ICOR” based on the true expenditure that would have really gone into generating the capital assets on three different scenarios of “capital savings foregone”, namely 75%, 50% and 25%. The supplementary growth impetus that could have been realized on the “shadow real ICOR”, had the total capital expenditure incurred been physically invested to create economic assets without going in waste, was thus worked out; the results of which analysis are summarized in the Table 2.

**Table 2: Recorded ICOR, Estimated Shadow Real ICOR and Growth Foregone**

Scenario	Scenario of Average Capital Expenditure Savings Potential of the Government		
	75%	50%	25%
Recorded ICOR (average for 10 years 2010 to 2019)	6.57	6.57	6.57
Recorded Investment Ratio	34.39%	34.39%	34.39%
Recorded Public Investment Ratio	5.43%	5.43%	5.43%
Shadow Real Public Investment Ratio	1.36%	2.72%	4.07%
Shadow Real Investment ratio	30.28%	31.64%	33.00%
Estimated Shadow Real ICOR	5.79	6.05	6.31
Growth rate feasible if total CapEx by Govt was physically invested	5.94%	5.68%	5.45%
Recorded Growth rate	5.23%	5.23%	5.23%
Growth differential foregone owing to capital deployment inefficacy	0.71%	0.45%	0.22%

Source: Authors’ calculations

These results bring suggestive evidence to the effect that Sri Lanka during the past decade would possibly have lost an otherwise realizable supplementary growth impetus owing to over-expenditure of public investment; the excess appears to have been wasted or leaked out. This potential supplementary impetus could be substantial and figure from 0.71 per cent to 0.22 per cent, depending on the level of wasteful expenditure ranging from 75 per cent to 25 per cent, respectively, in the overall Government capital expenditure portfolio in general over the past decade.

Thus, it is clear that the inefficiencies present in public investment planning, appraisal and implementation would represent a substantial constraint to growth. Removal of such constraints would significantly reduce the economy's ICOR level (implying augmented investment productivity), and thereby facilitate the nation's economic progress towards early escape from the Middle-Income Trap.

### Conclusion and recommendations

Investment process has inefficiencies – high costs, leakages, inadequate domestic effective demand creation - as reflected from transport sector projects in Sri Lanka. While generalization of this inference to other sectors require further research, such presence to some extent could possibly be behind unhealthy pattern observed during the past 10 years with regard to ICOR, reflecting worsening investment productivity. Analyses suggest that public investments funded through bilateral foreign borrowings are much lesser productive than locally funded projects. Economic leakages associated with such investments appear significantly high, particularly because bilateral loans are usually “tied to donor” through conditionality so no market competition advantage is made available to the borrower country. To national value addition, this is worse than facing international competition as advocated in Neoliberal policy prescriptions, which at least permit fair competition opportunity for local firms. Therefore, public investment financing through unsolicited offers should be avoided. Complete overhaul is necessary to streamline public investment appraisal / approval process, without which, Investment in Sri Lanka will largely be mere book entries with no or little value adding effect. If that could not be addressed, escaping from the Middle-Income Trap through investment spending will be constrained for long periods into future.

**Keywords:** *Economic growth; Middle Income Trap; Investment Productivity; ICOR; Sri Lanka*

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## IMPACT OF GOVERNMENT EXPENDITURE ON PRIVATE INVESTMENT IN SRI LANKA

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### **Introduction**

The government sector performs an important role in economic management in developing countries. The role of government in economic management is performed through the implementation of fiscal and monetary policies. In this context, fiscal policy actions are playing a vital role in promoting growth and development particularly in developing countries. Theoretically, this is confirmed by the new growth theory in which theory identified public spending as a major fiscal policy instrument which promotes productivity and long-term growth (Rathnasiri and Soysa 2020; Udoh,2011; Rathnasiri and wijesinghe,2012). However, the impact of government expenditure on private investment is controversial in the extensive literature (Ahmed and Miller 1999; Tsung-wu Ho 2001; Nikiforos T. Laopodis 2001; Faik Bilgili 2003; Hussain et al., 2009; Motlaleng, Nangula, and Moffat 2011). The majority of the previous empirical literature are based on the two main theoretical strands; neoclassical and Keynesian views. In this regard, the negative crowding- out effect of government spending is postulated by neo classical school and the positive crowding- in effect in the literature was formed by Keynesian theory.

### **Problem Statement**

The previous empirical studies argued in support as well as against increases in government expenditure on private investment. This explained an important unresolved issue on the relationship between government expenditure and private investment. In the previous empirical literature, some perceived increase in government expenditure as a means of promoting economic activities through the development of economic infrastructure that attract private investors to invest heavily in the economy by lowering cost to the private sector (Hussain and Zafar, 2017, Muhammad et.al., 2012).

Some other studies confirmed the neo-classical theory where increasing government expenditure crowding out private investment, that increases interest

rates due to high demand for borrowing in the loanable fund market reduces the available credit facilities to the private sector. Further, high demand for borrowings increases money market interest rates and finally reduces the private investment. This may distort the prices and leads to misallocation of resources (Barro 1991; Folster and Henreckson, 2001).

On the other hand, some others argued based on the Keynesian view that increasing government expenditure complements private investment with low interest rate policy (Sinevičienė, 2015; Fujii et. al., 2013; Cooray, 2009; Ranjan and Sharma, 2008). Expansionary fiscal policy actions stimulate aggregate demand in view of the matter that underutilization of resources paying the way to increase economic growth. Moreover, investigations carried out by Laopodis (2001); Faik Bilgili (2003); Motlaleng, Nangula, and Moffat (2011); Hussain et al., (2009) argued that there would be neither crowding-in, nor crowding out effect of private investment due to increase in government expenditure. As a result, private investment and government expenditure are considered to behave independently. This view is based on the Recardian equivalence theorem (Sen and Kaya, 2014).

Even though there are controversial ideas, this intended issue is very important to analyze because private investment is one of the main growth drivers in the long run. Yilanci and Aydin (2016) explained the role of private investment in developing countries as main players in the growth process. Hence, growth increases the productive capacity of the country. There were limited country specific studies conducted to analyze the effects of government expenditure on private investment in developing countries (Dilrukshini, 2009). It seems that a time series country specific study is potentially more informative as such studies captures country specific factors, although the findings cannot be generalized to other countries. In Sri Lanka, the size of the government sector has increased with the implementation of development projects and the expansion of economic activities after 1977 with the focus on the more development orientation. The size of the government which measures government expenditure as a percentage of GDP has increased with the introduction of liberalized policy after 1977. For instance, the above figure has increased at the end of 1970's and the midst of 1980's and 1990's (CBSL 2018). Further, it has been noticed that private investment considerably fluctuated during the study period 1977- 2019 and the recorded period average was 27.5 percent of GDP. The limited empirical literature confirmed the positive association between government expenditure

and private investment in Sri Lanka (Herath, S. 2010; Lahirushan and Gunasekara 2015; Thilanka and Sri Ranjith, 2018).

According to Sri Lankan data during the last few decades this matter has become more controversial as the private investment fluctuates noticeably with the moderate growth record in the pace of increasing government commitments in economic activities. Hence, research questions of the study area as follows. Firstly, what kind of relationship exists between government expenditure and private investment in Sri Lanka? Secondly, is the public expenditure crowd- out or crowd- in private investment in Sri Lanka? And finally, what component of government expenditure is more important in promoting private investment and growth?

### Objectives of the Study

The main objective of this study is to identify the impact of government expenditure on private investment in Sri Lanka during the period 1978 to 2019. The specific objectives of the study are as follows,

- To identify the short run and long run relationship between government expenditure and private investment in Sri Lanka.
- To identify the impact of public current and capital expenditure on promoting growth in Sri Lanka.
- To identify most significant factors which determined private investment in Sri Lanka

### Methodology

To examine the short run and long run relationship between government expenditure and private investment, this study utilized the bound testing procedure and Error correction methodology (ECM). Bound testing Technique provides the long-term association among the variables and ECM provides short run relationship between the variables in the long run model. According to the literature, the relevant dependent variable and explanatory variables are identified for the investigation and the study expresses the simple model as follows.

$$PRIV_t = f(GREX_t, GCEX_t, RGDP_t, RIR_t, FT_t, INFL_t)$$

To find out the impact of government expenditure, this study adopts the main disaggregate form of government expenditure, government recurrent expenditure (GCEX) and government capital expenditure (GCEX) as the main explanatory

variables. Further, study incorporates real GDP (RGDP), real interest rates (RIR), proxy for openness variable as total trade to GDP (FT) and inflation rates (INFR) as the main control variables to explain the private investment in Sri Lanka. Linearizing equation can be explained as;

$$\ln PRIV_t = \beta_0 + \beta_1 \ln GCEX_t + \beta_2 \ln GCEX_t + \beta_3 \ln RGDP_t + \beta_4 RIR_t + \beta_5 INFR_t + \epsilon_t$$

This study uses a large time series data set spanning from 1977-2019. The relevant data collected from central bank annual reports. All the variables converted to real term except inflation rate to neutralize the impact of price changes at 1996 prices based on the GDP deflator. The natural logarithms of all the variables have been utilized except inflation rate and real interest rate.

## Results and Discussion

According to the ADF unit root tests, government recurrent expenditure as a percentage of GDP, government capital expenditure as a percentage of GDP, real GDP, real interest rate, Foreign trade to GDP and inflation rate (annual average change in GDP Deflator) are non-stationary variables at level but at first difference implying that they are I(1) variables while real private investment as a percentage of GDP was stationary at levels meaning that is an I(0) variable. Optimal lag length in the ARDL model was investigated by the standard criterion and accordingly two lags selected for the model. After the lag selection, ARDL bound test results and the coefficients based on the selected long run model: ARDL(1, 0, 0, 2, 1, 1, 0) is given in Table 1 and 2.

**Table 1: Bound F Test Results**

Country	F-Stat. Value	Lag length	Significance Level	Bound Values	
				I(0)	I(1)
Sri Lanka	5.462025	2	10%	2.12	3.23
			5%	2.45	3.61
			2.5%	2.75	3.99
			1%	3.15	4.43

Source: Calculated by authors based on survey data



The bound test results reveal that F stat is greater than the upper bound critical values. It shows that there exists a cointegration relationship among the variables. The results of the long run model are summarized in table 2.

**Table 2 ARDL Long Run Model**

Dependent Variable D(PRIV)

Selected Model: ARDL (1, 0, 0, 2, 1, 1, 0)

Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGREX	-0.594256	0.232591	-2.554941	0.0163
LGCEX	0.264535	0.127422	2.076057	0.0472
RIR	-0.000723	0.012528	-0.057716	0.9544
LRGDP	0.275538	0.131492	2.095473	0.0453
LFT	0.536989	0.170863	3.142809	0.0039
INFR	0.007057	0.013341	0.528986	0.6010
R-squared				0.747218
Adjusted R-squared				0.646105
F-statistic				7.389937
Prob(F-statistic)				0.000025

Source: Calculated by authors based on survey data

The results of the short run error correction are given in table 3. The error correction term is negative and significant, confirming the existence of a long run relationship between variables in the model.

This indicates that following a shock, approximately 73% adjustment towards long run equilibrium is furnished after one year. The short run dynamics of the long run model indicates there is no short run relationship between government expenditure and private investment. Further, real interest rate, real GDP and trade openness have expected positive association with private investment in the short run.

**Table 3 ARDL Error Correction Regression**

Selected Model: ARDL(1, 0, 0, 1, 1, 1, 0)

Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.192209	0.032121	-5.983976	0.0000
D(RIR)	0.010998	0.002589	4.248136	0.0002
D(RIR(-1))	0.006970	0.002634	2.645779	0.0132
D(LRGDP)	0.863773	0.404997	2.132787	0.0418
D(LFT)	0.809639	0.140122	5.778110	0.0000
CointEq(-1)*	-0.727185	0.111565	-6.518064	0.0000
R-squared				0.725694
Adjusted R-squared				0.685354
F-statistic				17.98980
Prob(F-statistic)				0.000000

Source: Calculated by authors based on survey data

Results of the study, indicates that government recurrent expenditure, and real interest rates have negative impact on private investment in Sri Lanka and the rest of the variables in the long run model indicates positive impact on private investment. The government recurrent expenditure has significant negative impact on private investment confirming crowding out effect for the period analyzed while the government capital expenditure has positive impact confirming crowding in effect on private investment and growth as mentioned in the Keynesian theory. This is also in line with the previous literature (Thilanka and Ranjith, 2018; Sen and Kaya, 2013; Basar et.al 2011). The negative crowding out effect in this case is mostly explained by high government expenditure over its revenue induced by public borrowings from the domestic market discouraging private investment (Rathnasiri and Soysa, 2020).

Real interest rate has a negative impact on private investment confirming the theory but not statistically significant. This actually explained the financial crowding out effect of government expenditure but it is not valid to justify at this moment since the particular variable is statistically insignificant in the model. This may be due to the fact that low interest elasticity of investment particularly in developing countries. Among the other control variables in the model, real GDP and trade openness variables have significant positive impact on private investment confirming the previous literature (Levine and Renelt, 1992; Ahamed and Miller, 1999). But the inflation rate which measures based on the annual average change in implicit price index has shown positive impact on private investment in the long run which denoted a more controversial outcome with the previous literature.

Increased domestic output can lead to more capital accumulation in the private sector as the higher income may encourage future savings and those savings are mobilized for investment through the financial intermediation. Similarly, trade promotion has a positive impact on private investment as there is an inducement to the private sector to diversify the market and innovation of new products to meet the competition. Ahmed and Miller(1999); Levine and Renault (1992) confirmed the above finding.

### **Conclusion**

Unlike most of the previous studies, this study, considered the basic component of government spending, and accordingly, study reveals the effects of each component of government spending on private investment instead of taking them as a whole. Findings of the study concluded that recurrent expenditure crowds out private investment whereas public capital expenditure crowded in private investment in Sri Lanka. But, in the short run no impact on private investment running from government expenditure. Among the macroeconomic factors real GDP, interest rate, trade openness and inflation are important variables in determining private investment in Sri Lanka.

The findings of the study reflect an important factor about the effects of government expenditure on private investment in Sri Lanka. Private investment in Developing countries like Sri Lanka typically depends on availability of credits to the private sector and by nature the capital market is not well developed. In the government expenditure profile, recurrent expenditure is more dominant and more flexible by nature which may influence on more borrowing from the domestic market by the government in line with the current move in Sri Lanka.

Hence, the crowding-out effect of recurrent expenditure may have a significant effect on private investment. Accordingly, more attention should be given to achieving fiscal discipline by managing and controlling government recurrent expenditure in order to promote the private investment in Sri Lanka.

**Keywords:** *Government Expenditure; Private Investment; Bound Testing; Crowding-Out Effect*

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# **Foreign Relations and International Economic Repositioning**



## **NON-ECONOMIC FACTORS THAT INFLUENCE PRODUCTIVITY IN THE APPAREL INDUSTRY**

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### **Introduction**

Sri Lanka was amongst the only four countries outside East Asia to have embarked on a clear policy shift from import-substitution based industrialisation to export-oriented industrialisation. Given the decisive policy shift in 1977, and the policy continuity during the ensuing years, Sri Lanka provided a test case for the impact of a policy transition from inward orientation to outward orientation based on industrial growth and adjustment (Atukorale and Rajapatirana, 2000, p 543).

The first round of reforms adopted in the late 1970s by Sri Lanka was primarily focused on trade, with a whole package of incentives for export-oriented industry expansion, financial reforms for greater financial intermediation, including high real interest rates and a flexible exchange rate regime. It has to be said that the first phase of trade policy was not directed at the apparel sector per se. However, the policy shift lost momentum in the early 1980s, first because of an 'unfortunate' shift in policy priorities toward 'politically appealing' investment projects and, subsequently, as a result of the onset of the ethnic conflict (Atukorale and Rajapatirana, 2000p, 546).

Currently the industry is moving towards highly specialized areas focusing on a wide range of fashionable and quality items, including some products under leading international brands at competitive prices. Besides, the sector has moved into computerization of areas such as inventory or stock control and even attachment of smart devices to garments that help the wearer; these are some of the significant factors which are assisting the rapid expansion of this industry in Sri Lanka.

Apparel accounts for nearly 70 per cent of industrial exports while export earnings from textiles and garments account for around 46 per cent of the total export earnings and import of textile and textile articles only account for 12 per

cent of total imports (CBSL, 2015). This means that the sector has developed forward and backward linkages within the country as well as its competitiveness by conforming to customer needs.

According to Samarasinghe et al. (2015) the apparel industry currently has a large installed capacity. The high level of technical and managerial skills available in the apparel industry, low-cost land and the skilled and literate workforce provide the industry with a comparative advantage in the region.

The only meaningful measure of industrial competitiveness is productivity (Khurana & Talbot, 1998) and hence this topic is widely discussed, especially in the manufacturing sector, due to its vital link to the organizational profitability. As productivity is the driving factor in enhancing the competitiveness of any decision-making entity (firm), a study of productivity and its sources can provide vital inputs to a firm for improving its competitiveness. Further, the productivity in the apparel sector could shed light on how the policies, strategies and investments led to the creation of competitive advantage that could sustain the industry to what it is at present.

The analysis of productivity the apparel industry has many minimal deterministic factors. Amongst these factors one of the keys would be the transformations being examined in detail, in particular, what aspects of productivity have been identifiable with the apparel industry transformation and what specific factors and parameters were influential, how they transmitted themselves within the production and industrial structures, especially in the networking of the value chain are of critical relevance. It may also of interest how the productivity of the apparel sector managed to evolve viz-a-viz, other industry sectors that were launched in parallel with the apparel sector but failed to realize reasonably successful potential as key industries in Sri Lanka. It is noteworthy that the apparel sector currently is the largest trade sector and remain so even after more than three decades of its existence.

### **Research Problem**

The post-1977 economic performance was centred on the success of one solitary industry – the apparel exports. Having begun as a sector based on the comparative advantage derived from cheap and an abundance of unskilled labour, the sector faced many challenges both internally and externally. Despite the threats and challenges, including the most serious of all, namely the abolition of export quotas in 2005 of the buyer countries that provided the exclusive basis for apparel



exports, and GSP+ in 2009 the industry dramatically transformed itself through production, structural and market reorganizations with export earnings of 5.3 billion USD. Therefore, it is important to understand that what made the apparel sector perform differently from the other sectors and how it retransformed itself into a sector that still survives after three decades of existence as the principal manufacturing export sector.

### **Objective**

The main objective of this study is to analyze the characteristics and the determinants with specific focus on productivity as a principal explanatory variable that could shed light on the historical trends, including the reported resilience, displayed by the apparel industry. The study findings are expected to provide industry insights that could be used in formulating policies for the growth of the apparel industry to achieve the status as a principal value chain cluster in South Asia.

### **Methodology**

The research commences with the analysis of the profiles of the industrialists of the top apparel companies and thereafter go on to the stages of thematic analysis in detail. According to Braun and Clarke (2006), thematic analysis is the identification and reporting of themes within the data set. It is a widely used analysis technique which explains the minimally organized data in an enriched format.

The thematic network is used as the tool for analysis of data collected from in-depth interviews. The entire process of the thematic analysis consists of six steps where each step falls under one of the three main stages namely; (a) reduction or breakdown of the text; (b) the exploration of the text and (c) the integration of the exploration.

A sample size of nine organizations was chosen for the study from the top apparel companies where some of them are cluster companies who have been operating for over twenty years employing a minimum of 3,000 workers. Each respondent has work experience of over 15 years in the apparel sector though not necessarily in the same organization. However, six of them have over twenty-five years of apparel sector experience. Most of them have started their career at a lower position and subsequently had come up the ladder to the topmost positions in their respective organizations. Hence, they have wide-ranging experience in every aspect of their organization as well as an in-depth knowledge of the

industry. At least two individuals in strategic and tactical management level were interviewed but taken as one individual in the overall profile, using a discussion guide.

The discussion guide consists of questions covering the cost of production, strategies, markets, organizational culture, the role of government, the role of related bodies which attempt to gain certain insights into the technological innovations in each organization covering multiple aspects to enhance productivity.

## Results and Discussions

According to the findings of Isaksson, (2007) education, health, infrastructure, imports, institutions, openness, competition, financial development, geographical predicaments and absorptive capacity (including capital intensity) appear to be the most important factors for productivity growth while varied literature reveals low productivity in the manufacturing sector of the South Asian region is attributable to labour unrest, poor working attitudes, inefficient organizational culture/management, etc. which are directly related to labour productivity. Also, ineffective use of resources, poor information flow and non-productive activities have been identified as the key factors which are hindering the productivity prevalent in the Sri Lankan manufacturing industry (Vilasini et al. 2014). Thereby it is imperative to analyze the contribution of each variable towards productivity.

Looking at the past of the apparel industry transformation from “sweatshop” state to what it is now against many odds and predictions gives an idea of the kind of **authentic leadership qualities** the industry leaders displayed and turned disadvantages into advantages that established Sri Lankan apparel industry in the global fashion spectrum. While this should be praised and highlighted it could be exploited as a sixth sense of competitive advantage.

Clearly the individual and the collective leadership based strategic thinking of the entrepreneurs made a difference between a perishing or prevailing state to a more accurately persisting level. It can be suggested that this human quality could be harnessed to create a further dimension of advantage for the industry especially introducing new entrepreneurial blood into the industry. It can further be highlighted that the market is so vast that **new entrepreneurial** inroads will further enhance the country’s national competitive advantage to achieve new vistas of success.

The qualitative segment of the study brings out that **human resource development is a key factor** in maintaining the status-quo, minimally speaking, and it is a key strategy in the expansion of the industry. It recognizes the employees, not as tailoring girls but as a vital contributor to the economy. Therefore it is easing the pressure of working mothers with flexible working days (from 6 to 5 days), daycare facilities, doctor facilities, personal hygiene workshops, beauty culture workshops, outward bound training, team building exercises etc.

The study reveals factors such as **buyer loyalty, quality of ancillary and supporting services, worker attitudes, learning by doing, industry attitude and social responses, ethical supply sourcing, good relationships** which are commonly referred to as **non-economic factors**, have a significant bearing on productivity leading to enhanced competitive advantage. Qualitative information proved further that large companies possess organizational competencies namely **multi skilled workers, technological know-how, superior quality raw material, a worker friendly organizational culture, service levels, compliance standards and effective communication** which were widely recognized by the respondents as enablers of productivity through which the operational performance is enhanced.

## Conclusion

Since the opening up of the Sri Lankan economy in 1977, its readymade garment (RMG) industry has grown rapidly as a major sector of the economy in terms of its contribution to industrial production, foreign exchange earnings, employment generation and also its contribution to the alleviation of poverty in the country.

After the quota phase out, price competitiveness has become much more important in determining the export success of the industry. As per Athukorala and Ekanayake (2014) writings, procurement practices are no longer constrained by country-specific quotas; buyers would demand many more attributes in addition to prices, such as product variety, quality and timely delivery. This means that there are no limits on the amount traded by a given country or a firm and that there is freedom to enhance global competitiveness based on differentiation of products to suit customer needs, supported by scale economies or productivity. Hence, this study will facilitate the formulation of key policies to enhance the productivity and competitiveness of apparel categories. Further, the study has identified the important input categories for the apparel sector to

determine areas, which should be focused on, for formulating a conducive policy environment.

It should be particularly highlighted that the non-economics factors could be enhanced through the sharing of individual experiences of industry leaders to create an industry synergy. It could plausibly be argued that the industry should look at themselves as one family of enterprises that could compete in the global market by creating a national competitive advantage that could be made visible globally. In other words, the industry should gear to create a common global image as a high-end producer nation with the creation of widespread industry standards. In order to create this the state and the apparel bodies could take a common strategic viewpoint to promote the industry as a whole by sharing, exploring and networking these non-economic factors such as image building, sustainable, ethical manufacturing, manufacture of organic garments and recycling of yarn and fabric waste.

**Keywords:** *Non-Economic Factors; Productivity; Human Resource Development*

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## **REPOSITIONING SRI LANKAN ECONOMY - AN INTERNATIONAL POLITICAL ECONOMIC PERSPECTIVE**

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### **Introduction**

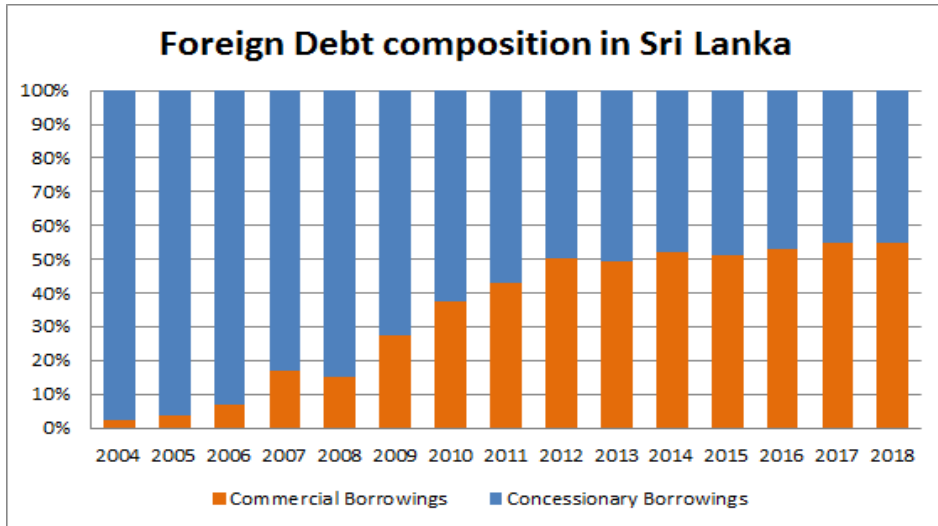
This paper aims to reposition Sri Lanka's (SL) economy within the context of the International Economic arena using a seminal theoretical framework within International Political Economy (IPE). This repositioning has been further complicated by the impact of the COVID-19 pandemic on global economies, with many economies set to fall into economic hardship.

Pre-COVID-19, the SL economy was already grappling with deep structural issues such as low growth, low tax revenue, foreign debt servicing cost and sluggish export performances (World Bank, 2019). Thus, understanding and shaping the future narrative around International Economic Repositioning (IER) requires key stakeholders within the SL economy to understand the dynamics of power and who holds market authority.

Significant research needs to be directed towards understanding power dynamics in global markets which give a holistic analysis of what it takes to reposition the SL economy.

### **Research Problem**

Repositioning SL economy requires detailed understanding about structural issues and power dynamics that impact the SL economy. Data indicates that structural weaknesses have caused significant vulnerability of the external sector. By the end of 2018, commercial borrowing portion of foreign loans has increased to 54.9% of total foreign loans, indicating increased cost of borrowings (CBSL, 2019).



Source: Authors constructed based on CBSL data, 2020

**Figure 1: Foreign debt dynamics in Sri Lanka**

Furthermore, change of maturity structure of foreign debt, has resulted in significant increase of foreign debt servicing cost. This is accompanied by sluggish export performance of SL which is largely attributed to a heavy concentration of a small export basket (Abeyasinghe, 2017). Data shows that SL's exports as a percentage of GDP have declined from 33% in 2000 to 12.7% in 2017.



Source : Authors constructed based on World Bank data, 2020

**Figure 2 : Sri Lanka's Export Performances**

These issues resulted in the country experiencing a persistent Balance of Payments (BOP) crisis (Weerakoon, 2017), forcing them to seek support from various international institutions and other actors. The SL state faces the conundrum of balancing between national interests, political interests and the interests of external actors. Thus, the IER of SL requires assessing power dynamics between these interests.

## Objectives

The objectives of this paper are to evaluate where and how power lies in the global economic arena from the perspective of SL with the use of Strange's theory.

## Methodology

The methodology of this study is based on the structural power of IPE theory by Susan Strange. This theory fits into the research problem as it has the ability to predict and explain how things related to each other, especially when dealing with the social phenomena of power<sup>6</sup> in global economies (Strange, 1988). Strange's framework consists of four pillars of power in IPE; security, production, finance and knowledge (Strange, 1988). These four structures will be applied to the SL case and thus, enable the repositioning of the SL economy.

*"Heads of government are last to recognize that they and their ministers have lost some authority over national societies and economies that they used to have. Their command over outcomes is not what it used to be. Politicians everywhere talk as though they have the answers to economic and social problems, as if they really are in charge of their countries destiny" (Strange, 1996)*

The challenges within the broader idea of IER are that a state's power and its sovereignty have been in decay (Strange, 1996). This is as a result of globalization, technology and the proliferation of non-state actors which are removing power from the state and leaving them vulnerable to external conditions (Strange, 1996). Based on these fundamentals, we attempt to identify the power dynamics that influence and constrain the SL economy, and its IER.

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<sup>6</sup> For the sake of this paper, power is defined as the ability to influence an actor to do something that they wouldn't normally do on their own through coercive or non-coercive measures.



## Results and Discussion

As opposed to conventional economic analysis, Strange believed that economic policy decisions are often influenced by politics and power dynamics (Strange, 1988). Her theory largely refers to who holds power or market authority in the global economy and to whose benefit. We argue that SL economic policies are significantly influenced by international actors and those who have power. We extended her theory to analyze the power dynamics in the SL economy.

### Security

According to Strange “*those who provide security acquire a certain kind of power which lets them determine and limit the range of choices. The security structure has an inevitable impact on who gets what in the economy*”(Strange, 1988). Strange is referring to the realist International Relations (IR) interpretation of security, the security of the state being the most important (Strange, 1988). However, this paper extends our understanding of security to include non-state actors like Multinational Corporations (MNCs), terrorist organizations, and other providers of security. We observe that security, as a power structure, has played a major role in Sri Lanka as a result of domestic conflict. Approximately 8% of total government expenditure in 2019<sup>7</sup> was spent on security, indicating the large wealth allocated for security. More emphasis is put on security subsequent to the Easter Attack and further power concentrated within the security structure. The LTTE<sup>8</sup>, a terrorist group which was involved in the conflict with the SL army held significant power over wealth and the economy during conflict, as they controlled the taxation and sometimes the production (Stokke, 2006). These actors who hold power in the security pillar are able to determine parts of the architecture of the SL economy and complicate the matter of IER.

### Production

This refers to generation of wealth, production of goods and services for the state. Strange’s notes, “*the production structure can be defined as the sum of all arrangements that determine what is produced, by who and for whom, by what*

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<sup>7</sup> Defence Ministry had the largest allocation for any ministry in 2019 budget, except the Ministry of Finance which is responsible to pay loan installments. See more : Budget Estimates, 2019

<sup>8</sup> The Liberation Tigers of Tamil Eelam (LTTE) fought with the SL Army claiming a separate land for Tamils live in Northern and Eastern part of Sri Lanka. Conflict ended when SL Army defeated LTTE and killed their leader.

*method and on what terms*”(Strange, 1988). The production structure has undergone extensive changes from primarily being focused on domestic consumption to focusing on domestic and international consumption (Strange, 1996). Understanding who holds power in SL production structure is vital to SL IER and making its exports and trade competitive. This requires an understanding of who controls domestic production, imports and exports. It is observed that the SL government has significant control over fuel supply, transport, health and education. However, the lack of export production in the presence of persistent BOP deficits reduces the state power. Successive SL governments have changed policies and adjusted regulations based on the interests and demands of investors. Specific tax concessions granted for investors under the Strategic Development Projects Act and the proposal to introduce a separate legal system to Colombo International Financial City<sup>9</sup> are identified as examples. We expand the power pillar to analyze the role of institutions in relation to exports. Extensive domestic Non-Tariff Barriers (NTBs) are identified as a major obstacle to promote exports, and are seen as an indication of the power of public servants<sup>10</sup>.

Finance is “*the power to create credit which is a power that allows or denies people the possibility of spending today and paying back tomorrow*” (Strange, 1988). The finance structure comprises of two aspects, being the ability to create and provide credit and the means to create money and manage currency exchanges (Strange, 1988). Finance is dominated by various actors in the global economy and understanding power in the finance structure is vital to nations like SL which suffer from BOP deficits and high debt servicing costs. Vulnerability to the BOP crisis has reduced the SL government’s power significantly in economic policy decision making pertaining to finance and trade.

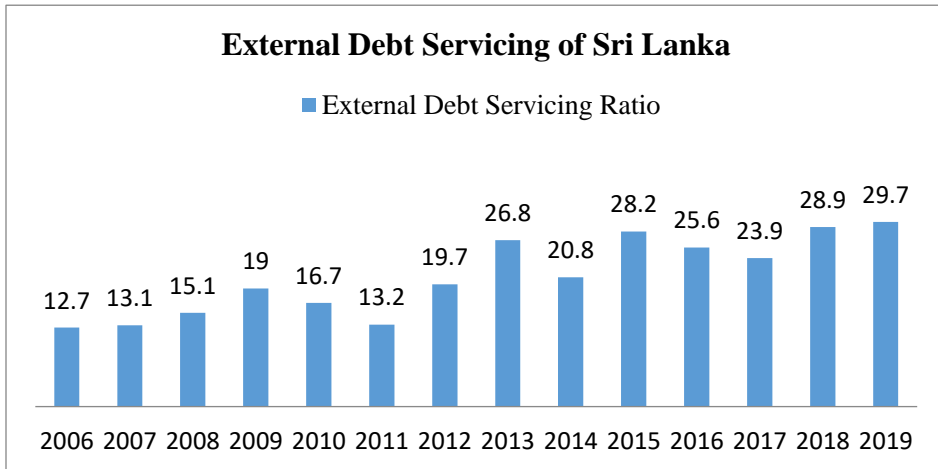
Evidence suggests that subsequent to entering to international capital markets, power has shifted to international actors, global financiers and rating agencies in terms of influencing the economic policies. SL policy sphere is influenced by the International Monetary Fund (IMF), which insisted on state owned enterprise (SOEs) reforms and taxation reforms as a part of the Extended Fund Facility

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<sup>9</sup> See more : <https://www.theguardian.com/cities/2018/aug/02/sri-lanka-new-dubai-chinese-city-colombo>

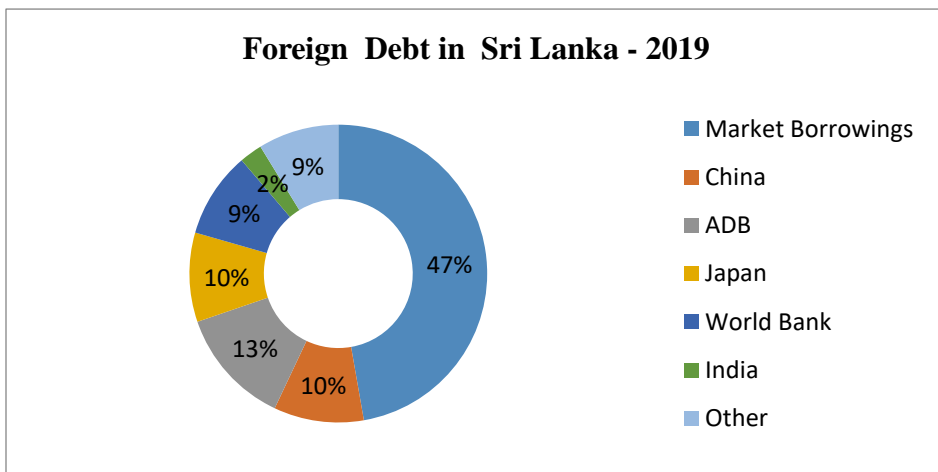
<sup>10</sup> Public servants has not been supportive enough of the implementation of national single window to facilitate exports. Proposed amendments to Custom Ordinance were strongly opposed by officials.

(EFF) programme<sup>11</sup> (IMF, 2016). SL faces constraints in implementing economic policies due to the potential responses of the international capital markets<sup>12</sup>. The power of the state is further reduced by rating agencies who often adjust the country's credit ratings.



Source: CBSL Annual Report, Multiple years

**Figure 3: External Debt Servicing of Sri Lanka**



Source: ERD, 2019

**Figure 4 : Foreign Debt in Sri Lanka**

<sup>11</sup> EFF is provided by IMF to countries to resolve BOP crisis in short term.

<sup>12</sup> In 2007 SL entered to international capital markets

Furthermore, EXIM Bank loans<sup>13</sup> called for unsolicited bidding, indicating the power of the lender country over Sri Lanka. Weakness of the external finances had forced Sri Lanka to seek for avenues to expand trade through means such as entering into FTAs which in turn influences the domestic trade policy.

Strange notes, "*knowledge structure determines what knowledge is discovered, how it is stored, and what communicates it by what means to whom and on what terms*" (Strange, 1988). Importance of the knowledge pillar can be understood in the context of ideologies and policy prescriptions dictated by various institutions or individuals. Policy is likely to be dictated by the knowledge of those who have power in the areas where decisions are made. Involvement of selected academics in policy making and the influence of think tanks or international institutions over SL's economic policy making can be identified as power dynamics within the knowledge pillar which results in only certain interests being advanced in IER of SL economy.

## Conclusion

Utilizing the power structure framework suggested by Strange, we assessed the impact of power dynamics on the economy. Our analysis shows that the weak external sector economy suffering from BOP issues has allowed international actors to influence the SL economy and the power regarding finance has shifted to international institutions, states, private creditors and rating agencies. The inconsistency of SL government economic policies has also, further dispersed power in the economy to other actors and further complicated the IER. Thus, the task of repositioning involves a balancing of power, geopolitical interests and domestic interests.

**Keywords:** *BOP; Finance; International Political Economy; Power; Security*

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<sup>13</sup> EXIM Bank loans refers to export credit which often provide the specific project contract to a company in lending country. Ex : Hambantota port loan was obtained from EXIM Bank of China and construction contract was carried out by the China Harbour Engineering Company.

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## **PUBLIC OPINION ASSESSMENT ON INTERNATIONAL TRADE AGREEMENTS: REFLECTIONS IN THE CONTEXT OF COVID-19**

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### **Introduction**

International trade has become a subject of policy discussion more than ever before, particularly in the context of Covid-19 pandemic in which not only international movements but also demand and supply of goods and services are disrupted (Felix et al, 2020). Developing economies around the globe are compelled to search for alternative means of securing essential supplies for consumption, many of which have hitherto been imported under increasingly liberalized international trade. This is because they have run into foreign exchange crisis; reduced consumption in the developed world has suppressed the demand for their exports while their forex outflows, such as debt service payments, have to be met regardless of current impacts on trade. Constrained passenger movements bringing down to almost zero the income from tourism, and the disturbances in the domain of foreign employment potentially impacting on inward remittances, have further aggravated the situation. In such conditions, countries tend to look for foreign exchange saving options, particularly for import substitution and reduction of non-essential imports.

This strategic option is constrained by international trade agreements a country has entered into. Such agreements, “contractually” committing to allow concessionary tariffs on imports from another a country restricts a country’s policy flexibility in managing foreign exchange reserves through controlling outflows. In short, international trade agreements, could be viewed as a means of self-abdicating trade policy making sovereignty of a nation.

### **Research Problem**

This research is an attempt to deep-dive in search of whether the aspect of “preserving policy amendment flexibility” has been adequately present or not, in the minds of stake-holders of trade policy, when discussing factors they envisage as important in considering and evaluating trade agreements, with particular reference to Sri Lanka.

Sri Lanka has already signed several bilateral and multilateral trade agreements, including India-Sri Lanka Free trade agreement (1998), Pakistan - Sri Lanka Free Trade Agreement (2005) and more recently Sri Lanka Singapore Free trade Agreement (2018). While benefits accrued to the country of such trade agreements are questionable, it is a certainty that the country is bound by the conditions therein, and would have to face costly legal repercussions if unilateral alterations of tariff concessions granted through such agreements are attempted.

### **Objectives**

The appropriateness of resorting to trade agreements as means of facilitating inter-country or inter-regional trade therefore becomes debatable. When some economists argue that trade agreements discriminate against fair competition among suppliers, and thus are counter-productive to free trade (Athukorala and Nasir, 2012), the necessity to exercise care and due diligence in preparing, negotiating and entering into bilateral or multilateral trade agreements, is further emphasized. This is because, once signed, exercising a nation's policy flexibility vis-à-vis trade and tariffs would be constrained.

The present research was conducted to examine whether the aspect of "policy flexibility" has been adequately present in the perceptions of Sri Lankan stakeholders of international trade. Its importance, possibly not adequately emphasized in the preparation of trade agreements, could be vital and critical, particularly if socio-political, environmental or economic exigencies call for protective or import-substitutive strategies to ensure public welfare (Umana et al, 2013), and to maintain financial balance.

### **Data and Methodology**

This research was conducted using secondary data sourced from the Interim report of the Public Commission on National Policy for International Trade, published by the Professionals' National Movement, containing the opinions expressed in 84 submissions by public, including 9 academics, 20 professionals, 26 entrepreneurs, 18 civil society representatives and 11 politicians.

First, each and every submission was scrupulously perused to extract 36 different factors that had been brought to the notice of the Commission. Two point Likert-scale analysis was adopted to represent the recognition (by assigning value 1) or not (by giving the value 0) of each factor by each submitter, resulting in an 84 x 36 matrix (submitter in rows, and factor in columns). Those factors were thereafter merged into 10 groups depending on their characteristics. The level of

importance assigned to “policy flexibility” and “strategic withdrawal possibility” by the stake-holders was thereby fathomed.

Frequency assessment of factor citations was the main methodology adopted. Cross-tabulation and computing averages were used as techniques to derive quantitative results. A comparative analysis of perceptions was conducted to derive strategic inferences and conclusions.

## Results and Discussion

As evidenced from the Table 1, which summarizes the results of the analysis, interest to protect local business and industrial interests (PIBTI), policy framework oriented towards national economic development (PFNED) and standards and national accreditation mechanism (SNAPR) have emerged as the most cited factors.

**Table 1: Common Factors**

Factor	Description	As a % of total citations
Factor 01 (PIBTI)	Protecting local industrial, business and trade interests	16.5
Factor 02 (NTCIC)	Improve national technological capabilities and industrial competitiveness	7.9
Factor 03 (UTECP)	Proper understanding of trade and economic conjuncture and perspectives	12.2
Factor 04 (PFNED)	Policy framework oriented towards national economic development	14.2
Factor 05 (SNAPR)	Standards and national accreditation mechanisms to prevent quality and safety risks	14.2
Factor 06 (CPEUR)	Contractual preparedness for unfavorable eventualities and for remedial strategies	4.3
Factor 07 (TLPPI)	Transparent and legislated process to formulate, appraisal and approval and ratification	6.3
Factor 08 (SNPLI)	Safeguards to national professional and labour interests	9.8
Factor 09 (SNSEI)	Safeguards to national socio-cultural and environmental interests	6.7
Factor 10 (SPDSI)	Safeguards to national political defence and sovereignty interests	7.9

Source: Authors' estimations based on PNF's Interim Report



The least importance among all, as mirrored through these results, appears to be the “contractual preparedness to face unfavorable eventualities and for remedial strategies” (CPUER) with less than 5% share of factors cited. National concerns such as implementation/legal aspects and safeguards to sovereignty, socio – cultural and environmental aspects also have not been cited that frequently either.

It is curious that this overall assessment shows that the importance assigned to “contractual flexibility” in the mindset of the concerned stake-holders is rather weak. This may be a result of a general lacuna awareness of its importance, or a particularly in one or more of the given professional categories; a finding which warranted a more refined examination based on submitter category (particularly because the sample appears inequitably shared among different categories).

Most prominent and frequently cited factors by each different respondent group were thus examined, the results are summarized in the Table 2.

**Table 2: Factor citations by each professional group**

(In percentages of total citations for each group)

Factor	All	Business Community	Civil societies	Academics	Professionals	Politicians
Factor 01 (PIBTI)	16.5	26.1	20.4	16.7	10.2	14.3
Factor 02 (NTCIC)	7.9	10.9	5.6	8.3	4.5	14.3
Factor 03 (UTECP)	12.2	13	9.3	12.5	14.8	9.5
Factor 04 (PFNED)	14.2	17.4	9.3	20.8	17	7.1
Factor 05 (SNAPR)	14.2	15.2	22.2	12.5	13.6	4.8
Factor 06 (CPUER)	4.3	2.2	1.9	4.2	6.8	4.8
Factor 07 (TLPPJ)	6.3	4.3	5.6	4.2	5.7	11.9
Factor 08 (SNPLI)	9.8	4.3	13	8.3	9.1	14.3
Factor 09 (SNSEI)	6.7	2.2	7.4	0	10.2	7.1
Factor 10 (SPDSI)	7.9	4.3	5.6	12.5	8	11.9

Source: Authors’ Estimations

According to results, there appears to be a common consensus among all types of stake-holder groups that the protecting local business and industrial interests (PIBTI) is of high importance. This appears the top priority among Business

Community (26%), and Politicians (14%), while the second priority among Civil Society (20%) and Academics (16.7%). Standards and national accreditation mechanism to prevent quality and safety risks (SNAPR) emerged as the highest concern (22%) of the Civil Society, while both Academics and Professionals have prioritized (with 21% and 17% respectively) the need to orient the policy framework towards national economic development (PFNED).

While it is not surprising that Business Community would be least bothered, with less than 5% of the expressed interests, to safeguard national cultural and environmental interests (SNSEI) and political defense and sovereignty interests (SPDSI), it is curious that Academics have expressed similar pattern of high concern in business and industrial interests and only “zero” citations pertaining to safeguarding cultural and environmental interests (SNSEI). It is the Political and civil society groups that have expressed significant concerns (14% and 13% respectively) to safeguard interests of national professionals and labour (SNPLI), interestingly much more than the interest (9%) shown by professionals themselves. Compared to all groups, professionals have paid much attention on the safeguards to national socio-cultural and environmental aspects (SNSEI). Politicians appear to be the most “balanced” group having expressed concern into almost all factors, whose spread ranges from a minimum of 5% (for SNAPR) to a maximum of 14% (for PIBTI, NTCIC and SNPLI), when all other groups showed skewed interests. It is also interesting to note that Politicians are one of the two groups (other being Academics) showing over 10% concern of National political defense and sovereignty interests (SPDSI).

These results, however, indicate that “preparedness for unavoidable eventualities and for remedial strategies” (CPEUR), the focal concern in this research, figures among the lowest of interests shown, the lowest (1.9%) in Civil Societies and the highest (6.8%) found among Professionals. In no category of stake-holders this concern appears to be substantially present. It is thus obvious that trade agreements entered into by the nation would lack this vital aspect addressed, preventing the decision makers exercising the greatest possible flexibility in relation to adjusting trade policies under exigencies of economic conjunctures.

## **Conclusions**

The outcome of this research mirrors that the Sri Lankan stake-holders of trade policy are likely to be substantially preoccupied with business and industrial profit-oriented interests, regardless of their profession. The concern to preserve economic policy adjustment authority and flexibility, which should not be

compromised or alienated under any circumstance in a sovereign nation, appears grossly inadequate. While reasons behind are not revealed through this research, it could be hypothesized that insufficient awareness of the multitude of parameters involved and their criticality, lack of strategic vision in regard to possible exigencies along the development drive, or simple disinterest in economic sovereignty as a national attribute, might be behind such a pattern.

The conclusion that stems from this analysis is that international trade agreements signed by Sri Lanka are likely to be largely built on a shallow foundation of business and industrial interest, and could lack necessary legal provisions to preserve the Government's strength to face policy exigencies emanating from a given economic conjuncture. In such a circumstance, a nation could find its wings clipped and being unable to freely take appropriate policy actions in view of ensuring national economic health and public welfare.

Covid-19 is a case in point. Disabled policy flexibility of the Government would imply foreign investors flexing muscle and seeking the "pound of flesh". They may even contemplate suing Governments against action taken in the interests of the national economy and public, claiming that such action is in violation of provisions in a trade agreement.

Italian Government's emergency measures taken to safeguard citizens facing Covid-19 implications, for instance, have been challenged by investors, empowered by provisions in numerous trade agreements, claiming that such measures have damaged their investments [(Corporate Europe Observatory, 2020), (Global Arbitration Review, 2020)]. In another example, trade and investment agreements have curbed the New Zealand Government's freedom to use protectionist mechanisms (Kelsey, 2020).

The research outcomes thus call for urgent strategic reorientation of the Government's approach towards developing, negotiating, approving and implementing international trade agreements. A new approach, preferably stipulated by law is warranted, through which inalienable national policy making sovereignty is preserved, and broader public participation is ensured, while building public awareness on the necessity to uphold national interests.

**Keywords:** *Covid-19; Policy Flexibility; Public Opinion; Trade Agreements; Sri Lanka*

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## **DOES MCC GRANT PROMOTE ECONOMIC GROWTH AND DEVELOPMENT? EVIDENCE FROM A CROSS- COUNTRY STUDY**

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### **Introduction**

The Millennium Challenge Corporation (MCC) was established by the US Congress with an aim to deliver financial assistance to low and lower middle-income countries (CRS, 2019). As envisaged in CRS(2019), the MCC grant differs greatly from the donor agencies due to its competitive selection process, requirement to generate country-led solutions and, country-led implementations whilst being focused to results (CRS, 2019). The MCC selection process for eligible countries is based on three major criteria; (i) ruling justly—promoting good governance, fighting corruption, respecting human rights, and adhering to the rule of law; (ii) investing in people—providing adequate health care, education, and other opportunities promoting an educated and healthy population; (iii) economic freedom—fostering enterprise and entrepreneurship and promoting open markets and sustainable budgets<sup>14</sup>.

CRS (2019) articulates that “MCC is based on the premise that economic development succeeds best if it is linked to free market economic and democratic principles and policies and where governments are committed to implementing reform measures to achieve such goals.” This mechanism guarantees that countries with good policies receive financial assistance under the MCC arrangement<sup>15</sup>. Burnside and Dollar (2000) empirically established that foreign aid promotes growth in countries with good policies. Evidently,, their research work largely impacted on the thinking and formulation of the MCC scheme. The

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<sup>14</sup> The MCC evaluates 20 indicators, representing above three areas, for selecting countries and a country is considered eligible for a full grant when it has score 17 on the indicators.

<sup>15</sup> As mentioned above these include; (i) ruling justly—promoting good governance, fighting corruption, respecting human rights, and adhering to the rule of law; (ii) investing in people—providing adequate health care, education, and other opportunities promoting an educated and healthy population; (iii) economic freedom—fostering enterprise and entrepreneurship and promoting open markets and sustainable budgets.

MCC has offered grants for around 30 low and lower middle income countries by 2019 and a number of sectors such as transport, agriculture, energy, education, infrastructure, water, land, and rural development have been targeted for financial support. Out of the total disbursed funds of the MCC, Sub Saharan African countries account for 63 per cent while MCC funds to Asian countries accounts for 20 per cent. In terms of sectors, around 27 per cent of total MCC grants are channeled into transport sector while that figure for agricultural sector and energy is 16 per cent and 15 per cent respectively.

### **Objective of the study**

The Main objective of this study is to examine the effect of the MCC grant on economic growth and development of recipient countries. It is expected that there are at least two broad channels through which MCC grant could enhance growth and development performance in recipient countries. Firstly, as spelled-out in MCC official documents, MCC grant aims at addressing key development bottlenecks by financing projects which generate higher returns to recipient countries. Secondly, eligibility for a MCC grant and its subsequent successful implementation may have significantly improved the policy environment in the recipient countries and that, in turn, may surge investments and improve productivity. In this context, it is expected that the receipt of MCC further enhances the policy environment partly due to the fact the government is required to engage in policy reforms prior to the disbursement of certain aid components attached to the overall MCC grant package. The impact of MCC selection criteria on policy reforms, both in eligible and contender countries, is often referred as ‘MCC effect’ in the literature. For instance, Parks and Rice (2013), through a global survey, concluded the presence of MCC effect, in particular, in the area of controlling corruption and implementing prudent fiscal policies in eligible and contender countries<sup>16</sup>.

### **Aid-Policies-Growth: A Brief Review of Literature**

A number of studies have been conducted on investigating the impact and effectiveness of foreign aid on economic growth (Arndt, Jones, and Trap, 2010, 2015; Burnside and Dollar, 2000, Easterly, 2003; Hansen and Tarp, 2001;

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<sup>16</sup> According to Parks and Rice (2013), the ‘MCC effect’ is weak with respect to democratic and human right related indicators.

Juselius, Moller, and Tarp, 2014; Rajan and Subramanian, 2008). Burnside and Dollar (2000) initiated a new research direction, namely aid-policy-growth association, and argued that impact and effectiveness of aid on growth depend on quality of policy framework. According to authors, aid promotes growth in countries with good policies. In subsequent years, aid-policy-growth hypothesis was intensely debated and recently, Jia and Williamson (2019) revisited this hypothesis and argued that there is weak evidence to suggest that aid promotes growth in the presence of good policies<sup>17</sup>. Authors concluded that the overwhelming majority of the results suggest aid conditional on policy is ineffective. Nevertheless, in a recent study, Mekasha and Tarp (2019) turn to meta-analysis to provide an overall assessment on effectiveness of aid and concluded that empirical evidence confirms the increasing consensus about the positive evidence of aid's impact on growth. Highlighting the complexity of on-going debate over aid effectiveness, Gisselquist and Tarp (2019) alerted readers as follows; "It is well established in the literature that great care has to be exercised in avoiding to overextend the use of insignificant statistical parameters in aid debates. To be sure, an insignificant parameter reflects our lack of evidence<sup>18</sup>".

As discussed in Gisselquist and Tarp (2019), a possible reason for lack of evidence of aid effectiveness is due to poor targeting towards the needs of recipient countries though aid is commonly justified with reference to the needs of recipient countries<sup>19</sup>. Moreover, Gisselquist and Tarp (2019) argue the lack of domestic ownership of foreign aid programmes as one of the other reasons for poor aid effectiveness. Despite the fact that local ownership is set out as a fundamental principle for aid effectiveness in a number of conventions/agendas (such as Paris Declaration, Accra Agenda for Action, and Busan Partnership), aid

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<sup>17</sup> The authors use new data for the same set of countries, which were covered by Burnside and Dollar (2000) study, over an extended period (1962-2013).

<sup>18</sup> To support their argument further, the authors quoted Temple (2010), following way: "an insignificant coefficient should usually be seen as absence of evidence, not evidence of absence, at least until the economic implications of a confidence interval have been explored."

<sup>19</sup> The authors cited Carment and Samy (2019) study and highlighted its key findings to support their argument. Carment and Samy (2019) found, for a set of fragile and conflict-affected states, aid is poorly targeted in fragile states. Further Carment and Samy (2019) argue that aid's impact would be improved through better targeting to address core challenges of legitimacy and authority that are important to understanding why states are fragile.

continues to be disbursed by donors without proper coordination with national institutional structures<sup>20</sup>. The MCC claims that aid recipient country involvement in programme identification and development is central in its aid programmes (CRS, 2019). Similarly, aid effectiveness could also be influenced by donor motivation. Citing Reinsberg (2019) study, Gisselquist and Tarp (2019) conclude that multi-bilateral aid is indeed used for geopolitical purposes. At the same time, it is argued that development assistance is in many ways a political project by donor countries and such motivation could have a negative impact on overall aid effectiveness (Gisselquist and Tarp, 2019).

As briefly reviewed above, the impact of aid on growth has been investigated directly as well as indirectly. Furthermore, possible factors influencing aid effectiveness have also been investigated extensively in the literature. Nevertheless, the debate on aid effectiveness is far from settled thereby requiring additional research inputs. In particular, it is required to examine to what extent aid programmes, which are partly aimed at promoting good policies, contribute to economic growth in recipient countries.

## **Econometric Specification and Data**

### **Econometric specification**

In order to examine whether MCC grants make an impact on economic growth empirically, we rely on the difference-in-difference-in-differences (DDD) approach employed by Hannes and Axel (2011). Our identification strategy rests on the observation that there can be no growth impact prior to when MCC was signed. In other words, the forthcoming MCC aid programme makes no impact on the economy, such as an increase in private sector investments, solely encouraged by the news that the government enters into MCC agreement, during the pre-MCC period. Moreover, we limit our sample to the countries which are generally qualified for MCC support, i.e. low and lower middle income countries. A simple approach to test for the potential effect of the MCC would be to use the *before-after approach* which involves comparing the level of growth before receiving and after receiving MCC support. The alternative with-without approach would simply entail comparing the changes in growth in countries which received MCC support against the countries that have not receiving MCC

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<sup>20</sup> The authors argue that conventional literature justified such practice with reference to efficiency while recent justifications have shifted to refer to corruption and weak implementation capacity.



support. Again, this would require a strong assumption that is unlikely to hold, namely that no other factors affect growth performance in MCC and non-MCC recipient countries. In such as context, combining the ‘*before-after approach*’ with the ‘*with-without approach*’ has considerable merit for alleviating the problem. By applying the DDD estimator, identification is based on the change in economic growth between the treatment group and the control group that occurred between the periods before and after receiving the MCC support. The DDD estimator could be spelled out as follows;

$$DDD = \left( (g_{2016}^T - g_{2012}^T) - (g_{2004}^T - g_{2000}^T) \right) - \left( (g_{2016}^C - g_{2012}^C) - (g_{2004}^C - g_{2000}^C) \right)$$

g stands for growth (GDP or GDP per capita) or per capita income (either in PPP or constant US\$ measured) while T and C denote *Treatment* and *Control* group, respectively. Evidently, , *treatment* group includes all the countries who have received MCC support from 2005-2010 while *control* group includes low and lower middle income countries who did not receive MCC support from 2005-2010.

Our sample does not include countries which received MCC support post-2010 period. Further, in order to avoid year-specific effect, we took the average of neighboring years, for instance, instead of the GDP growth in 2000, we took the average growth of 1999 and 2000. A similar approach was adopted for other years as well. Our dependent variable is the change in growth (per capita income) in the different periods. The following regression equation was estimated;

$$Y = \alpha + \beta Treat + \gamma 2^{nd}_{period} + \delta Treat * 2^{nd}_{period} + \theta Lower_m + \pi Africa + \varepsilon$$

where Y is our dependent variable and *Treat* is a dummy that takes 1 for countries which received MCC support from 2005-2010 and zero otherwise. The dummy variable  $2^{nd}_{period}$  takes 1 for 2012-2016 and zero otherwise. The interaction term,  $Treat * 2^{nd}_{period}$ , is the DDD estimate. In addition, the regression model was controlled for two more variables, namely *Africa* dummy (1= if an African country), and lower middle-income country ( $Lower_m$ ) dummy (1=if a lower middle-income country). The *African* dummy captures the growth dynamics, if any, specific to African countries and  $Lower_m$  dummy takes into account lower middle income country growth dynamics.

## Data and Data Sources

Data for the study was extracted from the World Development Indicator online database. This study extracted data for GDP growth rate, GDP per capita growth rate, GDP per capita income (constant US \$, 2017), and GDP per capital income, PPP, 2010). Our dataset consists of 62 low and lower middle-income countries.

## Estimation and Discussion

Table 1 presents the difference of our selected outcome variables by country group for the reference period. For instance, for *treatmentgroup* (who received MCC grant during 2005-2010), average difference of GDP growth is 1.64 per cent for 2004-2000 period. In other words, GDP growth rate in 2004, on average, 1.64 per cent higher than that of 2000. For the case of *control group*, GDP growth rate in 2004 is 1.95 per cent higher than that in 2000. Nevertheless, for both country groups, GDP grew at a slower rate in 2016 than in 2012. For instance, GDP growth rate, on average, is 1.84 per cent lower in 2016 than that in 2012 for *treatment group*, while in *control group* countries, growth rate is 1.65 per cent lower in 2016 than that in 2012. A similar pattern could be identified for both country groups when analyzing the GDP per capita growth rate. However, when analyzing GDP per capita (measured in constant US\$ and Constant Purchasing Power Parity (PPP)) terms, expansion of GDP per capital is relatively higher in *after period* (2016-2012) than that in the *before period* (2004-2000).

**Table 1: Difference (D) by Country Group and Time Period**

Country group	Period	GDP growth			GDP per capita growth			GDP Per capita constant (US\$)			GDP Per capita, PPP, constant (US\$)		
		Mean	SD	SE	Mean	SD	SE	Mean	SD	SE	Mean	SD	SE
Treatment	2004-2000	1.64	2.89	0.66	1.67	2.81	0.64	102	149	34	291	386	89
	2004-2016												
Control	2000-2016	1.95	5.57	0.85	2.02	5.29	0.81	80	192	29	254	457	70
	2012-2016												
Treatment	2012-2016	-1.84	3.63	0.83	-1.73	3.60	0.83	184	208	47	524	597	137
	2016-2012												
Control	2012-2016	-1.65	4.73	0.72	-1.89	4.54	0.69	113	174	26	368	485	74
	2016-2012												

Source: Author's calculation

Table 2 reports data related to difference-in-difference (DD) estimates. That is the difference in average growth rate differences reported in *before* and *after* periods, i.e.  $DD = D_{2016-12} - D_{2004-2000}$ . Accordingly, *control group*

countries witnessed marginally higher growth slow-down compared to *treatment group* countries. Similarly, in GDP per capita terms, *treatment group* countries reported much better performance than *control group* countries. For instance, DD estimate of GDP per capita (constant) is US\$ 82 for *treatment group* countries while this figure for *control group* countries is US\$ 33. This implies that addition to per capita income is higher in *treatment group* countries, when comparing before and after, than that in *control group* countries.

It seems that economic performance in *treatment group* countries has been better when compared to the *control group* countries during 2012-2016. This may be partly due to the MCC grant. However, it is not quite clear to what extent this performance differential is statistically significant and is attributed to the MCC grant. Additionally, a regression model was constructed by combining the *before-after* comparison with the *with-without* scenario.

**Table 2: Difference-in-Difference (DD) by Country Groups**

Country group	GDP growth			GDP per capita growth			GDP per capita constant (US\$)			GDP PC, PPPconstant (US\$)		
	Mean	SD	SE	Mean	SD	SE	Mean	SD	SE	Mean	SD	SE
Treatment	-3.48	5.35	1.23	-3.39	5.21	1.2	82	159	36	233	393	90
Control	-3.60	8.13	1.24	-3.91	7.54	1.15	33	257	39	114	609	94

Source: Author's calculation

The estimated results are reported in Table 3. We run four alternative models where our dependent variables are; change in GDP growth, GDP per capita growth, GDP per capita measured in constant US\$ , and GDP per capita measured in PPP constant. For instance, change in GDP growth rate for 2004-2000 is calculated as;

$$\Delta growth rate_{2004-2000} = growth rate_{2004} - growth rate_{2000}$$

In our regression models, *treat* dummy variable captures any specific growth dynamics which is unique for MCC recipient countries while *2nd period* dummy captures any specific growth dynamics which are common to all the countries in the *after* period compared to *before* (base) period. The interaction terms aims at capturing any growth dynamics which are common to MCC countries in the 2<sup>nd</sup> period. It is expected that the impact of MCC grant on growth and development could be captured through this dummy. If MCC grant is effective, it can be

expected that change in growth in MCC recipient countries may be statistically different from both 1<sup>st</sup> period as well as for non-MCC recipient countries (*control group* countries). The estimated coefficient of the interaction terms is the DDD estimate. The estimated coefficient of the interaction term is not statistically significant in all four models. It implies that there is no statistically significant evidence to suggest that MCC grant has made an impact on growth and development in recipient countries though our descriptive analysis showed a relatively better growth performance in recipient countries (*treatment group* countries), it is modestly better when compared to *control group* countries.

**Table 3: Effect of MCC Grant Scheme on Economic Growth and Development**

Dependent variable →	Change in GDP growth	Change in GDP per capita growth	Change in GDP per capita (constant US \$)	Change in GDP per capita, PPP, constant
Constant	2.901** (1.217)	3.259** (1.161)	30.415 (44.809)	270.000** (118.266)
Treat (1=MCC recipient)	-0.232 (1.297)	-0.245 (1.238)	28.372 (47.762)	68.987 (120.161)
2nd Period (1=2012-2016 period)	-3.598** (1.013)	-3.913*** (0.967)	33.424 (37.310)	113.899 (94.692)
Interaction term (Treat * 2nd Period)=DDD	0.119 (1.831)	0.521 (1.747)	48.344 (67.398)	118.954 (169.669)
Africa (1= if a African country)	-0.980 (0.955)	-1.292 (0.911)	-37.142 (35.182)	-289.977** (91.069)
LMIC (1= if a lower middle income country)	-0.651 (0.986)	-0.841 (0.941)	106.251** (36.317)	214.497** (94.549)
R2	0.14	0.17	0.14	0.22
F-value	3.80	4.78	4.08	6.91
No of observations (countries)	62	62	62	61

Note: \*\* denotes the estimated coefficients are statistically significant at 5 per cent or lower level of significance. **Estimated standard errors are reported in parentheses.** The estimate of DDD is highlighted.

Source: Authors' estimation

Documenting evidence from 86 closeout MCC projects in different recipient countries, Ospina and Block (2017) summarizes their findings as follows;

*“(i) closeout ERRs have been produced for the majority of projects (63%) and MCC funds (66%), (ii) closeout ERRs are on average above MCC’s 10 per cent threshold (13.2%), (iii) more than one-third of closed projects have closeout ERRs below MCC threshold, (iv) roughly three-fourths of project exhibit ERRs that decrease from the time the impact Enters Into Force” (pp. 2)<sup>21</sup>.*

Above evidences show that in most cases, MCC funded projects have promoted growth and development, nevertheless, our findings suggest that such micro-level achievements are yet to be observable through macro-level indicators. This absence of statistically significant evidence may be due to few reasons. Firstly, it is possible that ‘MCC effect’ (MCC’s selection system is touted as an incentive for countries to pursue policy reform in order to gain MCC eligibility, a phenomenon nicknamed: the “MCC Effect may be relatively strong, and there may be less difference, in terms of policy environment, between recipient countries and eligible non-recipient countries” (Rose, 2013) <sup>22</sup>. Secondly, MCC grant, to a larger extent, may be driven by geo-political reasons rather than the development needs of the countries. It is often argued that development assistance is in many ways a political project by donor countries and such motivation could have a negative impact on overall aid effectiveness (Gisselquist and Tarp, 2019). Finally, it is also possible that it may require more time to witness micro-level impacts through macro-indicators.

## **Conclusion**

A majority of policy makers, politicians, as well as general public in cash-strapped developing countries believe that foreign aid could enhance their growth prospects and eradicate poverty. There is a long-standing debate over the impact and effectiveness of foreign aid on economic growth and development. This debate received a new impetus when Burnside and Dollar (2000) found that aid effectiveness is conditional on good policies. In other words, aid works only if it is channeled into countries that have good policies. Partly based on this new

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<sup>21</sup> These findings are based on 2016 Report on Closeout ERRs, as far as author knows, this is the latest publication reporting project closeout ERRs and was published in 2017.

<sup>22</sup> Rose (2013) defines MCC effect as an incentive for countries to pursue policy reform in order to gain MCC eligibility, a phenomenon nicknamed: the “MCC Effect”.

finding, USA re-designed their foreign assistance mechanism in setting up Millennium Challenge Cooperation (MCC) to fund countries that have good policies and are ready to reform institutions for guaranteeing free markets and democratic principles.

This study aimed at investigating the impact of MCC grant on economic growth and development. Our sample consisted of 62 low and lower middle income countries who are either recipients of or eligible for MCC grant. This study employed both descriptive as well as regression analysis in examining the impact of MCC grant on economic growth and development in recipient countries. By combining *before-after* analysis with *with and without* within a single framework, *Difference-in-Difference-in-Difference* (DDD), we examined whether the growth and development experience of recipient countries differ when compared to their own past performance (before receiving MCC grant) and their fellow countries who did not receive MCC assistance. Our descriptive analysis shows that MCC recipient countries performed better. Nevertheless, according to DDD estimate, such growth and development differentials are not statistically significant indicating absence of evidence that MCC grant is effective in promoting growth and development in recipient countries.

**Keywords:** *Cross-Country Study, Developing Countries, Economic Growth, Foreign Aid*

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## **SRI LANKA'S EXTERNAL DEBT: TREND, OWNERSHIP, AND DYNAMICS**

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### **Introduction**

The external debt stock of the central government, as a percentage of Gross Domestic Product (GDP), grew from 37 per cent in 2010 to 67 per cent in 2019. During the last decade, the growing external debt levels and concerns over repayment capacities received greater publicity, nationally as well as internationally. In particular, most international media stations carried out media reports/research studies arguing that Sri Lanka's growing debt burden is due to Chinese loans. Nevertheless, there are a number of unanswered questions (or research gaps) regarding Sri Lanka's mounting external debt. For instance, what are the changes in external debt dynamics? What has been happening to debt ownership over the years? Whose loans may have possibly contributed to the present crisis? Are costs comparable among lenders? These are some of the questions which require answers when understanding Sri Lanka's present debt burden. Section two spells out the objective of the study, while section three briefly reviews related literature. The fourth section deals with trends, magnitude, and ownership of Sri Lanka's external debt while the econometric specification and data are presented in section five. Finally, section six presents and discusses the estimated results followed by concluding remarks in the last section.

### **Objective of the study**

The Main objective of this study is to examine the sources of Sri Lanka's external debt burden with special reference to post-liberalization period (i.e. 1978-2019). Specific objectives include; (a) to identify the changes in the dynamics of external debt stock of Sri Lanka, and (b) to identify possible sources for structural breaks in Sri Lanka's external debt growth

### **Brief literature survey**

A number of studies have looked into public debt dynamics and its changes over time (Jawadi and Sousa, 2012; Andrie and Minovic, 2018; Guestas and Regis, 2019; Campos and Cysne, 2019). The main purpose of the analysis was to



identify the changes in the dynamics of debt growth and relate such breaks with possible sources. Jawadi and Sousa (2012) examined structural breaks and nonlinearity in US and UK public debt. Using quarterly data, authors found that US public debt series has witnessed eight structural changes during 1970:q1-2009:q2 period while UK public debt stock has witnessed five structural breaks during 1962:q4-2009:q2 period. The authors argued that factors such as economic recessions, oil shocks and, financial and political instability could explain such structural breaks. Similarly, Andrie and Minovic (2018) analyzed the dynamics of public debt growth in Serbia for the period of 2004:q4 – 2017:q4 period and their empirical estimates captured the upward shift in public debt growth from the onset of the Great Recession as well as the policy response to curb the rising public debt stock. In the context of China's looming debt crisis, Guestas and Regis (2018) examined the sustainability of China's sovereign debt, paying particular attention to changes in its dynamics. The authors found that there was a clear upward trend from 2014 onward, related to the growth of public debt in China and argued that urgent policy attention is required to address this unsustainable path in the debt-to-GDP ratio. Campos and Cysne (2019) analyzed the structural breaks in Brazilian public debt for the period of 1997-2018. The aim of the study was to identify the precise date as of which the debt trajectory became unsustainable. The authors found that until mid-2014, Brazilian public debt growth path showed weak sustainability, however, from May of 2014 onwards, it experienced a transition towards an unsustainable regime. This is largely due to enhanced spending at increasing rates, without a sufficient offsetting of revenue. Interestingly, all of the above studies employed the Bai and Perron (2003) methodology in identifying the changes in the dynamics of debt. The structural break test is unable to establish causation with absolute certainty, however, it is possible to either lend significant support to the case for causation or raise significant doubts of a causal relationship. Moreover, structural break analysis can provide support for, or help to refute the period in which damages were incurred and identify its contributors.

### **Trend and Ownership of Sri Lanka's External Debt**

Sri Lanka's external debt stock grew rapidly during the post economic liberalization period starting from 1978 till early 1990s (annual average growth rate was 15 per cent). This was mainly due to the large-scale development projects launched with the assistance of both bi-lateral and multi-lateral lenders. During 1990-99, external debt stock grew at an average annual rate of 6 per cent. In relative terms, as a % of GDP, Sri Lanka's debt stock declined from 1993 to

2010. The down-ward trend reversed from 2010 and the debt-to-GDP ratio which was 37 per cent in 2010 rose to 67 per cent by 2019. It indicates that the present debt burden is largely due to post-war period debt accumulation. Sri Lanka's external debt obligations shifted to new sources during the study period (see Table 1). Less than a decade ago, Sri Lanka's debt obligations to international financial market and China have significantly increased. For instance, Sri Lanka's debt obligation to international financial market, as a % of total outstanding external debt stock, increased from 30 per cent in 2010 to 52 per cent by 2019, whereas China's share in total debt stock increased from 2.8 per cent to 9.6 per cent between the two reference years. Sri Lanka's debt obligation to China increased further (around 16 per cent of total external public debt) when taking into account project loans offered by the Export-Import Bank of China to State Owned Enterprises (IMF, 2019).

**Table 1: Changing Sri Lanka's External Debt Ownership: 1980-2019**

(as a % of total Central Government Debt Stock)

Source	1980	1990	1995	2000	2005	2010	2015	2019
Multilateral	40.4	40.8	41.8	46.1	55.9	33.3	28.1	23.0
World Bank	22.2	22.3	22.8	23.9	22.4	13.9	11.0	8.5
ADB	16.5	17.0	17.5	30.3	24.1	17.7	15.1	12.5
Bilateral	56.0	56.1	55.2	51.2	45.3	36.5	25.1	17.7
Japan	27.3	29.6	29.3	31.9	29.0	23.7	12.9	9.7
China(a)	0.4	0.2	0.2	0.4	0.4	2.8	8.8	9.6
Financial markets	-	-	-	-	-	30.2	41.4	51.9
Total	100	100	100	100	100	100	100	100

Note: (a) Excluding outstanding project loans under State Owned Enterprises

Source: Annual Report of Central Bank (*various years*)

## Econometric Specification and Data

### *Econometric Specification*

Bai (1997) and Bai and Perron (1998, 2003a, 2003b) consider a multiple linear regression model with  $T$  periods and  $m$  potential structural breaks, i.e.  $m+1$  regimes. In particular, for the observation in the regime  $j$ , Bai (1997) and Bai and Perron (1998, 2003a, 2003b) estimate the following least square regression:

$$y_t = X_t^T \beta + Z_t^T \delta_j + \varepsilon_t$$

for the regimes  $j=0,1,2,\dots,m$ , and white noise process  $\varepsilon_t$ . The model (1) is presented in its most general form as variables corresponding to the matrix do not vary across regimes, while variables corresponding to matrix  $Z$  are allowed to vary across regimes. For a specific set of  $m$  breaks, Bai (1997) and Bai and Perron (1998, 2003a, 2003b) minimize the following sum of squared residuals;

$$S(\beta, \delta | \{T\}) = \sum_{j=0}^m \left\{ \sum_{t=T_j}^{T_{j+1}-1} y_t - X_t^T \beta - Z_t^T \delta_j \right\}^2$$

using standard least squares regression to obtain estimates  $(\beta, \delta)$ . The global  $m$ -break optimizers are the set of breaks and corresponding coefficient estimates that minimize sum of squared residuals across all possible sets of  $m$ -break partitions (Bai and Perron 1998, 2003a, 2003b). Following Jawadi and Sousa (2012), who apply described Bai-Perron testing procedure in the cases of US and UK, the mean-shift model with  $m$  potential structural breaks  $(T_1, T_2, \dots, T_m)$  is estimated:

$$\Delta ED_t = \mu_j + \delta_j trend + \varepsilon_t$$

where  $\Delta ED_t$  is the growth of external debt while  $\mu_j$ ,  $\delta_j$  and  $\varepsilon_t$  stand for the intercept coefficients, slope coefficients, and error term respectively. Building on Bai (1997), Bai and Perron (1998) have introduced several structural break tests. The one that is employed in this study is the one proposed in Bai and Perron (2003a, 2003b), where the authors proposed the following algorithm for determining the overall number of structural breaks; (1) pre-specify the upper bound for the number of breaks  $m$  by setting the value of trimming percentage, (2) test the null hypothesis of no structural break against the alternative of a pre-specified number of breaks defined in step (1) by using double maximum test of Bai and Perron (1998) and, (3) if double maximum tests indicate the presence of at least one structural break, proceed to next structural break, selecting  $M$  such breaks.

### Data and Data Sources

Data for the study are extracted from annual reports published by the Central Bank of Sri Lanka and our main variable is the growth of external debt stock, while the period of study is 1978-2019 ( $T=41$ ). External debt, measured in US\$, was considered for the analysis to avoid any exchange rate depreciation effect.

Our data contain external debt of the Central Government only since data for external debt of State-Owned Enterprises are not publically available for the study period.

### Estimation and Discussion

The estimated results indicate that the change in the growth of external debt dynamics had occurred in year 2007. Distinctively, mean value of growth of external debt shifted upward in 2007. Our test results clearly indicate a presence of a structural break in 2007. This shift is statistically significant (see test statistics and information criteria values in Table 2&3) and there is only one such structural break for the study period. The results are consistent for different statistical tests.

This structural break states that Sri Lanka's foreign borrowings rapidly increased during the post-2007 compared to pre-2007 period. At the same time, it is also possible that Sri Lanka borrowed at a higher cost prior to 2007. Hence, the amount of borrowing as well as the costs of borrowings may have contributed to increase Sri Lanka's external debt obligations during the post-2007 (Weerakoon and Jayasuriya, 2018).

**Table 2: Structural Break Test: Growth of External Debt Stock – 1978/2019**

(Multiple Structural Break Test – Global Informtion Criteria)

Breaks	# of Coefs.	Sum of Sq. Residuals	Log-L	Schwarz Criterion*	LWZ Criterion
0	2	0.33	42.30	-4.4674	-4.5766
1	4	0.22	50.31	-4.8781	-4.6800
2	6	0.20	52.64	-4.8109	-4.5099
3	8	0.21	51.12	-4.5603	-4.1531
Schwarz criterion selected breaks			1		
LWZ criterion selected breaks			1		
Estimated break dates					
1. 2007					
2. 2007, 2013					
3. 1988, 1995, 2013					

\* minimum information criterion values displayed with shading

**Table 3: Structural Break Test: Growth of External Debt Stock – 1978-2019**

(Multiple Structural Break Test – L+1 break vs. global L)

Break test	F-statistic	Scaled F-statistic	Critical value**
0 vs. 1*	18.12	18.12	8.58
1 vs. 2	4.45	4.45	10.13
2 vs. 3	3.61	3.61	11.14
Estimated break dates			
1. 2007			
2. 2007, 2013			
3. 1988, 1995, 2013			

\*significant at the 0.05 level

\*\*Bai-Perron (Econometric Journal, 2003) critical values

The structural break in year 2007 could result due to various factors. Firstly, in 2007, Sri Lanka issued international sovereign bonds for the first time and, as a result Sri Lanka's debt obligation increased by 54 billion rupees in 2007. In addition, debt obligation to China increased from 5 billion rupees in 2006 to 22 billion rupees in 2007. Subsequently, Sri Lanka's debt obligations to both these sources jumped remarkably due to an increase in borrowing from both sources<sup>23</sup>.

Sri Lanka's debt obligation under the international sovereign bond stood at 4 per cent of total external debt stock in 2007 and it rose to 31 per cent by 2017. Similarly, Sri Lanka's debt obligation to China was 0.5 per cent, as a % of Sri Lanka's total external debt obligation in 2006 and, it increased to 1.7 per cent in the following year. By 2019, Sri Lanka's debt obligation to China rose to 9.6 per cent of the Sri Lanka's total external debt obligation. Hence, growth of external debt has been driven primarily by new debt sources than the traditional lenders.

An increase in external debt burden could be due to the relatively expensive new sources of external funds (Morris *et. al.*, 2019). A recent World Bank study examined and compared costs of loans, in terms of interest costs, grace and maturity periods, and grant component. It concluded that international financial market and Chinese funds are relatively expensive than that of the World Bank

<sup>23</sup>Weerakon (2018) concluded that Chinese loans are clearly not the primary cause of Sri Lanka's debt imbroglio but have contributed to, and, possibly, aggravated the problem.

for many developing countries including Sri Lanka. In the Sri Lankan context, Weerakoon (2018) concluded that Chinese funds are less concessionary than most other bilateral lenders, in particular Japanese funds are highly concessionary than that of China.

## Conclusion

Sri Lanka's external debt growth path witnessed a structural break in year 2007. It implies that external debt obligation grew at a faster rate in post-2007 in comparison to the time period from 1978-2006. This change was largely accompanied by new sources of external funding, namely from the international financial market and China. The amount of debt may have increased due to two factors; namely the amount of borrowings and costs of borrowings. Funds from both sources were available at a higher cost than that of the traditional bilateral and multilateral lenders. More importantly, post-2007, the share of Sri Lanka's debt obligation to traditional lenders, such as ADB, World Bank, and Japan declined significantly. Hence, Sri Lanka's debt burden is mainly due to its increased borrowing at higher costs from sources such as international financial markets and China. Hence, the debt burden is a recent phenomenon and it was caused due to increased borrowing at a high cost from the new sources.

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## **THE EFFECTIVENESS OF MILLENNIUM CHALLENGE COOPERATION GRANTS IN GROWTH STIMULATION: AN EMPIRICAL DEEP-DIVE**

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### **Introduction**

The Millennium Challenge Corporation (MCC) is a United States' agency, with a novel structure, that provides international development assistance. It operates with the stated objective of assisting the grant recipient countries in their attempts to accelerate economic growth through poverty reduction, particularly by identifying and removing the "binding constraints to growth" (Millennium Challenge Corporation, 2020). The selection of recipient countries for the programme is based on a set of qualifying criteria, among which figures the countries being low-income countries (LICs) or lower-middle income countries (LMICs). The MCC programme, established through the Millennium Challenge Act of 2003, has so far granted 37 Compacts worth a total of USD 13.4 billion in 29 countries and 28 Threshold Programmes worth a total of USD 0.7 billion in 26 countries (perceived based on Millennium Challenge Corporation, 2020).

### **Research Problem**

There is a wide criticism that the MCC has not been effective in reaching its stated objective of assisting the grant recipient countries in accelerating economic growth. Thus, the present study attempts to analyse whether the Millennium Challenge grant is effective in stimulating growth in the recipient countries.

### **Objective**

There is much debate over the extent to which the MCC programme is being effective in realising its growth-supporting objective. A few studies have been conducted in order to examine this aspect (Dunusinghe, 2020a, 2020b; Johnson & Zajonc, 2006; Ospina, 2014; Ospina & Block, 2017). The present paper, being another attempt to shed light on this issue, examines the growth performance in the MCC grant recipient economies from a different angle.



## Methodology

Macroeconomic data on 74 countries were fetched from the World Bank database. The years in which the MCC grants were obtained by the recipient countries were sourced from the MCC website. Initially, the annual average Gross Domestic Product (GDP) per capita growth rates<sup>24</sup> “before” and “after” receiving the MCC grants were compared. Then, a regression model was constructed based on the theoretical underpinning that the initial GDP per capita and annual average gross capital formation as a percentage of GDP (or “Investment Ratio”) could determine annual average GDP per capita growth rates. The highest number of MCC grants obtained by countries was two (2). Therefore, two (2) dummy variables were also introduced as regressors to indicate whether a particular period considered is “before” or “after” the receipt of the first or the second MCC grant. The period of 18 years from 2000 to 2017, taken into consideration for the present analysis, was broken into two or three depending on whether one (1) or two (2) MCC grants have been obtained by each recipient country, while using the years in which the agreements were signed as points of separation of periods. Countries that have not received MCC grants were also considered in the analysis, in order to check the “with” and “without” effect. Thirty-six such countries were subjected to analysis. Another variable was introduced to represent the “length of the time period” since the duration of periods become unequal owing to different points in time at which the MCC grant facility had intervened. The full length of 18 years was considered for those countries which had not received any MCC facility. It was intended that this variable would capture any effect of duration on the annual average GDP per capita growth rate. A dummy variable was introduced to indicate whether a specific country belongs to Sub-Saharan Africa or not. It was intended that the said dummy variable would capture growth dynamics, if any, specific to Sub-Saharan Africa. Another dummy variable was included to indicate whether a country was a LMIC in the starting year of the considered period.

Thus, the relationship between annual average GDP per capita growth rate and its determinants was estimated by regressing the following equation:

$$G_i = \beta_1 + \beta_2 PCI_i + \beta_3 IR_i + \beta_4 MCC1_i + \beta_5 MCC2_i + \beta_6 NY_i + \beta_7 SSA_i + \beta_8 LMIC_i + \mu_i$$

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<sup>24</sup> The present study uses GDP per capita growth rate instead of GDP growth rate, to set off against any possible impact of changes in population.

Where,

G = Annual average GDP per capita growth rate for the considered period

PCI = GDP per capita at the beginning of the period

IR = Annual average Gross Capital Formation as a percentage of GDP (“Investment Ratio”)

MCC1 = First MCC grant dummy variable (1 if the first MCC grant has been obtained in the considered period)

MCC2 = Second MCC grant dummy variable (1 if the second MCC grant has been obtained in the considered period)

NY = Number of years in a given period of time

SSA = Sub-Saharan Africa dummy (1 if the country belongs to the African continent)

LMIC = LMIC dummy variable (1 if the country is a LMIC)

By 2016, 40 countries around the world had signed MCC agreements for compact and/or threshold programmes. However, Sao Tome and Principe’s gross capital formation data were not available. Data on 36 comparable countries that had not received MCC grants were also obtained. These were LICs and LMICs according to the World Bank country classification by income level (World Bank, 2020). Thus, data on 76 countries altogether were used in the analysis.

A cross-sectional analysis was thereby performed. No presence of multicollinearity was found. Outliers were removed to ensure normal distribution of the residuals. The normality of the residuals of each model was tested by the Shapiro-Wilk test of normality. Breusch-Pagan / Cook-Weisberg test for heteroskedasticity was conducted. STATA software package was deployed to estimate the model.

## **Results and Discussion**

Annual average GDP per capita growth rates before and after receiving a MCC grant were examined, and were found not normally distributed. Thus, the

Wilcoxon signed-rank test was used to compare the paired means. The null hypothesis that the median difference between the two variables is equal to zero was rejected under 1% level of significance, indicating the presence of a significant difference between annual average GDP per capita growth rates before and after receiving the MCC grant.

Table 1 summarises results of the regression analysis, in which the Model-2 emerged as the best-fit model among the three different variants of models tested.

**Table 1: Results from OLS Regression**

	Model 1	Model 2	Model 3
Constant	9.834*** (1.836)	12.450*** (2.034)	12.620*** (2.105)
Initial GDP per capita (in 100 USD)	-0.027 (0.032)	-0.107*** (0.036)	-0.096*** (0.036)
Ann. avg. gross capital formation (% of GDP)	0.118** (0.046)	0.087** (0.044)	0.088** (0.044)
MCC 1 (dummy variable)	-3.750*** (1.084)	-2.933*** (1.053)	-2.915*** (1.060)
MCC 2 (dummy variable)	-5.729*** (1.191)	-5.143*** (1.071)	-5.191*** (1.074)
Number of years	-0.352*** (0.099)	-0.349*** (0.097)	-0.353*** (0.098)
Sub-Saharan Africa (dummy variable)		-2.811*** (0.765)	-2.978*** (0.820)
LMIC (dummy variable)			-0.500 (0.914)
R <sup>2</sup>	0.35	0.41	0.41
F-value	13.94	17.83	16.21
Number of observations	123	123	123

Note: \*\*\*, \*\* and \* indicate significance at 1%, 5% and 10% respectively. Robust standard errors are reported in parentheses.

Source: Author's estimation

The coefficient of the initial GDP per capita indicated a negative and significant influence on the dependent variable, except in the Model-1 where the influence did not emerge significant. The initial income level being higher makes it less easy to grow further, and thus, such a negative direction of relationship indicated in Models 2 and 3 are theoretically expected. The Investment Ratio emerged as a positive and significant determinant, again a theoretically expected result, in all the three models tested. The length of duration indicated a negative and significant influence in all the models tested, while the dummy variable

representing Sub-Saharan Africa became negative and significant in the two models tested with it, indicating the presence of a slower growth rates characteristic to the region. LMIC dummy variable, when introduced in the Model-3, became negative though insignificant.

According to all the models, the coefficients of both MCC 1 and MCC 2 dummy variables, standing for the first and the second intervention of a MCC grant respectively, showed a negative and significant bearing on the dependent variable. This brings suggestive evidence to infer that MCC grants would have negatively affected the growth rates of the recipient countries.

## **Conclusion**

It can be inferred from the present study that the MCC grant has not been successful in accelerating the growth impetus in recipient nations. In fact, the effect has been “detrimental” if one is to interpret it based on the above results. The results of this study conform with that of Dunusinghe (2020a, 2020b), where he also brought evidence towards MCC grant having been unable to fulfill its explicit objectives. However, given the fact that the growth effect of any investment activity is perceived only with a reasonable time lag, and that the periods after obtaining MCC grants by many countries are relatively shorter, these results may have to be reconfirmed through further investigation after collecting data in a few more years in the future. Such future research could also examine whether any inherent weaknesses or shortcomings in relation to development and implementation of the MCC investment programmes (such as in Constraints Analyses or in implementation mechanisms, which appear notably peculiar to MCC grants and quite different from other international donor programmes) have been behind this apparent failure, which is not an aspect dealt with in the present study.

**Keywords:** *Capital formation; Growth; International development assistance; MCC grant; Per capita GDP*

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## **RELATIONSHIP BETWEEN RESTAURANT DEMOGRAPHICS AND RevPASH; EVIDENCE FROM REGISTERED TOURIST RESTAURANTS IN COLOMBO DISTRICT**

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### **Introduction**

Revenue management was first developed in the mid-1980s and has been successfully applied to the airline and hotel industries for many years, but has only recently been applied to the restaurant industry. Revenue management is a sophisticated form of supply and demand management. Its primary focus is managing customer demand through the use of variable pricing and capacity management to maximize profitability. The four strategic levers for yield management are: calendar (reservations, bookings), clock (duration controls, turnover rates), capacity (demand smoothing) and pricing (price fences, discounts). Through the application of information technology, pricing strategy, and service product/process design, revenue management helps companies to sell the right product at the right time to the right customer for the right price. Revenue management is particularly suited for the restaurant industry, with its relatively finite capacity of available tables, perishable inventory, and micro-segmented markets of restaurant guests (Karunarathne, 2020). In the restaurant industry, Revenue Per Available Seat- Hour (RevPASH). The revenue per available time-based inventory unit can be calculated by Total Revenue dividing Available seat hours (Number of available Seat x Hours of seat availability). Tourist arrivals to Sri Lanka during the year 2017 amounted to 2,116,407, registering a 3.2% increase since 2016. Reported number of nights spent in 2017 by international tourists was 23,068,000, showing an increase of 10.27%, with an average duration of 10.9 nights (SLTDA 2019). At present, a lot of tourist restaurants are established in Sri Lanka, because they have a good food and beverage market. Competitiveness increases as the number of restaurants increase in the local context. In Sri Lanka, Total number of registered restaurants with SLTDA is 498. Among them, 399 (80%) restaurants are Grade A, while 99 (20%) are Grade B restaurants as at end 2018. “Most hoteliers still not familiar with RevPAR concept and using wrong determinants to determine RevPAR” as cited in

(Anastassopoulos et al.2009) it is similar to restaurant industry. Restaurant's managers and owners are still not familiar with RevPASH concept and using wrong determinants to determine RevPASH.

This study aims to identify the relationship between restaurant demographics and RevPASH of registered tourist restaurants in Colombo district.

### **Research Problem and Objective**

Most of the researchers have presented diverse perspectives on various determinants influence on a firm's performance. In one hand, outside the firm, researchers have pay attention on sectors and markets seeking to understand how their structure influences productivity and inside of the firm, beholding for determinants to set strategic decisions by evaluating performance metrics and functional choices. Researchers have identified the Revenue Management as a good method to improve performance of a service based organization with limited capacity. Consequently, RevPASH is one of the best methods to evaluate the performance of a restaurant, which is still under researched and rarely practiced in many developing countries including Sri Lanka. Most restaurant managers and owners are still not familiar with RevPASH concept and they fail to select right determinants to determine RevPASH.

Hence, this research was intended to identify the relationship between restaurant demographics and RevPASH in registered tourist restaurants in Colombo district, Sri Lanka.

### **Methodology**

The current study was conducted as a quantitative study and used a structured questionnaire as the data collection technique. The questionnaire was subduced of size, grade, age, services and facilities, location and RevPASH data. These data measured over the period of last financial year (2018) for 75 registered restaurants which were located in Colombo district. Restaurant size was measured by the number of employees and number of covers, Age measured by establishment year, Grade measured by A or B, services and facilities measured by availability of security service, Wi-Fi facility, entertainment facility and parking facility and location measured by centrality and distance to the main road. Based on the research objective, target population of this study is all registered tourist restaurants in Sri Lanka. Total of 75 SLTDA registered tourist restaurants in Colombo district were selected as the study sample using convenient sampling

technique. Descriptive statistics and correlation analysis were used to analyse the data with the support of SPSS 22 version.

## Results and Discussion

### Nature of the Determinants of RevPASH

The determinants of RevPASH were identified under four elements as location, age of the restaurant, grade of the restaurant, size of the restaurant as well as facilities & services offered in the restaurant. Accordingly, the descriptive statistics presented in table 1 explain the current level of those determinants.

**Table 1: Descriptive Statistics for the Determinants of RevPASH of Tourist Restaurants (N=75)**

Determinants of RevPASH	Mean	SD
Distance to the main road (m)	43.80	104.023
Restaurant age (years)	13.28	10.184
Total covers	99.93	44.128
Total employees	16.40	7.552

Source: Based on SPSS output of survey data in 2019

According to the results, out of total restaurants in the sample, 81.33 per cent were 'A' grade and 18.67 per cent 'B' grade restaurants. Further, 5.33 per cent of restaurants were started in 1970-1980, 4 per cent in 1981-1990, 16 per cent in 1991-2000, 36 per cent started in 2001-2010 and 38.67 percent of restaurants were started in 2011-2019. Moreover, 49.33 per cent of restaurants were not refurbished at all whereas 30.67 per cent were partially refurbished and 20 per cent of restaurants were fully refurbished. Considered to the location of the restaurant, 64 per cent of were located in urban area, 25.33 per cent in suburban area and 10.67 per cent were in rural area. Further 66.67 per cent of restaurants situated in zero distance to the main road (at road side with a very close proximity), 21.33 per cent situated within less than 100m distance to the main road, 8 per cent within 101m - 200m, 1.33 per cent within 301m - 400m from the main road and 2.67 per cent of restaurants situated within 401m - 500m distance from main road. 57.33 per cent of restaurants offer security service, Wi-Fi facility, entertainment facility and parking facility, 25.33 per cent offer three facilities out of four, 12 per cent of restaurants offer two services and facilities out of four, 4 per cent of restaurants offer only one service and facility and rest



of 1.33 percent of restaurant were not offering any services and facilities out of four services and facilities.

### Relationship between RevPASH and its Determinants

Karl Pearson coefficient of correlation analysis was utilized to measure the strength of relationship between RevPASH and its determinants (size, grade, age, services and facilities and location). Table 2 presents the results of correlation test and has indicated a highly significant relationship between number of employees of the restaurant and RevPASH, services & facilities and RevPASH, as well as Centrality (locating the restaurant at a closer proximity to the center of city) and RevPASH whereas the restaurant grade also indicated a relationship between Grade of the Restaurant and RevPASH.

**Table 2: Correlation between RevPASH and its determinants**

Attributes	Pearson Correlation	P-value	Nature of Relationship with RevPASH
No of employees	0.448**	0.000	Weak Positive Relationship
No of covers	0.187	0.108	No Significant Relationship
Restaurant Grade	-0.219	0.060	No Significant Relationship
Established year	0.030	0.797	No Significant Relationship
Refurbishment	-0.047	0.688	No Significant Relationship
Services and facilities	0.285*	0.013	Weak Positive Relationship
Centrality	0.278*	0.016	Weak Positive Relationship
Distance to the main road	-0.155	0.184	No Significant Relationship

N= 75

Note: \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

Source: Based on SPSS output of survey data in 2019

Accordingly, correlation between no of employees and RevPASH is 0.448 ( $0.3 < 0.448 < 0.49$ ), implies a moderately positive relationship with the P value of  $0.000 < 0.01$ . Accordingly, when the number of employees is increased in the restaurant, the Revenue per Available Seat per Hour or the RevPASH of the restaurant seems to be increased at a moderate level. The reason behind this situation can be the efficiency of service with sufficient number of work force during the operational hours may leads to serve higher number of guests using same resources. If the guests are receiving the service faster, they may leave the restaurant after the meal sooner, so that same space can be utilized for another set of guests. However, the efficiency of employees is not measured here although it is an important element in this context.

However, the total no of covers, grade of the restaurant, establishment year of the restaurant, recent refurbishment of the restaurant, and the distance to main road from restaurant had indicated no significant relationship with RevPASH with P values greater than 0.05.

Services and facilities offered in the restaurant and centrality of the restaurant location has indicated a weak positive relationship indicating 0.285 and 0.278 correlation value respectively whereas the grade of the restaurant has a weak negative relationship with RevPASH. Accordingly, when the restaurant is located closer to the city center, the RevPASH may be getting higher due to the attraction and better accessibility. Further, when the facilities are available more and more, the guest willingness to visit the restaurant, as well as facilitating more guests with the support of other ancillary staff and facilities may encourage visiting the restaurant as well as make easier to serve more guests within the time period.

## **Conclusion**

Restaurant owners and managers in registered tourist restaurants in Colombo district should pay more attention on the total number of employees in restaurant, services & facilities of restaurant and centrality of the restaurant corresponding to the location to increase the RevPASH of their restaurant in order to enhance the revenue. When we increase the total number of employees in restaurant, we can provide a high-quality service within a short period of time. That will automatically increase the customer satisfaction and number of returning customers. It enhances the RevPASH of the restaurant. When we offer various kinds of services & facilities to the customer such as Security service, WiFi facility, Entertainment facility and parking facility, it will increase the customer satisfaction and number of returning customers. It also enhances the RevPASH

of the restaurants. We have to consider the centrality of the restaurant corresponding to the location. Being centralized in an urban area will be a good opportunity to become more attractive among the customers because of the ease of accessibility. It will also be helpful in promoting the restaurant among various types of customers. It will also enhance the RevPASH of the restaurants.

**Keywords:** *Restaurant industry; Revenue management; RevPASH; Performance metric*

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## **Strategic Marketing for Growth**



## **EFFECTS OF CONSUMER PERCEPTIONS ON GREEN MARKETING MIX IN CONSUMER PURCHASE INTENTION OF FAST-MOVING CONSUMER GOODS**

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### **Introduction**

The business world encounters that environmental issues are becoming as severe global issue. All most all the governments around the world have concerned about green marketing activities that they have attempted to regulate. Green marketing came into prominence in the late 1980s and early 1990s. It was first discussed much earlier. The American Marketing Association (AMA) held the first workshop on "Ecological Marketing" in 1975. When we consider the green product it can be referred to as any products that are manufactured through green technology and that caused no environmental hazards are called green products. Like many Asian countries, Sri Lanka suffers from increasing levels of air toxic waste, exposure to severe road traffic noise, high levels of garbage deposal and rapidly lessening landfill space in most of the urban areas. Nearly 30% to 40% increment seen in green trading growth in the Sri Lankan context. In deed this can be a processing stage of the green revolution of Sri Lanka (Samarasinghe, 2012).

Specifically, in the Sri Lankan framework, there is a rise in green trade virtually by 20 – 22% compared to the last five years in fast-moving consumer goods trade (Wanniarachy, 2016). Green marketing mix influences groups of consumers based on their differed perception of green knowledge. Consumers would act differently due to their varied perception of green products, green price green place and green promotion. At the same time, they would reflect from their demographical factors such as sex, education, income, age, subjective norm, attitude and perceived behaviour.

### **Research problem**

Most of the retailing sectors are highly focused on green certification, green promotions and labelling in order to fulfil the consumer demand. Voluminous Consumers are intending to purchase environmentally friendly goods. To what

extent green marketing mix influences on consumer perception towards their purchasing intention.

### **Research questions**

The basic research questions can be stated as

- Why retailers are concerning to display green labels and green brands of their fast moving consumer goods?
- Do green place, green promotion and green price influences on consumer perception on purchase intension of fast-moving items?
- How demographic factors such as age, sex, income, educational level and green knowledge are influencing on Consumer Purchasing Intention on fast moving consumer goods?
- Which is the most influential behavioural factor affecting to Intention on purchasing?

The willingness of a customer to buy a certain product or a certain service is known as purchase intention. Purchase intention is a dependent variable that depends on several external and internal factors. The research investigates whether the purchasing intention on FMCG is influenced by green marketing tools as eco-labelling, eco-standards and certification, eco-branding and green marketing mixtures and how the consumer perception functions towards purchase intention.

### **Objective of the research**

There are primary as well as secondary objectives to be expected as the outcome of the research. The primary objectives of this research are

- To assess the positive and negative perception of green label, and green brand of consumers' purchase intention
- To identify the relationship of consumer perception on the green place green price and green promotion for the purchase intension of fast-moving goods.
- To identify the relationship between demographical factors such as age, sex, income, educational level, green knowledge of consumers and purchase intention



- To investigate the most influencing factor in the theory of planned behaviour such as attitudes, subjective norms and perceived behavioural control for customers' Intention of purchase

As the secondary objective, the identification of effective marketing tool and a demographical factor can be an informative fact to the marketers, manufactures and distributors as to influence green trading

### **Literature review**

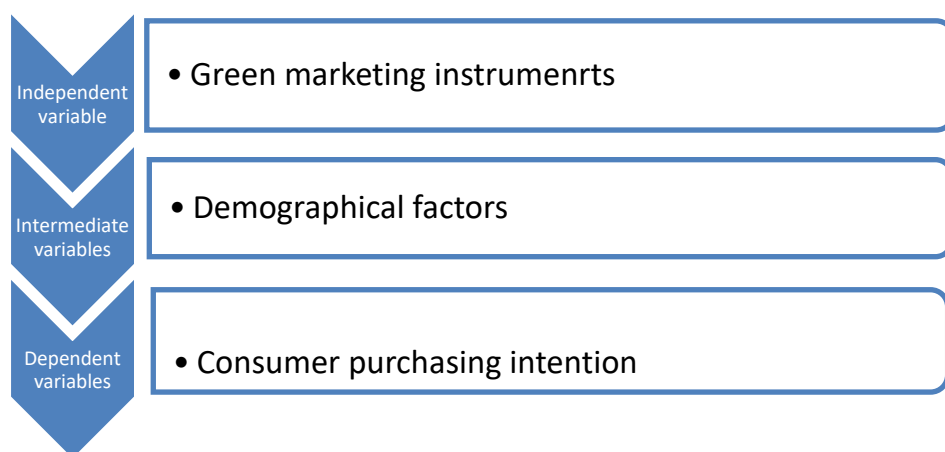
The coverage of green marketing on fast moving consumer goods is distinct in present contemporary market. Understanding the green marketing implications through researchers' measures and identifying the literature gap can be resulted as the expected outcome of this research. The study of consumer attraction on green products (W.M.C.B. Wanninayake & Pradeep Randiwela, 2015) reveals that the green products have substantial awareness among Sri Lankan customers and they are willing to pay something more on green products. The majority of customers considered that package is most important element of such products. The study of factor analysis on green consumer goods (Prof.Siddharth Sriram, 2017) indicates that there is a stronger positive correlation among CSR and consumer purchase intention.

The investigation of consumer purchase intention on fast-moving consumer goods (Bansal, P. & Roth, K., 2000) identifies the interrelationship between the consumer willingness and green products. The Findings of the study (Bryman, A. & B. E., 2011) show that, age and education have positive relation with Eco-literacy. Socio demographic variables are not significantly related with green purchase intention. Besides this Environmental advertisements, Price and Ecological packaging were found to be attributes for Consumer buying behaviour. (Berry, A, & Rondinelli, D , 1998). The influences of the subjective norms and democratically factors on green consumer goods need to be focused efficiently as to fill the research gap.

### **Methodology**

Consumer purchasing intention has been linked with demographical and green marketing factors in many ways (Brian bell 2014). The developed empirical model has been used to build relationship between key variables of green marketing tools green marketing mixture and green trust instruments (independent variable, customer purchasing intention (dependent variable)

demographical factors (intermediate variables). Data analysis includes descriptive as well as inferential approaches.



Source: (Brian Bell, 2004)

**Figure 01: Conceptual Framework**

### **Location of the study**

This study basically examines the green marketing implication in Negombo Divisional secretariat. The area of Negombo is located in western province in Sri Lanka under District of Gampaha, including the population approximately 142,136 with 68600 males and 73,536 females.

### **Sampling framework**

Out of these 452 registered retailing outlets there are 90 outlets have been chosen whereas 270 respondents will be testified for this analysis using “convenient sampling” technique thorough disproportionate method is used.

### **Data collection**

The research method used for this research was a cross-sectional research design since the survey based analysis is being held in the retailing field. The questionnaire includes 30 close- ended questions in order to testify the out. Collected data were analyzed through descriptive and inferential approaches. The statistical significance of relationships among the selected variables was determined using the Fisher’s exact test.

### Data analysis and conclusion

Based on the above empirical findings, it is evident that in Negombo context, consumer's income, eco literacy education level is significant demographic variables for green segments. The findings revealed the importance of promotion through media as well as reference of peer groups has positive effects as we found a relationship with the purchase intention of green products. Word of mouth as through family and peer group really matters, in the responses of our questionnaire we found that people pay much attention to the opinion of their family and friends concerning green products as well as they recommend them to others. Consumers concerned about the environment but as they have become more sophisticated, they require clear information about how choosing one product over another will benefit the environment. Consumer education results in their empowerment. Empowered consumers choose environmentally preferable products when all other factors are equal (table 01).

**Table 01: Coefficients and correlations**

Model variables	Standardize d coefficient	t- value	P -value
(Constant)	0.368	1.612	0.108
Green labels	0.254	2.082	0.039
Green brand	0.097	1.267	0.020
Green price	-0.318	-2.962	0.003
Green place	0.101	1.405	0.162
Green promotion	0.113	0.971	0.033
Age	0.540	0.618	0.538
Sex	-0.084	-1.177	0.322
Education	0.169	2.091	0.038
Income	0.034	0.298	0.766
Green knowledge	0.036	0.438	0.036
Subjective norms	-0.017	-0.231	0.818
Perceived behavioral control	0.165	2.236	0.027
Attitude	0.031	0.425	0.067

Source: Author's estimation

Ultimately green marketing requires that consumers to think Green, think clean, and Ecofriendly. Consumers prefer the eco-friendly products even at premium price. The Marketers and retailers need to be more vigilant on introducing green products and green trading practices as to influence and encourage green purchase. When green awareness is inculcated in the society the sustainable development would take place.

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## **DETERMINANTS OF DEMAND FOR SKILL LEVEL BASED LABOUR MIGRATION IN SRI LANKA**

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### **Introduction/Background**

A demographic change with population ageing and a decline of the workforce, and a fragmented labour market is characterised by high unemployment level for low-skilled people and a simultaneous shortage of skilled workers. A large number of policy makers consider that labour mobility creates an answer to reach full employment level in several countries in the world. Theoretically, labour mobility should enable workers to move from a country to another in order to reduce unemployment in countries where high unemployment rates prevail, and offer a new labour force where there is a lack of workers. The Demand for Labour might be definite as the economic necessity of people able to work (Dolny, et al, 1998).

Sri Lanka has experienced varying forms of labour migration during the post-independence era. After the three decades of civil conflict, Sri Lanka became one of the contemporary world's major emigration nations. According to the United Nations (2013) 1.25 million of Sri Lankan-born persons living outside of their country of birth and it was equivalent to 5.9 percent of the current Sri Lankan resident population. Meanwhile more than one million Sri Lankan citizens are estimated to have moved for targeting for a foreign employment opportunity.

Especially with the opening of the Sri Lankan economy, international labour migration has increased during the last three decades gradually (Ramanayake and Wijetunga, 2018). Recent estimates suggest that over a million migrants work abroad while the annual reported outflows are about 200,000 persons (Haas, 2011). Every year, substantial inflows of remittances were generated by foreign employment and, represented as a safety valve for local unemployment. Remittances now obviously play a significant role in terms of exports and share of GDP and are vital for the economic health of the country. Consistent with Siddique et al. (2012), found that migrant workers' remittances significantly support economic development in Sri Lanka. Greater amount of labour mobility for workers in developing countries could have a more impact on economic

development than any other policy intervention. Today, increasing mobility levels of labour constitutes a challenge to the host country. Meanwhile if workers were allowed to fill specific labour shortages, the host countries would be also broadly benefitted. On the other hand, immigration and migration policies should represent logical and rational strategic approaches to mitigate the complexities among the countries. Therefore, it is an important factor in the study of demand determinants of international labour mobility in Sri Lanka, because it looks at how labor, one of the major factors of production, affects growth, production, unemployment and world economic stability.

Further, the income differentials of countries create impacts on migrant flows. When income differentials increase, it produces larger incentive to migrate to beneficially country. The reverse holds true when income differentials decrease. Therefore, income levels and income differences are naturally considered among the most important determinants in the decision to migrate. Access to the benefits system of host countries plus welfare benefits, state education, housing and health care services create the positive impact on the migrate for a foreign employment. Meantime, deference's between labour demand between nations, in particular for younger workers, to build new skills and qualifications and develop networks also generate more attention.

## **Research Objectives**

### **Main Objective**

The main objective of this study is to empirically examine the strategic priority factors that accountable for labour demand for international labour mobility of 2007 to 2016 in Sri Lanka.

### **Specific Objectives**

1. Identify the dynamic response of Sri Lankan labour mobility to labour demand shocks of host countries.
2. Examine the determinants of labour mobility and their impacts on Sri Lankan skilled labour migration.

## **Research Methodology**

Since the study mainly based on secondary data quantitative methods were used by analyzing international labour mobility within the broader with the context of all migrations from Sri Lanka to foreign countries. It may include official statistics and draw upon relevant information developed by other international

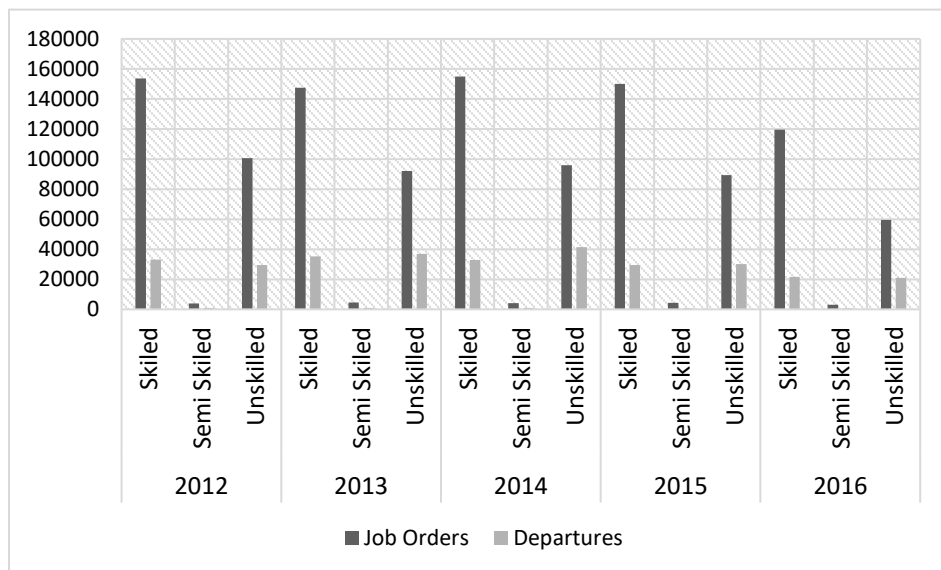
organizations and local stakeholders. This study is concerned with the determinants of demand for skilled migration from Sri Lanka to the world between 2010 and 2018. The dependent variable  $W_i$  is the number of skilled migrants all over the world from Sri Lanka in year  $t$ .

The following data series were obtained for each origin country  $W_i$ , Skilled labour migration from Sri Lanka to world at year  $t$ . GPC is GDP per capita of Sri Lanka in year  $t$ , LR is the Literacy rate in Sri Lanka in year  $t$ , WKPP is the working Population of Sri Lanka in year  $t$ . Further, UE is the Sri Lankan Unemployment rate year  $t$  and  $\varepsilon_{it}$  is the error term.

$$W_{it} = \beta_0 + \beta_1 GPC + \beta_2 LR + \beta_3 WKPP + \beta_4 UE + \varepsilon_{it}$$

### Findings and Discussion

Labourers in low-income countries like Sri Lanka are keen to earn a high amount of income by employing quality and better job fields in different countries. Due to this reason, approximately every economic situation of international labour mobility incorporates income differentials and other economic factors in a given period. Therefore, several key economic factors are creating push and pull impact on international labour mobility.



Source: SLBFE, (2017)

**Figure 01: Number of Job Orders (vacancies) and Departures through registered Sources by Manpower Skilled Levels**

The above diagram illustrates the number of work positions (vacancies) and departures through registered sources by skilled levels in Sri Lanka from 2012 to 2016. There is a significant mismatch between labour demand and supply in the context of labour migration. It indicates that Sri Lanka was unable to absorb the considerable amount of overseas job opportunities via filling the Sri Lankan labours. This gap between labour demand and supply for skilled and unskilled workers may arise due to various economic and social factors. The lack of competence and knowledge of workers in the local labour market would be one of the key sources for creating this gap. On the other hand, for some job categories existing labour force was not adequate to meet even the need of the local labour market can be another reason for that.

According to the foreign labour demand by manpower level, the skilled level job categories sustained to continue as the highest labour demand category among all manpower categories of migrant workforces. Further, the demand for unskilled labor also provided a considerable amount of supply from 2012 to 2016.

The above data demonstrate that, as a developing country, Sri Lanka was unable to address the demand for foreign job opportunities to a considerable level due to a lack of competence and skills in manpower in the domestic labour market. There is an overall shortage of migrant labours from Sri Lanka. Most of the time, Sri Lankan migrants were often unskilled or not equipped with skill sets that are in demand.

The unit root test: since the assumptions for the classical regression model require that both variables be stationary and that errors have a zero mean and finite variance. The unit root test is evaluated using the Augmented Dickey-Fuller (ADF) test.  $\log W_{it} = 2.485 + 0.851GCP + 0.751LR + 0.68WKPP + 0.689UE + \varepsilon_{it}$

The OLS estimates that while the host country Per capita growth rate is a significant determinant of skilled migration in Sri Lanka. The amount of working population of Sri Lanka is also significant, as is the lagged dependent variable. Change in the Sri Lankan unemployment rate has a positive coefficient and is significant at 0.1 level. In addition to that, the literacy rate of Sri Lanka became significant and has a positive coefficient for labour migration. The higher level of literacy rate of Sri Lanka provided more skilled workers to the international labour market.



## Conclusion and recommendations

The differences in demand for skilled migration flows in Sri Lanka tend to be dominated by mainly economic conditions like per capita income of the host country and human capital development, Unemployment rate, rise of the working-age population in the home country are determined the demand for international labour. On the other hand, keeping legislative and economic stability, its good recruit aspects in the employment market also draws the skilled migrants to high labour supply countries. However, the market requirement for skilled migration from low-income countries needs to continue or increase the number of skilled migrants to especially to developed and industrial countries.

**Keywords:** *Labour Demand; Migration; Skilled Labour; Unemployment*

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## **IMPACT OF GREEN SUPPLY CHAIN MANAGEMENT PRACTICES ON OPERATIONAL PERFORMANCE OF APPAREL EXPORTERS IN SRI LANKA**

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### **Introduction**

In the Sri Lankan business context Green Supply Chain Management (GSCM) practices and operational performance play a significant part as most of the stakeholders highly concern about maintaining an eco-friendly environment while increasing their organizational operational performance. Due to the environmental issues that occurred in the process of delivering the products to the end users, the concept of GSCM has become a hot topic among the researchers today more than ever before. According to Tsenga et al. (2019) most of the organizations are now trying to minimize environmental impact by combining environmental concern into their supply chain operations. Manufacturing sector has been more focused on this GSCM context than the other business sectors, because most of the air, water, environmental pollution can occur due to such sectors. When Sri Lankan context is considered, the manufacturing industry plays a foremost part regarding the development of Sri Lankan economy. Central Bank Of Sri Lanka (2019) stated that 44.7% of the export composition in the Sri Lanka in 2018 is based on textile and garments. According to the apparel sector in Sri Lankan economy is at a considerable position and it should be focused more their attention on environmental and social concepts to achieve sustainable development.

### **Research problem**

Today the environmental thinking-based organizations are doing a massive revolution in the business sector. As customers are more rational, they consider the contribution which is given to the environment when manufacturing products. And also, due to the increment of environmental issue, customers pay much attention to what kind of product they are purchasing and from whom. So as a solution GSCM has been introduced to different business sectors. Though the business sector tries to use GSCM as a solution to reduce the environmental issues, they have a problem regarding the impact which is emerged by GSCM practices on organizational performance. According to the idea of Muthuka &

Nyamwange (2015), the relationship between GSCM practices and operational performance is not very clear and there is a shortage of consensus regarding the impact of GSCM on organizational performance outcomes.

### **Objectives**

The main objective of the study is identifying the impact of Green Supply Chain Management practices on operational performance of apparel export manufacturing companies in Western province in Sri Lanka.

Specific Objectives of the study are as follows;

- Identify the different green supply chain management practices

- Identify the level of impact of each Green Supply Chain Management practices on operational performance

- Identify the most significant Green Supply Chain Management practice affects for the operational performance

### **Methodology**

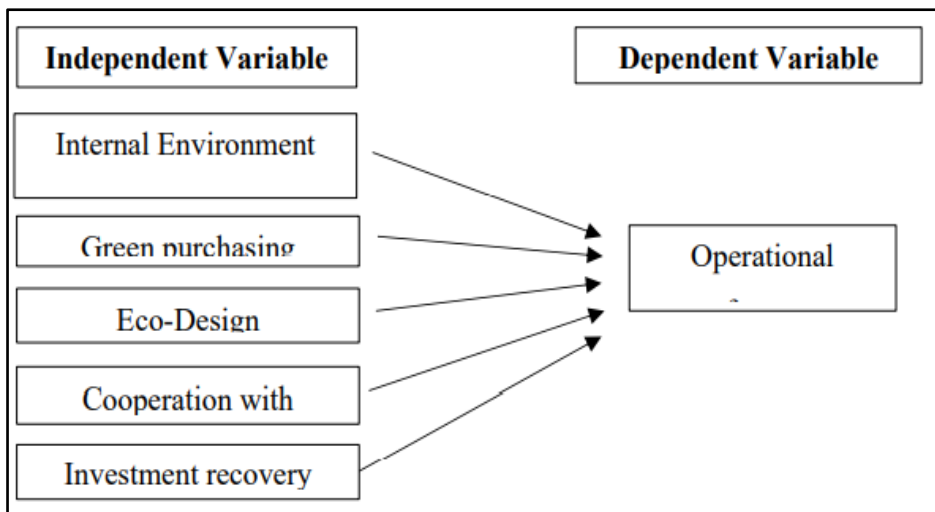
As the main objective of the research is to identify the impact of GSCM practices on operational performance in the Sri Lankan apparel export manufacturing industry, the population has been taken as the managers of apparel export manufacturing companies who are practicing GSCM in Sri Lanka.

Though there are no clear statistics regarding the apparel manufacturing companies who are practicing GSCM, under International Standard Organization's (ISO) statistics in 2015 there are 55 apparel manufacturing companies in Sri Lanka, who certified under ISO 14001- Environmental Management System. Therefore, it can be taken an idea about the apparel export manufacturing companies who are practicing GSCM in Sri Lanka.

As the researcher has no idea about the number of managers in each and every company and also about the companies who implement GSCM practices, convenience sampling, which comes under the non-probability sampling technique was used. Here researcher has taken only the Western province into consideration as it is given a massive contribution to the apparel industry in Sri Lanka. When selecting the sample size, the researcher has used 10 times rule method. Under that, Kock (2018) said that 10 times rule is one of the most commonly used method to estimate the minimum sample size of a research. 10 times rule can be calculated by multiplying the maximum number of latent

variables in the model from 10. As the maximum latent variables in this model is 5, the minimum sample size under 10 times rule can be estimated as 50. Therefore, the sample size of this research study is 54 managers of apparel export manufacturing companies in the Western province in Sri Lanka.

Primary and secondary data were utilized by the researcher and data for the study was collected through a questionnaire developed by the researcher and the questionnaire was distributed among the managers in apparel export manufacturing companies which practice GSCM. The questionnaire adopted five-point Likert scale (1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree) as the rating scale.



Source: Ranasinghe (2020)

**Figure 1. Conceptual framework**

## Results and Discussion

Cronbach's alpha value was recorded beyond the 0.7 and all the variables are in the acceptable region.

As the research hypothesis in this study is based on the type of impact and degree of impact of each and every independent variables on dependent variable separately, multiple regression analysis was used as the testing tool.

$R^2$  of this study was 0.528 and it represents that if the operational performance of apparel export manufacturing companies in Western province change from 100%, 52% of it changes due to the internal environmental management practice,

green purchasing, cooperation with customers, eco-design and investment recovery (independent variables).

As per the results, the estimated regression model can be developed as follows.

$$OP = \alpha + \beta_1 IEM + \beta_2 GP + \beta_3 CWC + \beta_4 ED + \beta_5 IR$$

$$OP = 1.371 - 0.224 IEM + 0.457 GP + 0.226 CWC - 0.035 ED + 0.192 IR$$

OP	=	Operational Performance
$\alpha$	=	Intercept
$\beta_1 \beta_2 \beta_3 \beta_4 \beta_5$	=	Coefficient of Variables
IEM	=	Internal Environmental Management
GP	=	Green Purchasing
CWC	=	Cooperation with Customer
ED	=	Eco-Design
IR	=	Investment Recovery

According to the above multiple regression analysis, the hypotheses were tested and out of five hypotheses only three were accepted and two were rejected. Under that, it was found that three practices (green purchasing practice, cooperation with customer practice and investment recovery practice) have a significant and positive impact, while rest of the two practices (internal environmental management practice and eco-design practice) are having a non-significant and negative impact on operational performance.

### Conclusion

Based on the above findings of this study it was revealed that green purchasing has highest ability to impact on operational performance than the other practices. Eco-labeling and ISO 14001 certification of suppliers, suppliers' environmental friendly practices highly concern for the increment of operational performance through one of the GSCM practice, green purchasing.

In order to have a strenghful operational performance, cooperation with a customer also can be involved as it is positive and significant impact on operational performance. As the customers are more rational with eco-friendly

productions, interacting and retaining customers while practicing GSCM practices is more important for the increment of operational performance.

Strong investment recovery is essential to achieve improvements in operational performance under the implementation of GSCM practices. In order to that, selling excess inventories, materials and equipment are more supportable for operational performance of organizations.

This study was limited to the Western province in Sri Lanka and it is suggested to carry out similar type of study in other provinces in order to further validation of findings. Future research can be implemented by considering other industries to gain much more understand about the impact of GSCM practices on operational performance. In addition to that future researchers can conduct by focusing on another organizational performance instead of operational performance.

**Keywords:** *Cooperation with customers; Eco-design; Green purchasing; Internal Environment Management; Investment recovery; Operational performance*

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## **3PL INDEX: MEASURING THE SATISFACTION OF 3PL CUSTOMERS IN SRI LANKA**

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### **Introduction**

Businesses operate in a more complex and highly dynamic environment and customers are more knowledgeable and informative than before. Customers exert immense pressure on the businesses by requiring quality products at affordable prices. As a result, businesses must pay more attention to the production process to develop quality products at low prices to satisfy customers. Therefore, most businesses outsource their non-core activities to third party logistics providers (3PLs). Outsourcing logistics activities to 3PL service providers mainly help to reduce logistics costs and to improve focus on the production process and new product development process. Outsourcing of logistics services has now been around for over three decades. It has been experienced that outsourcing can benefit an organization immensely (Harrington et al., 2004). However, this will only be true if the correct activity is chosen for outsourcing, with a well-maintained procedure, the right partner selected, performance and compliance constantly monitored.

Capgemini Consulting (2009) identified openness, transparency, good communication, personal relationships on an operational level, flexibility of 3PLs to accommodate customers' needs, effective partnering and collaboration between customer and 3PLs, achieving target cost reductions, achieving improvements in service levels, peer-to-peer relationship on executive level, providing guidance and sponsorship, the capability of the 3PLs to provide valuable ideas for supply chain improvement and innovation, willingness of 3PLs to share risk, and financial arrangement for compensating as the expectations of 3PL customers from the 3PL providers. Georgia Tech & Capgemini Consulting (2005) discovered that proven results and performance, trust, openness and information sharing, solution innovation and relationship reinvention, ongoing executive level support, service offering aligned with customer strategy and deep industry knowledge are the expectations of 3PL customers from 3PL providers.

The most important dimension in marketing is customer satisfaction. Companies use customer satisfaction to evaluate their business performance and effectiveness. Marketing managers intended to invest more funds to increase customer satisfaction for their product or services. Customer satisfaction can be identified as customer's complete or global opinion concerning the level to which the actual performance product or service tallies the pre-defined expectations (Stank et al., 1999; Anderson & Sullivan 1993).

Bolton & Drew (1991) have elaborated that customers' evaluation of service value can affect purchasing intentions and consumer behaviour. Furthermore, it has been identified that there is a relationship between customer satisfaction and future intentions (Bearden & Teel, 1983; Oliver, 1980). Consumers' viewpoint on substitute attractiveness and joy could be a conclusive factor for customers to shift (Anton et al., 2007).

Anton et al. (2007) has stated that poor service quality influences customer intention to withdraw from the relationship or to shift to alternatives. Rahman & Azhar (2011) found that high switching activities of consumers are to be noted in both developed and developing economies. Oliver (1981) and Walsh et al. (2006) stated that customer satisfaction has a negative relationship with the intention to switch. Langley et al. (2003) uncovered those customers who are satisfied with their 3PL providers gave positive responses when they were questioned whether they intended to use third party services over the next 3-to-5-year period.

### **Research Problem**

The third-party logistics market in Sri Lanka is fragmented with few major local players dominating the scene. Level of satisfaction and trust towards the service providers are not considerably high in Sri Lanka (De Alwis, 2016). Cost, lack of control, lack of coordination and lack of cooperation, lack of skills and knowledge, lack of industry knowledge, and trade union activities are identified as problematic areas in the 3PL market in Sri Lanka.

There is a service gap between customer expectations and what they are experiencing in the 3PL market in Sri Lanka (Malkanthie & Jayamanna, 2016). Premaratne (2012) highlighted that the 3PL providers are not responding well to the expectations of 3PL customers in Sri Lanka. Further, no attempts can be found in the literature on measuring the level of satisfaction of 3PL customers in Sri Lanka. As a consequence, although the logistics outsourcing market has developed up to 7PL in the world, Sri Lanka outsourcing market is still at the 3PL stage.



## Objective

The objective of the study is to develop an index to measure the satisfaction level of 3PL customers in Sri Lanka.

## Methodology

The 3PL index to measure the level of satisfaction of the 3PL customers was constructed based on selected nine variables: openness and transparency (OPNTR), good communication (GDCOM), flexibility of 3PL to accommodate customers' needs (FLXCN), effective partnering and collaboration between customer and 3PL provider (EFCOL), achieving target cost reductions and improvements in service levels (ACTRG), customer relationship (CUSRL), willingness of 3PL provider to share risks (WILSR), financial arrangements and compensates (FACOM), and trust (TRUST). The variables were selected through a comprehensive literature review. To obtain the 3PL index, the average satisfaction score of each attribute ( $A_k$ ) should be multiplied by the importance weight of the attribute ( $W_k$ ).

$$3PL\ Index = \sum_{k=1}^m A_k W_k$$

where,

$A_k$  = satisfaction score for attribute k,

$W_k$  = the importance weight (relative importance) for satisfaction attribute k,

m = number of satisfaction attributes,

After calculating the 3PL Index, the growth rate of customer satisfaction can be calculated by utilizing the following formula.

$$\text{Growth of Customer Satisfaction} = \frac{\text{3PL Index of the current year} - \text{3PL Index of the last year}}{\text{3PL Index of the last year}} \times 100$$

A total of 200 leading companies (3PL customers) in Colombo district in Sri Lanka participated in this survey. The sample of the study was selected randomly. The five-point Likert scale developed by Likert (1932) has been used to gather opinion for each question in the questionnaire and scores are given from strongly disagree (1) to strongly agree (5). The reason for choosing a five-point Likert scale was because research has shown that reliability in respondents' perceptions increases up to a level of five-points and then tapers off (Lissitz & Green, 1975).

The target respondents typically hold the title of Senior Executive, Manager or Director of the company. Steps have been taken to ensure the anonymous nature of the questionnaire so that the responses are honest and unbiased. Interrater reliability was assessed using Cronbach's alpha ( $\alpha$ ).

## Results and Discussion

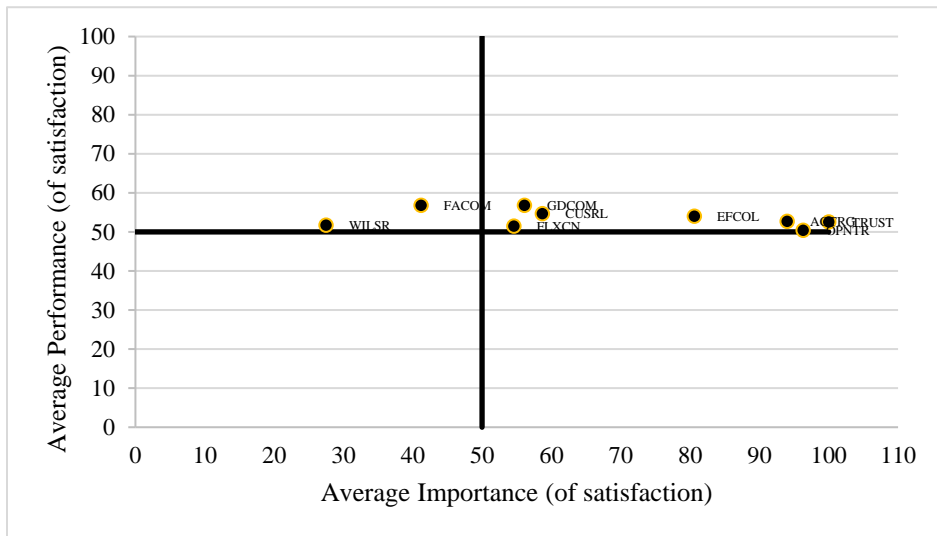
Action diagram in figure 1 indicates the strong and the weak points of customer satisfaction and define the required improvement efforts. The diagram is divided into quadrants, according to performance (high/low) and importance (high/low) that may be used to classify actions. The first action is Status quo (low performance and low importance): Generally, no action is required. Action two is Leverage opportunity (high performance/high importance): These areas can be used as an advantage against competition. Action three is Transfer resources (high performance/low importance): Company's resources may be better used elsewhere. And action four is Action opportunity (low performance/high importance): These are the criteria that need attention.

PERFORMANCE	HIGH	<b>Transfer Resources</b> (high performance / low importance)	<b>Leverage Opportunity</b> (high performance / high importance)
	LOW	<b>Status Quo</b> (low performance / low importance)	<b>Action Opportunity</b> (low performance / high importance)
		LOW	HIGH
		IMPORTANCE	

Source: Customers Satisfaction Council (1995)

**Figure 1: Action diagram**

Figure 2 indicates the scatter diagram for the average importance and the performance of the satisfaction levels of 3PL customers and the diagram was divided into four quadrants based on the 50 percent average levels of performance and importance.



Source: Survey data (2019)

**Figure 2: Average importance and the performance of the satisfaction levels of 3PL customers**

Figur 2 highlights that financial arrangements and compensates (FACOM) and the willingness of 3PL providers to share risks (WILSR) are shown just above the border line of the Transfer Resources area (high performance / low importance). According to the action diagram proposed by the Customers Satisfaction Council (1995) company's resources may be better used elsewhere.

However, all other variables are just above the borderline of the Leverage Opportunity area (high performance / high importance). Those seven variables can be used as an advantage against competition. As depicted in table 1, the weighted degree of contribution to successful 3PLs experiences (satisfaction) with providers (weighted expected experience) was multiplied by the actual degree of contribution to successful 3PLs experiences with the main 3PLprovider (perceived experience) to calculate the 3PL Customers' Satisfaction Index (3PL Index).

**Table 1: Calculation of the 3PL Index**

Item of the 3PL Index	Weighted Importance/ Expectation (A) (Percentage)	Perceived Satisfaction (B) (percentage)	(A x B)
TRUST	16.42	52.50	8.62
OPNTR	15.81	50.40	7.97
ACTRG	15.44	52.70	8.13
EFCOL	13.23	54.00	7.15
CUSRL	9.64	54.70	5.27
GDCOM	9.21	56.80	5.23
FLXCN	8.97	51.50	4.62
FACOM	6.77	56.80	3.84
WILSR	4.52	51.70	2.33
		Sum of (AxB)	53.18
		3PL Index	53.18

Source: Survey data (2019)

According to the calculation in table 1, 3PL index for 2019 is 53.18%.

## Conclusion

Trust (TRUST), openness and transparency (OPNTR), achieving target cost reductions and improvements in service levels (ACTRG), and effective partnering and collaboration between 3PL customer and provider (EFCOL) are the significant contributing factors to the 3PL Index. The most important factor was trust (TRUST). To improve the trust, 3PL providers should keep the promises it makes to the firm, regardless of an oral agreement or written contracts. The 3PL providers should ensure the confidentiality of the confidential business information of the firm. The 3PL providers should practice sound business ethics and follow its company code of ethics. The 3PL provider must have a reputation for being honest, fair, reliable, and empathetic towards the customers. The study shows that the proposed method can measure and analyse customer satisfaction in a constructive way, and thus it may be integrated in 3PL

customer's total quality approach. The installation of a permanent customer satisfaction barometer is considered necessary, given that it allows the establishment of a benchmarking system (Edosomwan, 1993). Therefore, the implementation of the 3PL Index method through a period can serve the concept of continuous improvement.

**Keywords:** *3PL Index; Logistics Management; Outsourcing; Sri Lanka; Third Party Logistics*

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## **THE IMPACT OF CHOCOLATE BRAND ROMANCE ON BRAND LOYALTY (WITH SPECIAL REFERENCE TO CHOCOLATE CONSUMPTION IN SEEDUWA AREA)**

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### **Introduction**

Modern-day consumers interact with thousands of brands during the lifetime; however, they only develop solid attachments for few of them. Further, it is important to note that, consumer emotions play a significant role behind these attachments (Belaid & Temessek, 2011). The emotional bonds that consumers foster with brands are important for marketers who want to establish long-term relationships with their consumers (Patwardhan & Balasubramanian, 2011). The current study is planning to explore more on new such concepts, Brand Romance which reflects the deep emotional attachment customers have on brands which in turn dominates customer cognition through the arousal of pleasure while using the brand (Aron, Norman, & Aron, 1998). Patwardhan & Balasubramanian (2011), Defines brand romance as an emotional bond on attachment; an attraction yet to be developed into brand love and it can be explained by using three underlying proportions, namely pleasure, arousal and dominance (Patwardhan & Balasubramanian, 2011).

Despite the importance as far as authors' knowledge is concerned, there are no studies done in Sri Lanka enquiring the impact of brand emotions on repeat purchase intention in FMCG food product brands. Therefore the main objective in the current research is to investigating impact of brand romance on brand loyalty. Here the study will also be planning to examine the impact of sub variables of brand romance; namely brand arousal, brand pleasure and brand dominance on brand loyalty.

### **Research problem**

Brand romance concept in marketing, is industries getting to involve with the emotional attachment with the consumers (Aydin & Zehir, 2017). Except for the food industry, all the industry such as auto-mobile, cell phone used this tool to increase their brand loyalty underlying three dimensions (Petzer, Mostert, & Kruger, 2014). But in the food industry, they are not seeking very much on brand

romance when they assessing brand loyalty. So this study illustrates whether that underlying dimensions of brand romance impact on brand loyalty or not in chocolate industry. And also this study focuses on three basic research questions such as does the brand arousal, brand pleasure and brand dominance impact on brand loyalty respectively.

### **Research Methods**

As the research methodology, descriptive research method was selected and to examine the objectives, survey was employed as the research instrument. Because of the resources limitation and Covid-19 pandemic situation in country, Undergraduates in universities were selected as the sample of the study. There was no documentary evidence suggesting that geographical differences of buyers influencing emotional perception on brands, thus authors do not believe that selecting respondents from one area will impact the results (Vidhanapathirana & Sirisena, 2019). Therefore 180 respondents who were 18 years and older undergraduates were included and a convenience sampling technique was selected. The primary data of the study collected using online self-administrated questionnaire and data were analyzed via SPSS software version 21.0 and AMOS software.

### **Research Hypothesis**

We conceive brand romance using three underlying dimensions, namely brand pleasure, brand arousal and brand dominance, according to our research. To be verified by the analysis, we created the following hypothesis.

H1: Brand pleasure significantly impact the brand loyalty

H2: Brand arousal significantly impact the brand loyalty

H3: Brand dominance significantly impact the brand loyalty

### **Results and Discussion**

A coefficient of 0.7 and higher indicates adequate reliability of internal consistency that enables the measurement of an overall mean score for the dimension (Pallant, 2007). In this study, all parameters displayed an alpha coefficient of Cronbach greater than 0.7, indicating the durability of internal consistency by all dimensions involved.

With respect to age groups in study, 32.8% were in the age group of 18-25 years, 48.9% were between 26-35 ages category. The sample consisted of more males representations (64.4%) than females (35.6%).

**Table 1: Values of the variables in the path model**

Variable	$\beta$	Mean	$R^2$	EV	$\alpha$	Conclusion
Brand Pleasure						
I love this brand	0.88	2.18	1.130	0.24	***	Supported
Using this brand gives me great pleasure	0.87	2.28	1.105	0.26	** *	Supported
I am really happy that this brand is available	0.86	2.25	1.175	0.32	** *	Supported
This brand do not disappoints me	0.74	2.36	1.000	0.53	** *	Supported
Brand Arousal						
I am attracted to this brand	0.82	2.45	1.166	0.40	** *	Supported
I desire this brand	0.86	2.31	1.084	0.26	** *	Supported
I want this brand	0.87	2.38	1.103	0.25	** *	Supported
I look forward to using this brand	0.81	2.32	1.000	0.33	** *	Supported
Brand Dominance						
This brand often controls my thoughts	0.59	2.98	0.816	0.86	** *	Supported
This brand only brings positive feelings into my mind when making purchase decisions	0.74	2.67	0.985	0.54	** *	Supported
This always seems to be on my mind	0.76	2.58	1.000	0.49	** *	Supported
Brand Loyalty						
I consider myself loyal to this brand	0.63	2.50	0.866	0.45	** *	Supported

Source: Authors (2020)

Notes:  $\beta$ =Standardized parameter estimates,  $R^2$ = Regression weight EV= Error variance,  $\alpha$ =Statistical significance level, \*\*\*Path analysis is significant at the .001 level



There are 161 respondents (89.4 %) in unmarried group and 19 respondents (10.6 %) in married group in the sample, giving a total of 180 respondents. More than half of the respondents represent (60%) below Rs.10,000 income as their income group. The survey also shows that nearly half of the respondent's most preferred chocolate brand was Ritzbury (46.7%) and 35 (19.4%) respondents liked Kandos as preferred chocolate brand.

Chi-square / degrees of freedom ( $\chi^2$  /df), goodness-of - fit fit index (GFI), adjusted goodness-of - fit index (AGFI), normed fit index (NFI), comparative fit index (CFI), and root mean square of approximation ( RMSEA) were used to determine SEM fitness. All effects of the structural model fitting indexes of the model which shows that the associated model will match the research problem according to the absolute, relative and simple fitting indexes. The standard values, mean values,  $R^2$  values, and error variance of the parameters are shown in Table 1 above. At the 0.05 level of significance, standardized regression effects were significant.

Brand pleasure describes brand loyalty at a frequency of -0.52, brand arousal at a frequency of 0.60 and brand dominance at a frequency of 0.68, as shown in Table 1. The brand pleasure served as no relationships with brand loyalty (H1:  $\beta = -0.52$ ,  $EV = 0.64$ ,  $\alpha > 0.001$ ). Brand arousal was not adequate to keep brand loyalty in the mind of the customer. (H2:  $\beta = 0.60$ ,  $EV = 0.62$ ,  $\alpha > 0.001$ ), but brand dominance was impacted on brand loyalty (H3:  $\beta = 0.68$ ,  $EV = 0.68$ ,  $\alpha < 0.001$ ) consistent with (Aydin & Zehir, 2017). This outcome reveals the predicted impacts of the variables found in the model that are substantially accepted by H3 and rejected by H1 and H2. Rather than brand pleasure and brand arousal, brand dominance is the only a factor that shows a positive impact on brand loyalty ( $\alpha < 0.001$ ). Although brand pleasure and brand arousal do not impact on brand loyalty, brand dominance of brand romance impact on brand loyalty.

## Conclusion

Fostering brand loyalty for chocolate brand marketers is a difficult job when buyers have multiple brands of chocolate items to choose from. However, Study indicate that consumers have strong relationship of consumer-brand engagement or involvement. That means consumers point out that particular chocolate product often controls their thoughts, particular brand only brings positive feelings into their mind when they making purchase decisions and particular brand always seems to be on their mind. As the brand dominance is the best predictor of brand

loyalty, marketers in food industry must aim to improve the brand romance of customers to build a loyal customer of the brand.

**Keywords:** *Brand arousal; Brand dominance; Brand pleasure; Brand romance; Chocolate brand*

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## CONSUMER WILLINGNESS TO ADOPT ONLINE GROCERY SHOPPING: EVIDENCE FROM KANDY DISTRICT

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### Introduction

Grocery products include not only edible commodities such as perishable products (examples: fruits, vegetables, meat) and durable eatables (examples: canned and packaged food) but also non-food goods such as household appliances that are purchased often or continuously, usually at regular intervals of time. Groceries are different from many other products that are commonly purchased online. Therefore, the buying decision of consumers regarding groceries is greatly affected by the sense of touch, smell, and sight. Online grocery shopping (OGS) looks promising when compared to other products available online but it faces different challenges of its own for its buyers as well as sellers. Some standardized goods are generally considered more successfully sold on the Internet (e.g. clothes, computer appliances, books), whereas products like groceries are still not widely popular among online consumers (Klepek *et al.*, 2020). Therefore, some concerns arose as to whether the Internet is a suitable mode for purchasing all kinds of products. Worldwide, Internet grocery purchases are still low compared to the general online sales such as clothes and sports goods (Rishi *et al.*, 2018).

Hence, for the development of online grocery, grocery retailers need to understand what factors are influencing consumers to adopt and use the online channel (Saleem *et al.*, 2018). In the Sri Lankan context, consumers are actively engaging with online shopping but the uptake of OGS has been slower than anticipated. Even though online grocery shopping is a potent industry in Sri Lanka, the uptake of online grocery shopping has been slower than anticipated. Thus, to further facilitate the adoption of online grocery, it is crucial to explain the factors that influence buyers towards the purchase of grocery products online (Pauzi *et al.*, 2017).

There is less attention has been given to the factors that influence customers' willingness to adopt it. Therefore, it is timely important to study the customers'

willingness to adopt online grocery shopping in Sri Lanka and the factors which influence them. The problem, this research aims to investigate is the factors that are affecting customers' willingness to adopt online grocery shopping.

This research aims at identifying the key factors that affect the consumer's willingness to adopt online grocery shopping and what are their current attitudes towards this concept. Furthermore, the research aims to identify the concerns of consumers that need to be catered to increase online grocery shopping adaptability. This study lays out consumer willingness towards online grocery shopping and in practice; the findings of this study can be employed by online retailers to formulate more effective strategies in encouraging consumers to adopt online grocery shopping.

### **Research hypothesis**

This study focuses on six major aspects: grocery price concessions, grocery quality, web site quality, convenience, prior online shopping experience and perceived risk. The two factors price concessions and grocery quality are implicitly related to the key variable perceived usefulness, while the web quality reflects the perceived ease of use in the TAM.

H1: Grocery price concessions have a positive impact on willingness to adopt OGS.

H2: Grocery quality has a positive impact on willingness to adopt OGS.

H3: Website quality will positively affect the consumer's willingness to adopt OGS.

H4: Convenience has a positive impact on willingness to adopt OGS.

H5: Perceived risk will negatively affect consumers' willingness to adopt OGS.

H6: Prior online shopping experience has a positive impact on willingness to adopt OGS.

### **Research Method**

The research targeted the sample population of consumers drawn from Kandy District, who may have or may not have any previous experience of online grocery shopping. The sample size for the study was 120 individuals who are aged 18 years or above. Data were collected primarily using questionnaire technique in the form of a self-administered online (web-based) questionnaire. The collected data was analyzed using the Statistical Package for the Social

Sciences (SPSS). The causal and effect structure of the proposed conceptual framework was tested using Structural Equation Modeling (SEM).

## Findings

### Assessing reliability of variables

To assess the internal consistency, the reliability of the scales was used to measure the various dimensions of factors affecting consumer willingness (Cronbach's alpha = 0.935 for 24 items in total).

### Structural model

SEM integrates a number of different multivariate techniques such as factor analysis and regression, into one fitting framework. The fitness of the SEM was assessed in according to Scott, 1995. According to the results degrees of freedom ( $\chi^2/df$ ) of the model is 1.690 and root mean square of approximation (RMSEA) is 0.076, so both are in the acceptable range.

Relative fitting indexes namely Normed Fit Index (NFI), Comparative Fit Index (CFI), Incremental Fit Index (IFI), and Relative Fit Index (RFI) were also can be accepted. Parsimony-Adjusted Measures Index (PNFI) is 0.681, which is also in the acceptable range.

**Table 1: Correlation analysis**

Variable	Correlation	P	Relationship
Price concessions → Product quality	0.70	***	Strong positive
Price concessions → Website quality	-0.70	0.055	Strong negative
Price concessions → Convenience	0.70	***	Strong positive
Price concessions → Perceived risk	0.66	***	Moderately positive
Product quality → Website quality	-0.89	0.042	Strong negative
Product quality → Convenience	0.86	***	Strong positive
Product quality → Perceived risk	0.82	***	Strong positive
Website quality → Convenience	-0.86	0.034	Strong negative
Website quality → Perceived risk	-0.86	0.035	Strong negative
Convenience → Perceived risk	0.76	***	Strong positive

Source: Authors' estimation

The correlation analysis is focused on analyzing the correlation between the latent variables to provide a foundation for exploring the causal relationship in the structural model. The casual relationship between the latent variables is meaningful if the correlation is strong. As shown in Table 1 above, we can see that the correlational relationship between all variables is more than 0.60. It explained that the variables have strong relationships between them. These quantitative results are highly consistent with the results presented with the SEM technique.

As shown in Table 2, willingness to adopt was explained by price concessions at a rate of 0.66, product quality at a rate of 0.89, web site quality at a rate of 0.47, convenience at a rate of -0.05, perceived risk at a rate of 0.30 and prior experience at a rate of 0.02. This result indicates the estimated influences of the variables contained in the model. It is clear that no influences are significant; therefore, H1, H2, H3, H4, H5 and H6 are rejected.

**Table 2: Impact of difference factors on willingness to adopt**

Variable	$\beta$	Mean	R <sup>2</sup>	EV	$\alpha$	Conclusion
H1 PC→ Willingness	-0.017	0.29	-0.029	0.29	0.924	Rejected
H2 PQ→ Willingness	-0.002	0.30	-0.004	0.30	0.995	Rejected
H3 WQ→ Willingness	0.470	0.05	1.969	0.05	0.304	Rejected
H4 Convenience → Willingness	-0.046	0.83	-0.047	0.83	0.859	Rejected
H5 PR→ Willingness	0.298	1.00	0.276	1.00	0.212	Rejected
H6 PE→ Willingness	0.025	1.11	0.073	0.10	0.781	Rejected

Notes:  $\beta$ =Standardized parameter estimates, EV= Error variance,  $\alpha$ =Statistical significance level, PC = Price concessions, PQ= Product quality, WQ= Web site quality, PR= Perceived risk, PE= Prior experience, \*\* Path analysis is significant at the .001 level

Source: Authors' estimation

## Conclusion

The purpose of the paper was to investigate the factors that may affect consumer willingness to adopt online grocery shopping. The findings of the study have demonstrated the applicability of the Technology Acceptance Model and Perceived Risk Theory in assessing the willingness to adopt online grocery shopping in Sri Lanka. As can be summarized, this study tried to explore the factors, which could possibly influence consumers' online purchasing intention in grocery the industry, and relevant factors are listed to be analyzed. Factors include grocery price concessions, grocery quality, web site quality, perceived risk, convenience, and prior online shopping experience combined with the previous literature.

As the results showed, there is no significant relationship between consumer willingness to adopt online grocery shopping and the above-mentioned factors. It means those mentioned factors do not affect consumer willingness. The results differed from previous research results that are conducted about online grocery shopping. However, there is only a limited number of research on consumer willingness to adopt online grocery shopping in Sri Lankan context. Therefore, it is difficult to compare the results of this study with the previous studies. As buying groceries online is a new and growing trend in Sri Lanka, this study can be used as a basis for e-grocer retailers to replicate the findings on a large population, and improve their business within online grocery.

**Keywords:** *Online grocery shopping; Structural equation model; Technology acceptance model*

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## **SOCIAL MARKETING CONCEPT WITHIN THE SOCIAL ENTREPRENEURSHIP RESEARCH CONTEXT: A SYSTEMATIC LITERATURE REVIEW**

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### **Introduction**

Entrepreneurship is highly regarded as a significant basis for gaining competitive advantage and one of the crucial factors in the economic development and the contentment of societies. It's about taking the first step which carries the whole world into something revolutionary. However, social entrepreneurship that centers on social value creation instead of merely focusing on financial value creation has become an innovative and emerging concept under entrepreneurship. In light of this, social entrepreneurship is a hybrid model that combines for-profit and non-profit actions that bleared the traditional boundaries among the public, private, and nonprofit categories while providing solutions for societal issues with innovative solutions as a response exactly to the societal problems is the social entrepreneur (Choi & Majumdar, 2014). Indeed, a social entrepreneur who recognizes a business opportunity by providing an innovative way to overcome a specific social issue is considered as a key to entrepreneurship. The package of "charity and business" at same, will lead to social enterprises that become prominent economic and social contributors towards the growth of the country.

Social entrepreneurship provides a framework for all businesses to have their way of success while supporting the whole community. Moreover, generating job opportunities, tackling poverty, sustaining social services, and resolving many environmental issues are a few contributions of social entrepreneurship (Gunawardena & Mudalige, 2019). The innovative ideas and new business strategies motivate social entrepreneurs to resolve the problems namely; poverty, corruption, limited access to education, clean water, finance, and health care while getting the maximum use of scarce resources (Abeysekara, 2019). The use of both entrepreneurial and business skills in reaching the double bottom line, economic and social, are encouraged social entrepreneurs to be flourished within the country. Thus, the motto of "do well by doing good" directs social entrepreneurship towards "make the world a better place".

Most likely, social enterprises are limited in their marketing strategies to the products and services which they offer. Nevertheless, the marketing framework can be applied to address several social issues, and applications of marketing principles for the good of society have led to emerging the concept of “social marketing”. Consequently, social marketing plays a vital role in the success of social entrepreneurship.

Social marketing gives its focus on changing the behaviors of the consumers to the benefit of the consumer and/or to the community at large (Kotler & Lee, 2008). The application of marketing concepts to social problems which develops a framework of building innovative answers to societal issues is social marketing (Lefebvre, 2013). Social marketing surrounds all the activities of traditional marketing which enable the process of exchange including customer focus, situational analysis, market research, segmentation, target marketing, 4 Ps strategies, and implementation of marketing strategies (Kotler & Lee, 2008). Both commercial and social marketing is focused on the change in consumer behavior but, commercial marketing concerns the change in consumer behavior for the benefit of the company and stakeholders while social marketing concerns the change in the consumer behavior in terms of benefitting both individual and society (Kotler & Lee, 2008). Accordingly, commercial marketing targets the increase in profits by encouraging the purchase of goods while social marketing concerns the adoption of new behaviors by changing the existing behaviors which will benefit both the individual and society. The ultimate target of social marketing is working for the betterment of society rather than focusing only on generating profits.

Marketing scholars have revealed social marketing is an effective and efficient concept that influences consumer behavior and society (Beall et al., 2012). Nevertheless, social marketing must concern the ultimate impact and the processes of social marketing campaigns to fully realize the opportunities. However, social marketers could able to influence the acceptability of social ideas through developing, implementing, and controlling social marketing programs with the involvement of 4Ps, and marketing research (Kotler & Zaltman, 1971). The social marketing concept will offer benefits to the society, environment, and businesses and it encourages the introduction of innovative products that contribute towards the betterment of the whole society in the long run while satisfying the consumers. Consequently, social entrepreneurship and social marketing is closely link and social marketing would able to assist the social entrepreneurs in becoming more successful.

### Research objective

Therefore, the principal objective of this paper has been to systemize and organize the contemporary knowledge on social marketing from the social enterprise research context to spot the knowledge spaces which will be immeasurably sensible for future studies.

### Research method

Researchers conduct a systemic literature review to achieve our aforementioned objective (Gupta et al., 2020; Hota et al., 2019) since the approach led to observe diverse themes within the social marketing concept and to reflect on the missing links to future researchers. In that context; (a) Citation analysis, and (b) Thematic analysis has been conducted to discover core themes within the context of social marketing. Research articles were selected from well-reputed databases such as Web of Science, Social Science Citation Index as well as Google Scholar databases during the period of September-November 2020.

### Findings and Discussion

Among the research database, 112 research articles have been analyzed thematically based on the social marketing perspective within the social entrepreneurship context. Thematic analysis was conducted to evaluate how the research on social marketing has been evolved with the social entrepreneurship context. Accordingly, identified that the concept has been intensively researched and evolved based on 5 parent themes and sub-themes and illustrate in Table 1:

**Table 1 : Thematic analysis**

Parent Theme	Sub-theme
Issues within the social marketing context	Issues within the social marketing context
Social Marketing strategies	Social marketing and behavioural change Innovation and communication within social marketing Retail marketing and social response
Social marketing and organization	Profit orientation and social marketing Non-profit orientation and social marketing
Social enterprise dualities	Role of the social marketing
Implications of the social marketing	Practical implications within the social marketing context

Source: Author's estimation

The identified five parent themes have been elaborated by the authors comprehensively as follows;

**Theme 1: Issues within the social marketing context**

Social marketing with the issues, challenges and barriers has been immensely studied by scholars (Deshapande, 2019; Pechmann, 2002; Bloom & Noveli, 1981) and the behavioral change has been addressed further by Gordon et al. (2010) within the context, we identified several studies with a SWOT analysis where the social marketing has identified deeply within the contemporary challenges.

**Theme 2: Social Marketing strategies**

Among the research context, social marketing strategies recognized as a popular segment whereas scholars identified different strategies, communicative, innovative and market oriented within the social enterprises (Corner & Randall, 2011; Gordon et al., 2013; Brodie et al., 2008).

**Theme 3 : Social marketing and organization**

Organizational context within the social marketing could be considered as an effective research area, where as many scholars enriched the literature by two organizational context, both profit-oriented (Howard, et al., 2003; Peattie & Peattie, 2009; Dinan & Sargeant, 2000) and Non-profit oriented (Smith et al., 2010; Ling et al., 1992).

**Theme 4 : Social enterprise dualities and Theme 5 : Implications of the social marketing**

Further, scholars have addressed the dual nature of the social enterprises (Andreasen, 2002; Malibach, 1993) whereas the implications of the social marketing were investigated (Shive & Morris, 2006). Within the context of social marketing, both commercial and social objectives are focused on the change in consumer behavior. Despite the focus, commercial marketing moreover concerns the company and stakeholders' benefits, while social marketing concerns both the individual and society benefits (Kotler & Lee, 2008). Accordingly, social marketing concerns the adoption of new behaviors by changing the existing patterns within the organizational context, which benefits society in long run. Therefore, the ultimate target of social marketing strives to achieve the objectives of society and long run economic prosperity.

## Conclusion

At present socio-economic development, investigations on social enterprises are getting popular among the business research agenda. Moreover, the concept of Social marketing will offer benefits to the society, environment, and businesses while encouraging an innovative approach to social enterprises. Therefore, the paper intended to critically review the extant literature on social marketing within social entrepreneurship, whereas 112 research papers were reviewed and thematically analyzed. The authors identified five parent themes on which social marketing has been researched in the social entrepreneurship context. Authors intended to enrich the knowledge-base by exploring the themes through which social marketing has been researched and identified gaps for future researchers. As a summary, the identified parent themes and sub-themes will enrich the knowledge-base of the social marketing context, as an emerging research area.

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