Sri Lanka is currently facing many transitions: economic, epidemiological, demographic, technological and social. The world economy too is evolving, with technological progress, economic crises and social upheavals demanding more and alternative economic analyses. Both these factors make it imperative for economists in Sri Lanka and overseas, among the academic community as well as practitioners, to focus on economic research and its dissemination. The Sri Lanka Journal of Economic Research (SLJER), the international journal of the Sri Lanka Forum of University Economists, seeks to fulfil this mandate.

The SLJER is a refereed bi-annual tri-lingual journal. It creates a space where research, particularly policy related research, can be disseminated and so contributes to the economic thinking in the country in this period. The critical evaluation of policy is essential if optimal use is to be made of the demographic window of opportunity. Equity and social welfare, the cornerstone of economic thinking in the country, and the challenges posed to such fundamentals by economic liberalization, globalization and technological progress make it vital to dwell on ideas and ideals, as well as to collate systematic evidence to support rational policy making. The aim of this journal then is to support such processes through dissemination and discussion.

The SLJER is open for publication of high quality research outputs of scholars, researchers and practitioners in Economics and Development Policy, even though it primarily provides an opportunity for authors presenting papers at the Sri Lanka Economic Research Conference, the annual international symposium of the Sri Lanka Forum of University Economists to disseminate the outcomes of their research. Apart from the research articles the journal carries a special section titled ‘Perspectives’ which articulates alternative thinking and approaches to Economics. Book reviews are included as well.

All articles in this journal are subject to a rigorous double-blind peer-review process, followed by a thorough scrutiny by the Editorial Committee to ensure high academic and research standards prior to final acceptance for publication.
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RESEARCH ARTICLES
Introducing Eco-Friendly Technologies to Reduce Chemical Fertilizer Usage in Paddy Farming in Sri Lanka

A.P. Silva
U.K. Jayasinghe-Mudalige
R.S. Dharmakeerthi
W.S. Dandeniya
B.L.W.K. Balasooriya

Abstract

The study explores the probability of substituting Chemical Fertilizer (CF) with Eco-Friendly Technologies (EFTs) which are to be introduced to the Sri Lankan paddy farmers in the form of a product package of Biochar (BC) and Bio Fertilizer (BF). The main focus was to elaborate whether the benefits of EFTs have overweighed the costs of EFTs and to identify the policy tools, incentives and key instruments, by employing a semi structured questionnaire based survey carried out in Anuradhapura and Kurunegala for a sample of 100 farmers. The perception analysis revealed that EFTs are beneficial over the CFs and if proper governance is established by the regulatory bodies EFTs are much preferred by the farmers over CFs.

Keywords: Chemical Fertilizers, Eco-Friendly Technologies, Paddy farmers, Perception analysis, Policy Tools, Sri Lanka

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INTRODUCTION

At the onset of the Green Revolution in the early 1950s the world was focusing on crop production in intensive scales, which ultimately resulted in introducing high yielding varieties of crops that were highly responsive to Chemical Fertilizer (CF). Even though the era of “Green Revolution” was credited for the higher levels of food production and productivity of agricultural lands, quality and health aspects of the production procedures could not be achieved due to the massive reliance on agro-chemicals. Actually traditional farming practices especially prior to the 20th century were generally regarded as ‘organic’. But the introduction of synthetic farm inputs proved to increase crop yield overshadowing those green / organic approaches (Paull, 2006). Several studies have been carried out to stress on the crucial environmental, social and health problems associated with CF usage in paddy cultivation and those findings have further emphasized the fact that a solution is required for the problems associated with the CF (Jayasumana et al., 2013; Dharmawardena et al., 2015).

Rice is not only the staple food in Sri Lanka but makes up almost the total livelihood in the rural areas of the country. Paddy farming gradually changed from the organic background to complete dependency on CF and the frequency and quantity of using it intensified with the stretched budgetary allocations of the government for the fertilizer subsidy under projects like “Kethata Aruna” (Herath et al., 2014). Due to excessive use of CF on agricultural lands the soil fertility has drastically dropped over the past few decades. When considering the situation in Sri Lanka, CF has ranged from 0 to 830 percent of the recommendations in different cropping systems (Kendaragama, 2006). Most critically 70 percent of the CF imported to Sri Lanka is used in paddy farming. The history proves that the subsidizing triggers the use of CF. In 1990 CF usage was reduced and the reason was the subsidy scheme being completely removed. But today the situation has changed. The treasury spends about Rs. 50 billion on the fertilizer subsidy scheme and that amount is almost 2% of the foreign exchange earnings (Herath et al., 2014).

As a solution for these issues, National Research Council (NRC), of Sri Lanka has funded the implementation of the multi-year, multi- disciplinary project “Development of Eco-Friendly farming technologies to minimize inorganic fertilizer usage while maintaining adequate productivity and improving soil fertility” in 2016. The project is supposed to run for several consecutive years. The project consists of seven work packages which are monitored and conducted by veterans in the agriculture sector from different academic and research institutes. Development of farmer friendly site specific nutrient management for rice cultivation through a Nutrient Expert Decision Support tool, Production of Biochar (BC), Development of Bio Fertilizers (BF) and developing technologies associated with the production of the Eco-Friendly Technologies (EFTs) are some of the major tasks covered by the work packages.
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About 2/3rd of rice production in the country is done in dry and intermediate zones. Kurunegala, Polonnaruwa and Anuradhapura can be identified as the three major rice growing districts which contribute to nearly 50% of the national rice production in Sri Lanka. In these districts the water management systems and the cropping systems reflect major variations and diversities based on the climatic factors (Anon, 2017). Hence, the compatibility or the adaptability of new technologies can be efficiently assessed and the results will be applicable to a wide range of rice growing environments in Sri Lanka. In addition to these reasons RRDI of DOA has regional experimental stations and good links with farmer groups to conduct participatory research activities, which strengthens the development of farmer friendly new technologies. Therefore, hundred farmers were registered representing these districts and their lands were utilized for the field experiments with the consent of the farmers. For the field experiments conducted Bg 352 rice variety was used.

This study was conducted regarding the product package which is to be launched to the market in the near future. The product package includes the BC and the BF developed under the work packages of the project. The socio economic importance of the product package was assessed by this research study. Actually what matters for the farmers is the profitability of the EFTs. Therefore the study was aimed at identifying the social acceptability and the economic viability of the product via a perception analysis of the farmers.

BC and BF are supposed to be introduced to the agriculture market as a single product package to be incorporated in the paddy fields as a solution to the CF usage. BF is formulated using microbial inoculants that improve nutrient availability in soils (Hayat et al., 2010 and Bhattacharyya and Jha, 2012) and the complementary product, the BC as well is supposed to be of equally beneficial to the nutrient management of agricultural soils. Through these EFTs, the quantity and the frequency of inorganic fertilizer usage in paddy farming is intended to be reduced significantly.

Biochar (BC)– Nitrogen, Phosphorus and Potassium or commonly known as NPK are macronutrients that are required by plants in large quantities are not adequately present in the general soil to support the sustainability of the plants. Therefore NPK are supplied to the plants externally through fertilizer. Since the conventional fertilizer compositions are water soluble 50%-70% of nitrogen applied using conventional fertilizers is lost without efficient plant uptake (Monreal et al., 1986). Number of technologies have been developed in the past to increase the nitrogen use efficiency in cropping fields. Slow release technologies use coating N fertilizers with organic or inorganic materials or combine with other chemicals (Shaviv, 2000; Majeed et al., 2015). The EFT project has focused on such background information and have produced biochar from rice husk using simple pyrolysis technique, and it shows a range of micro pore spaces (Dharmakeerthi,
The BC produced from rice husk under this project has a porous structure ranging from sub-micro to nano scale and subsequently will be impregnated with urea into these pores in order to formulate the new slow release fertilizer. Use of BC to produce a slow release N fertilizer is supposed not only to reduce chemical fertilizer usage in the country, but also to apply BC into the soil every season which could contribute to improving soil fertility gradually.

Bio-fertilizer (BF)– The next product. The project was focusing on BF. BFs play a very significant role in improving soil fertility by fixing atmospheric nitrogen and in association to plant roots. Without it, solubilizes insoluble soil phosphates and produces plant growth substances in the soil. They are in fact being promoted to harvest the naturally available, biological system of nutrient mobilization (Venkatashwarlu, 2008). The EFT project aims to develop a bio-fertilizer integrated with Plant Growth Promoting Rhizobacteria (PGPR). The microorganisms living in association with root system stimulating the plant growth are called as PGPR and they are expected to show high adaptability to a wide variety of environments. Enabling them to successfully establish in soil eco-systems can help to reach a faster growth rate and biochemical versatility, to metabolize a wide range of natural and xenobiotic compounds (Battacharya and Jha 2012). Given this concrete background and since at present there is no recommendation by Rice Research and Development Institute of Sri Lanka on integration of bio-fertilizers in nutrient management programme in rice cultivation, the project targets at further developing a farmer friendly bio fertilizer technology, which will be effective in a range of rice growing environments.

From all the deliverables which are proposed to be fulfilled by the project, it is important to pay attention to the socio-economic aspects of the process as well and to identify the influence of these production process and use of the EFT package of interest (BC and BF) with regard to the paddy cultivation sector of Sri Lanka. This study specifically assesses such benefits and costs from the perception of the farmers, and introduces policy tools, incentives and key instruments as per the preference of the farmers.

**RESEARCH PROBLEM**

Prior to introducing the EFTs to the market it is important to get a clear picture of the perception of the paddy farmers (the potential end users of the product) about the product package. The major problem encountered was to obtain a vivid image of the mind-set of the end users and their preferences. The study aims at recognizing whether the paddy farmers identify the use of EFTs as beneficial over the use of CFs with regard to the associated costs, and to elaborate the criteria placed as important by paddy farmers to replace CFs with EFTs. Through this economy based research it is also attempted to
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discover the major concerns of the farmers when it comes to developing policy tools, incentives and key instruments for the EFT usage in paddy farming in Sri Lanka.

OBJECTIVE

The main objective of the study was to assess the perception of the paddy farmers on development and use of BC and BF over the CFs in an economic point of view and to introduce the farmer preferred policy tools, incentives and key instruments to the regulatory bodies for the betterment of the paddy farming of Sri Lanka.

METHODOLOGY

Theoretical Framework

As implied in theories conveyed by Buchanan (1969), the organizational decision making can be supported with an analysis of benefits and costs of the product to launch. In order to confirm the continuation of developing the EFTs, a benefit-costs analysis was conducted for the sample to identify the expected benefits and the associated costs of the product package inclusive of BC and BF. Following equations are to be employed and achieved in order to make decision favourable to EFTs.

Using notations from Figure 1,

\[ TB - TC > 0 \]
\[ (IB - DB) - (IC - DC) > 0 \]

Compliance decision based on the final outcome,

Benefits – Costs > 0

To identify the major preferences of the farmers in terms of benefits or costs as per their point of view, 20 statements were generated and classified into six major criteria identified through the “expert perception analysis” by Chandrasiri et al., (2018) for previous studies on the same discipline on EFTs. The criteria identified were (1) Regulation (RT), (2) Cost of Application (CT), (3) Effect on the Environment (ET), (4) Expected Performance (PC), (5) Availability of Related Services (SE), and (6) Level of Acceptance (AC) and each score given for statements represented the attitudes of the farmers regarding the EFTs.

The policy tools, incentives and key instruments for the EFTs are considered in case of introducing the product to the market. Based on the perceptions and general concepts on EFTs 28 statements (Table 2) were selected to the study and classified into four major categories as, ‘Price’, ‘Service’, ‘Materials’ and ‘Other’. These were once again

**Figure 1: Conceptual Framework**

![Conceptual Framework](image)

**Appendix A**

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

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Notation</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Level of Acceptance</td>
<td>AC1</td>
<td>Risk level of diminishing the current yield</td>
</tr>
<tr>
<td></td>
<td>AC2</td>
<td>Durability of EFTs after opening the package</td>
</tr>
<tr>
<td>(2) Cost of Application</td>
<td>CT1</td>
<td>Management of the workload associated with the use of EFTs</td>
</tr>
<tr>
<td></td>
<td>CT2</td>
<td>Labour requirement and management</td>
</tr>
<tr>
<td></td>
<td>CT3</td>
<td>Need of using heavy machinery to support the procedure of applying EFTs</td>
</tr>
<tr>
<td></td>
<td>CT4</td>
<td>Storage cost and space requirement for the EFTs</td>
</tr>
<tr>
<td></td>
<td>CT5</td>
<td>Wastage/ over utilization of resources</td>
</tr>
<tr>
<td></td>
<td>CT6</td>
<td>Expenses related to soil treatments to maintain soil health and fertility</td>
</tr>
<tr>
<td>(3) Effect on the Environment</td>
<td>ET1</td>
<td>Potential damage to the surrounding environment</td>
</tr>
<tr>
<td></td>
<td>ET2</td>
<td>Possible human well being and safety matters resulted by the use of EFTs</td>
</tr>
<tr>
<td></td>
<td>ET3</td>
<td>Priority given to the eco system safety and sustainability</td>
</tr>
<tr>
<td></td>
<td>ET4</td>
<td>Disposal of waste materials after use of EFTs</td>
</tr>
<tr>
<td>(4) Expected Performance</td>
<td>PC1</td>
<td>Possibility of improving productivity of paddy fields</td>
</tr>
</tbody>
</table>
Introducing Eco-Friendly Technologies to Reduce Chemical Fertilizer Usage in Paddy Farming in Sri Lanka

<table>
<thead>
<tr>
<th>Classification</th>
<th>Notation</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>government</td>
<td>Pg1</td>
<td>Steps taken to reduce rice volatility</td>
</tr>
<tr>
<td><strong>market</strong></td>
<td>Pm1</td>
<td>Information on market pricing conditions</td>
</tr>
<tr>
<td></td>
<td>Pm2</td>
<td>Systems to adjust supply and demand</td>
</tr>
<tr>
<td><strong>judiciary</strong></td>
<td>Pj1</td>
<td>Fertilizer price controls</td>
</tr>
<tr>
<td><strong>self</strong></td>
<td>Ps1</td>
<td>Monthly income and affordability</td>
</tr>
<tr>
<td><strong>Services</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>government</td>
<td>Sg1</td>
<td>Workshops, awareness and capacity building</td>
</tr>
<tr>
<td></td>
<td>Sg2</td>
<td>Proper standardization processes</td>
</tr>
<tr>
<td></td>
<td>Sg3</td>
<td>Need of agricultural credit</td>
</tr>
<tr>
<td></td>
<td>Sg4</td>
<td>Importance of subsidy on CF</td>
</tr>
<tr>
<td></td>
<td>Sg5</td>
<td>Importance of subsidy on EFT</td>
</tr>
<tr>
<td><strong>market</strong></td>
<td>Sm1</td>
<td>Subsidy given in the form of fertilizer</td>
</tr>
<tr>
<td></td>
<td>Sm2</td>
<td>Providing information on production process</td>
</tr>
</tbody>
</table>

Table 2: Policy Tools, Incentives and Key Instruments

Note: (1) Regulation (RT), (2) Cost of application (CT), (3) effect on the Environment (ET), (4) expected Performance (PC), (5) availability of related Services (SE), and (6) level of Acceptance (AC)
<table>
<thead>
<tr>
<th>Subcategories</th>
<th>Service related factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td></td>
</tr>
<tr>
<td>government</td>
<td>Mg1</td>
</tr>
<tr>
<td>market</td>
<td>Mm1</td>
</tr>
<tr>
<td>judiciary</td>
<td>Mj1</td>
</tr>
<tr>
<td></td>
<td>Mj2</td>
</tr>
<tr>
<td>self</td>
<td>Ms1</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>government</td>
<td>Og1</td>
</tr>
<tr>
<td>market</td>
<td>Om1</td>
</tr>
<tr>
<td>judiciary</td>
<td>Oj1</td>
</tr>
<tr>
<td>self</td>
<td>Os1</td>
</tr>
<tr>
<td></td>
<td>Os2</td>
</tr>
</tbody>
</table>

Note: Main Categories - P- Price related factors, S- Service related factors, M- Material related factors, O- Other factors, Subcategories- g- should be administered by the government, m- controlled by the market conditions, j- related to law and authority, s- can be controlled by one’s own self

**COLLECTION AND ANALYSIS OF DATA**

For 100 farmers from districts of Anuradhapura and Kurunegala, who were registered for the EFT project, a questionnaire-based survey was conducted through face to face interviews during August and September, 2019, to obtain the farmer perceptions on switching from CF to EFTs based on their current knowledge and experience. Previously identified 20 statements (Table 1) were listed to differentiate the costs and benefits of EFTs over CF and 28 statements regarding policy tools, incentives and key instruments were included to discover the importance farmers place on each of the segments under the given categories. The statements were evaluated against a 10 point Likert scale ranging from ‘extremely important’ to ‘extremely unimportant’.

Based on the scores given by the farmers on EFTs and CF, on the benefits and costs of the product package in a socio economic point of view, a relative value was taken considering 5 as the neutral point. Mean scores above 5 were considered as an IB or DC based on the implied idea of the statement and mean scores below 5 were considered as
either a DB or IC. Then based on the relative “Mean Importance Scores (MIS)” given, the equations suggested by Buchanan (1969), were employed to identify the economic feasibility.

For the 20 statements developed under the six criteria the “ Confirmatory Factor Analysis” was carried out to establish the validity of the classification and ascertain the “Scale Reliability” and the “Unidimensionality”. Once the validity and reliability of data, were confirmed MIS related to those criteria and statements were employed for further analysis (Jayasinghe-Mudalige and Henson, 2006).

Analysis of the policy tools, incentives and key instruments on EFTs was also based on the MIS obtained by each statement. According to the ‘relative rank’ method explained by Powers and Xie (1999), after deriving the aggregate scores given by the respondents, the summed scores were divided by the number of farmers in the sample to obtain the MIS. As per the value of the statement after the process, they were ranked and ordered based on the importance as the most and least prioritized ones.

The Exploratory Factor Analysis (EFA) was conducted using the coded data of policy tools, incentives and key instruments to identify the internal consistency of the statements the “Cronbach’s Alpha value”. Statements assessed against the 10 point Likert scale were taken as ‘multiple-item scales’ and ‘Principal Axis Factoring’. This was the technique used to bring out that the data set available for the study which was ‘Unidimensional’. High reliability is assured if a value above 0.7 is obtained.

But with multidimensional and orthogonal data, related to the nature and sample design of the research a value exceeding 0.5 is considered to be sufficient (Lord and Novick, 1968). EFA was further extended to identify the co- relation between the factors with the objective of reducing variables in a way that only closely related and most focused ones will be remained. Then based on the scores given against the 10 point Likert scale, the MIS was derived for each sub -category for further proceeding of the study to obtain a relative rank of each statement (Jayasinghe–Mudalige and Henson, 2006).

RESULTS AND DISCUSSION

The project from which the study is derived aims at further developing BC and BF for the purpose of reducing CF usage in paddy farming of Sri Lanka. Several ventures on the same matter have been carried out by different personnel previously and have obtained progressive results. Biochar has been tested for its effect on paddy cultivations at numerous level experiments and has been proven as an effective mode of soil amendments and to be acting as a barrier against the leaching of nutrients. Biochar has
been used on paddy related experiments and has resulted in developing height, dry mass and tillers (Utomo et al., 2010). If the nutrient carrier could be made from waste organic materials using a simple technology, it would provide multiple advantages. There is an increased interest in using biochar as a soil amendment in agriculture, as a carbon sequestration technology as well as a method for improving soil fertility (Lehman and Joseph, 2015). Regarding the BF being produced under the project using PGPR has sound evidence of its ability to facilitate growth of paddy. The mechanisms of plant growth promotion by these organisms include solubilization of nutrients (eg. P and Si) N2 fixation, production of growth regulators, competitive exclusion of pathogens or removal of phytotoxic substances, induction of systematic resistance, etc. (Tsavkelova et al., 2006; Battacharya and Jha 2012; Dandeniya and Rajapaksha, 2013). Bio-fertilizer are formulated using microbial inoculants that improve nutrient availability to plants. There are number of scientific reviews discussing bio fertilizer and their potential to cut down chemical fertilizer usage in crop cultivation (Hayat et al., 2010; Battacharya and Jha2012; Bharadwaj et al., 2014). With that background on the BC and BF, it is important to focus on the economic aspects of the product package which is the major focus of this study.

The multiyear, multidisciplinary project has been the subject of several studies for the purpose of scientific and survey matters. The previous authors have conducted several studies to check the social acceptability and economic viability of the same project. An expert view perception analysis on “Adoption of Eco-Friendly Technologies to Reduce Chemical Fertilizer Usage in Paddy Farming in Sri Lanka” reveals that EFTs can play a significant role towards reduction of CF usage in Sri Lankan paddy cultivation if the key issues associated with the use of EFTs are addressed successfully. The study further highlights the need of providing services, extension services and private incentives to the farmers in order to promote the use of EFTs (Chandrasiri, 2018). Following the expert perception analysis several other studies have been carried out to identify the willingness of the farmers to pay for EFTs over CF and to explore the willingness of the farmers to adopt EFTs over CFs. To replace CFs with EFTs the farmers in general, exhibits positive attitudes and willing to pay relatively high prices for eco-friendly attributes associated with EFTs like and Biochar and Bio-fertilizer, but there is the need to expose a modified product according to farmer preferences to offset short-term benefits of chemical fertilizer use (De Silva, 2019). A study on the farmer perception on willingness to adopt the EFTs over CFs highlights the importance of generating private and market-based incentives for farmers as potential end-users to encourage adoption of Eco-Friendly Technologies in paddy cultivation, where the availability of related services and facilitative institutional framework will have a direct impact on the adoption such eco-friendly technologies (Colombage, 2018). Thereby the project leaves room for further experiments.
Farmers have been using CFs for decades in the paddy fields and the introduction of the EFT product package would make some vital shifts in their normal farming patterns. There can be opportunities and constraints in switching from CFs to EFTs. Actually studies have been previously conducted on similar subjects and they have revealed that such type of projects even though they are initiated with a purpose of conserving environment and addressing human health issues, they still can have both positive and negative reviews in different perspectives of people. One such study found that in developing countries there is a potential to apply “fertigation” as a way of environmentally friendly fertilizers application as it has been adopted in China. These opportunities include abundant natural resources like land and water, less polluted environment, conducive agricultural policies, zero duties levied on imported irrigation equipment. However, a number of limitations also are there such as, lack of investment, lack of infrastructure, lack of information, the requirement of expertise on plant nutrition and management of fertigation system, requirement of soil analysis and proper interpretations by experts (Kabirigi et al., 2017). Non-availability of sufficient organic supplements, bio fertilizers and local market for organic produce and poor access to guidelines, certification and input costs, capital-driven regulation by contracting firms discouraging small farm holders were identified as drawbacks in the case of substituting chemical fertilizer with environmental friendly matters (Pandey and Singh, 2012).

With the background provided by the previous studies in the related fields the gaps were identified and the study was launched to identify the farmer perception of the EFTs in terms of benefits and costs and to bring out the farmer preferences for developing policy tools, incentives and key instruments associated with the EFTs (BC and BF). Focussing on the results obtained by the study,

**Descriptive Statistics of the Sample**

When considering the demographic information of the sample selected, data were first collected from Anuradhapura district during August 2019 and then data were collected from Kurunegala district during November 2019. As indicated in Table 3, if taken separately,
Table 3: Descriptive Statistics of the Sample

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Category</th>
<th>Anuradhapura Percentage (%)</th>
<th>Kurunegala Percentage (%)</th>
<th>Overall Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>67</td>
<td>75</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>33</td>
<td>25</td>
<td>29</td>
</tr>
<tr>
<td>Age (Years)</td>
<td>&lt;35</td>
<td>11</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>35-65</td>
<td>83</td>
<td>83</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>&gt;65</td>
<td>6</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Farming experience (Years)</td>
<td>&lt;5</td>
<td>4</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>5-10</td>
<td>15</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>11-15</td>
<td>7</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>16-20</td>
<td>7</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>&gt;20</td>
<td>67</td>
<td>60</td>
<td>64</td>
</tr>
<tr>
<td>Education level</td>
<td>Not schooled</td>
<td>6</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Up to grade 5</td>
<td>16</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Up to grade 8</td>
<td>21</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Up to O/L</td>
<td>44</td>
<td>36</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Up to A/L</td>
<td>13</td>
<td>36</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Degree/Diploma</td>
<td>-</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>Land ownership (ac)</td>
<td>&gt;2</td>
<td>36</td>
<td>73</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>2-5</td>
<td>46</td>
<td>22</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>&gt;5</td>
<td>18</td>
<td>5</td>
<td>12</td>
</tr>
</tbody>
</table>

In Anuradhapura and Kurunegala the demographics were almost the same except for the education level and land ownership. In Kurunegala the farmers were much educated. Some of them (15%) is qualified with tertiary education. Compared to that, Anuradhapura did not have that much of educated farmers. 6% of them had not even been to school. In Anuradhapura a high portion of farmers (46%) owned 2-5 acres of land whereas in Kurunegala 73% of the farmers owned less than 2 acres of land. When considering both the districts as a whole, or the sample subjected to the study, majority of the farmers were males (71%) between the age of 35-65 years. Actually a very less number of farmers were under the age of 35 years. Despite the district they came from, 64% of them had experience over 20 years in the farming field. The highest education level for most of them (40%) was the GCE Ordinary Level except the slight deviations, which was the education level they had achieved.
Introducing Eco-Friendly Technologies to Reduce Chemical Fertilizer Usage in Paddy Farming in Sri Lanka

Based on the scores given by the farmers “Lowering expenses on soil treatment due to the sustainability of soil health”, has the highest points 3.9, where it can be expressed as a DC. The second in score is “Less wastage of fertilizer due to reduction of excessive applying” with a score of 3.8, which is also a DC. From the statements presented the respondents have identified “Ensuring human and environmental health and safety” as an IB and it has the third highest score of 3.7. Then some of the statements have scored minus values. Such as “High dependence on soil, water and weather conditions”, with a score of -3.5 and it is a DB whereas -3.4 scored, “More knowledge requirement on prior information on the field” can be identified as an IC. A complete demonstration on all 20 statements and relative scores are indicated in Table 1 and Figure 2.

The aggregate mean scores of each statement decide the economic feasibility of the project.

\[
(IB - DB) - (IC - DC) \\
(29.7 - (-3.5)) - (28.3 - (-3.4)) = 1.5 \\
TB - TC = 1.5
\]

The result exceeds 0. Therefore the project can be identified as an economically feasible venture since the obtained values suggests that the beneficial portion of the EFTs are overweighing the costs when compared with CF as per the perception of the farmers.

The results obtained from the ranking based on the MIS reveals that the paddy farmers are much concerned about the cost of application of the EFTs, and given that they have the capability of lowering the costs. Farmers have considered that fact favourably. When considering the next in line as important for the farmers are the environment concerns. They have looked at the product in a positive point of view with the belief that EFTs are capable of reducing the negative effects on the environment. What the farmers dislike as per the analysis are the regulations and availability of related services because of the additional work and effort they require. Figure 3 further enhances and separates the increasing benefits and decreasing costs from the increasing costs and decreasing benefits.
Figure 2: Outcome of the perception analysis on Benefits or Costs (Statements arranged from highest scored to the east scored)

Appendix B
Figure 3: Statements on Benefits and Costs Based on the MIS

Appendix C

Outcome of the EFA

The Cronbach’s Alpha value obtained as an output of the “Scale Reliability Analysis” done was recorded as 0.76 which is greater than 0.7, implying that the scale is internally consistent (Jayasinghe–Mudalige and Henson, 2006). Furthermore, the Kaiser-Meyer-Olkin (KMO) test has been resulted as 0.544 and since the value is higher than 0.5 the sample adequacy can be ascertained. Bartlett’s test of sphericity (Significance level of P < 0.005) was done to confirm the patterned relationship between the variables and the result being 0.000, less than 0.005 suggests that there is a patterned relationship among the variables of the study.

As indicated in Table 4, the eigenvalues (>=1) and the scree plot indicate significant factors that could be explained out of the given variables. Based on the results and eigenvalues four major factors could be derived. The statement classification followed by the sub categorization as indicated in Figure 4, explores the exact priorities of the farmers when it comes to preference between options in policy tools, incentives and key
instruments.

The factors were labelled based on the nature of the variables flocked under each factor giving the highest factor loading value. The variables indicating similar characteristics were classified together and in each major category once again based on narrower similarities sub categories were designed. Therefore the labels considered to be employed were ‘price’, ‘service’, ’materials’ and ‘other’ for the further continuation of the categorization for the convenience of the study.

Table 4. Outcome of the EFA

<table>
<thead>
<tr>
<th>Factor</th>
<th>EV</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.97</td>
<td>Price</td>
</tr>
<tr>
<td>2</td>
<td>3.28</td>
<td>Services</td>
</tr>
<tr>
<td>3</td>
<td>2.64</td>
<td>Materials</td>
</tr>
<tr>
<td>4</td>
<td>2.01</td>
<td>Other</td>
</tr>
</tbody>
</table>

Note: EV- Eigenvalue

When analyzing the overall result of the MIS of policy tools, instruments and key instruments, general attitudes of the farmers could be realized for each subcategory. Highest importance was placed on ‘Establishment of proper information networks among the farmers’, scoring 8.91, which comes under ‘market’ sub category. In addition the highest scored situations are ‘Disposal and knowledge acquisition on EFTs’, ‘Information on product and related processes’ and ‘Laws regarding the disposal of materials’ each sub category scoring an aggregative mean of 8.41, 8.24 and 8.04 respectively. As ‘Price’ related facts under ‘Market’ subcategory, ‘Information on supply, demand and pricing conditions’ have scored 8.16 highlighting how important that is for farmers. However the least concern of the sample was based on the affordability of EFTs with a generated mean score of 5.01.
Introducing Eco-Friendly Technologies to Reduce Chemical Fertilizer Usage in Paddy Farming in Sri Lanka

Figure 4. Classification of policy tools, incentives and key instruments based on aggregated mean importance scores

<table>
<thead>
<tr>
<th></th>
<th>Price</th>
<th>Service</th>
<th>Materials</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>7.38</td>
<td>8.01</td>
<td>8.07</td>
<td>6.77</td>
</tr>
<tr>
<td>Market</td>
<td>8.16</td>
<td>8.24</td>
<td>7.94</td>
<td>8.91</td>
</tr>
<tr>
<td>Judiciary</td>
<td>7.88</td>
<td>8.05</td>
<td>8.01</td>
<td>7.85</td>
</tr>
<tr>
<td>Self</td>
<td>5.01</td>
<td>8.41</td>
<td>6.21</td>
<td>5.65</td>
</tr>
</tbody>
</table>

Appendix D

CONCLUSIONS

The study brings into attention that the EFTs are actually beneficial over CF as recognized by the farmers. Most importantly when considering the general perceptions of the farmers to switch from CF to EFTs they are willing to convert. At the same time the farmers are well aware of the negative impact of CF on fields and human health, and under particular circumstances such as market information, hands on experience, training and subsidy schemes they are enthusiastically willing to experiment the EFTs in their fields given that is has economic incentives. Therefore with the illumination of the mindset of the responses, by organizing workshops, capacity building and training programmes and establishing proper information networks among farmers, they can be encouraged and motivated to switch from CF to continuous use of EFTs in the fields.
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Introducing Eco-Friendly Technologies to Reduce Chemical Fertilizer Usage in Paddy Farming in Sri Lanka


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APPENDICES

Appendix A

Figure 1: Conceptual framework

The conceptual framework is derived from the theories indicated by Buchanan (1969), to support organizational decision making by the analysis of possible benefits and costs associated with a particular venture. The figure explains the differentiation of the benefits and costs as per their tendency to increase or decrease. Based on the factor analysis conducted for this study the calculations done to identify the feasibility of the project is done based on the background provided by the framework. The structure highlights the identification of what weighs more via the simple calculation between benefits and costs.

Appendix B

Figure 2 is aimed at demonstrating the aggregated MIS given for each and every statement by the farmers. Actually the statements are ranked as per the scores they have obtained and included in the figure. However it assists with identifying the facts which are considered highly important by the farmers and the facts which are considered less important by the farmers. By getting an overall picture of the perception of the farmers it indicates that the farmers major concern is on cost related actors and the environmental concerns and they have doubtful opinions on the regulation processes and the availability of services related to the product package due to numerous reasons such as possibility of incurring additional costs and efforts.
Figure 2: Outcome of the perception analysis on Benefits or Costs (Statements arranged from highest scored to the east scored)

Appendix C

Based on the MIS values obtained regarding the beneficial or cost aspects of the EFTs the figure is derived. It separates the costs and benefits as well as the plus scored statements from the minus scores ones. Therefore the structure is supposed to give the reader an idea about the MIS obtained by the statements and the difference of values when compared one by one. Also the distinguishing between the benefiting factors form the cost factors as identified by the farmers’ perception is facilitated. It is derived based on the data obtained as MIS for each statement.
Introducing Eco-Friendly Technologies to Reduce Chemical Fertilizer Usage in Paddy Farming in Sri Lanka

Figure 3: Statements on Benefits and Costs Based on the MIS
Study on Potential Alternatives for the Banned Polythene Bags and Lunch Sheets (PBLS) and Exploring the Nature of PBLS Prevailing in the Market in Sri Lanka

S.P. Fernando
P.C.J. De Silva
I.V. Kuruppu
G.V.N. Aiome
D.R.P. Dembatapitiya
G.K.C. Nilusha

Abstract

The study illustrates potential alternatives for the banned polythene bags and lunch sheets (PBLS) imposed in 2017 by the Sri Lankan government and explores the nature of PBLS in the market in Sri Lanka. Results reveal that the government, at present, has no laboratory facilities to test degradability of PBLS. Further, there are very few alternatives for the banned PBLS while the high price acts as the main limitation for its popularity.

Keywords: Degradability, High price, Lunch sheets, Polythene bags, Potential alternatives

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INTRODUCTION

In 1977, supermarkets began to offer plastic grocery bags as an alternative to paper bags. By 1996, out of every five-grocery bags four were plastic. Since 1996 over 80 percent of all bags are plastic. It is estimated that somewhere between 500 billion and one trillion plastic bags are consumed throughout the world each year. Approximately 53 percent of plastic bags are distributed from supermarket outlets, while 47 percent come from other retail outlets such as fast food shops, liquor stores and general merchandising (Gogte, 2009).

There are two types of plastic shopping bags. They are; the lighter, filmy bags taken from supermarkets and other food outlets and, the heavier bags taken from other retail outlets, like clothing stores. HDPE or High Density Polyethylene Bag is stiff, thin and not transparent or opaque. HDPE (Ethylene polymer with densities ranging from 0.941 to 0.965 grams per cubic centimetre/\geq0.94) is normally used in grocery or t-shirt bags. Low Density Polyethylene-LDPE (0.916 to 0.925 grams per cubic centimetre/\lt0.94mm) or low density polyethylene bags are thick and soft and can be transparent and glossy in appearance. LDPE is used in shopping bags usually with attached handles. Unlike HDPE, LDPE cannot be recycled.

The Danish Environmental Protection Agency found in a study that a grocery bag would have to be reused a number of times to have as low an environmental impact as a standard LDPE single-use plastic bag. For example, value of 5 indicates a bag would have to be reused five times to equal the environmental impact of a standard single-use plastic bag (Bell and Cave, 2011). The results show that certain plastic bag alternatives have high environmental impact and would require many reuses to make them worthwhile as a substitute. For example, an organic cotton bag would have to be reused 149 times to equal LDPE's greenhouse gas emissions and 20,000 when impacts such as eutrophication, water and ecosystem are included.

There is a range of alternatives to plastic bags. Supermarkets in Australia introduced biodegradable bags made from tapioca starch in 2003. According to Gogte (2009); though these bags closely resemble polythene bags they decompose within three months. According to a study in the United States by Camann (2010), canvas bags are as popular as paper bags. The study also has demonstrated that a fair amount of the consumers would be willing to pay a small fee for alternative bags if such a system was introduced. The amount of participants willing to pay for alternatives is larger than the amount of participant willing to pay for current plastic bags. According to a study in Sri Lanka by Athukorala et al., (2017), cement paper bag with corn husk as the bottom, cement paper bag with oil paper layering and cement paper bag with banana tree bark at the bottom are also feasible alternatives for polythene bags.
Meanwhile, the Sri Lankan government imposed a ban on polythene bags and lunch sheets (PBLS). Accordingly, the new laws came into gazette effect on September 01st 2017 aiming at minimizing the environment issues prior to a full ban on PBLS in September 2017, which led to a huge uproar within the society. While some applauded the step, pointing at the sunny side of the ban on the environment; others protested, for the lack of alternatives and the economic blow it may have on their livelihood. The All Ceylon Polythene Manufactures and Recyclers Association and All Ceylon Canteen Owners’ Association accused the authorities for their impractical approach and not offering plausible replacements. Almost two years later, has Sri Lanka successfully overcome its reliance on polythene? Are there enough eco-friendly alternatives for PBLS available in the market in Sri Lanka? Are single use PBLS available in the market biodegradable? Still no study has been conducted in Sri Lanka to find the answers for questions arising following this major step. This study examines the prevailing and potential alternatives for the banned PBLS imposed in 2017 by the Sri Lankan government, different stakeholders’ perception on them and the nature of PBLS in the market in Sri Lanka.

RESEARCH METHODOLOGY

Selection of Study Location

According to the data collected by Japan International Cooperation Agency (JICA), the per capita generation rates of solid waste in Sri Lanka roughly range between 0.46 kg and 0.52 kg (Wijedasa, 2017). As an average value, that is around 0.49 kg. When reviewing the literature regarding the plastic waste in Colombo Municipal Council (CMC) and most other places in Sri Lanka, it shows that there are around six to seven percent (Wipulasena, 2018) plastic out of total. Thus, the per capita plastic generation quantity in Sri Lanka per annum is around 10.73 kg to 12.52 kg (data generated through the above figures) and the highest rate of per capita consumption of conventional polythene is reported in the Western Province. Besides, polythene producers and vendors of the polythene shopping bags and lunch sheets are concentrated in the Western Province. That trend is more likely to spread to other parts of the country. Therefore, considering these, this study was conducted in every district in the Western Province, covering all the rural, semi-urban and urban areas.

Methods of Data Collection

Key informant interviews, focus group discussions and questionnaire surveys were used to obtain primary data and the sources of Central Environmental Authority (CEA) and JICA, details of research reports, journals and newspaper articles were employed as
secondary data. Accordingly, primary data was collected from 1291 respondents (including key informant interviews, focus group discussions and questionnaire surveys) by covering government institutions, civil associations, material researchers, major foodstuff producers, polythene manufacturers, supermarket chains, grocery shops, food vendors, entrepreneurs, plastic collectors and recyclers as well as the general public. The data collection took place from March 2018 to February 2019 largely focused on the Western Province.

**Key Informants Interviews**

Key informant interviews were conducted with 75 key persons including government institutions, non-governmental organizations, material researchers, polythene manufacturers, supermarket chains, major foodstuff producers and entrepreneurs in order to learn the situation following the polythene ban.

**Focus Group Discussion**

There was a main focus group discussion on May 30, 2018 with the participation of different parties (around 30 parties) including government institutions, non-governmental organizations, material researchers, major foodstuff producers, polythene manufacturers, supermarket chains, grocery shops, food vendors, entrepreneurs, plastic collectors and recyclers as well as the general public to gather the current situation on PBLS in Sri Lanka and evaluate the possible path forward.

**Questionnaire Surveys**

Mixed reactions of both probability and non-probability sampling techniques were used for each questionnaire survey to attain the research objectives. Cluster sampling techniques were applied to select the respondents in each district. The gender of the respondents was considered to obtain good results. Therefore, purposive sampling techniques were also applied with mixed reactions of both cluster sampling with two stages and purposive sampling techniques.

There are 40 divisional secretariats (DSs) in the Western Province (Colombo: 13, Gampaha: 13 and Kalutara: 14). Since the number of DSs are similar in each district, interviews were planned with 250 consumers, 64 households, 25 retailers/sellers, 50 food court owners/restaurateurs (bake houses, pastry shops, bread shops etc…), 25 supermarket owners/responsible persons and 25 alternative producers/entrepreneurs in each district. Altogether 1317 respondents including 750 consumers, 192 households, 75 retailers/sellers, 150 food court owners/restaurateurs (bake houses, pastry shops, bread shops etc…), 75 supermarket owners/responsible persons and 75 alternative
producers/entrepreneurs were selected in western province. For this, five DSs were selected from each district and the aforementioned sampling techniques were applied to fulfil the above requirement. However, due to the lack of support of some stakeholders and limited time, we were unable to cover the total sample size (1317) within the study period and only 1186 questionnaires were usable to the survey.

DATA ANALYSIS

Categorical data analysis (cross tabulation) was mainly employed to analyses the data with SPSS. For achieving the factors affecting for the objectives, main variables of consumers, households, retailers/sellers, food court owners/restaurateurs, supermarket owners and alternative producers/entrepreneurs were analyzed and they consisted of 35, 46, 32, 26, 29 and 33 variables respectively. Moreover, choice experiment (CE) method was used to estimate the willingness to pay (WTP) for an eco-friendly alternative by the households.

Choice Experiment (CE) Techniques

Choice experiment techniques are widely used to value environmental resources. However, CE techniques can also be used to derive value for other aspects as well. Various forms of non-market valuations related to wide sectors ranging from health, transport and infrastructure have been conducted using CE techniques to estimate willingness to pay and accept of general public (Alpizar et al., 2001). CE techniques enable estimation not only of the value of the asset as a whole but also of the implicit values of its attribute (Hanley et al., 1998; Kuruppu et al., 2018). In this study since there are limited or no alternatives for polythene in the Sri Lankan market, CE technique was deployed to elicit willingness towards such alternatives.

CE method was used to estimate the willingness to pay (WTP) for an eco-friendly alternative by the households instead of polythene in Sri Lanka. CE can deliver the opportunity to elicit a deeper understanding of the trade-offs between different attributes. Also, CE provides more information since it allows estimating not only the mean WTP, but also the implicit price or marginal WTP for the different attributes. Identifying and understanding attributes are important in this study in order to derive an ideal alternative for the ultimate product. This is why study adopted CE method. For this, a theoretical consistency in line with the Lancaster’s model of consumer choice was employed. According to Lancaster (1966), choice of consumer is derived not from the actual content of the system but from the characteristics or attributes of the elements within it. Simply, each and every part may contribute to derive the ultimate value of that system. Preference
for the system is derived through its usability or utility. If a set of attribute bundle caters more, utility consumer chooses that bundle.

However, if a consumer is directed for a repeated choice then the consumer chooses something else due to some random factors. Therefore, even the consumer indirectly derives his preference from a set of attributes as a result of random factors repeated choices may vary. In this technique, a utility function \((U_{ij})\) as derived from alternative is specified and behaviour is integrated into this function by Random Utility Approach, where utility of a choice is comprised of a deterministic component \((V)\) and an error component \((e)\), which is independent of the deterministic part and follows a predetermined distribution.

Thus, the utility can be specified as;

\[
U_{ij} = V(Z_j, S_i) + e(Z_j, S_i)
\]

For any given household \(i\), a given level of utility will be associated with any alternative system \(j\). Therefore, utility derived from any of the alternatives depends on the attributes \((Z)\) of the system and the social and economic characteristics \((S)\) of households. This error component implies that the predictions cannot be made with certainty. Choices made between alternatives will be a function of the probability that the utility associated with a particular option \((j)\) is higher than that the utility associated with other alternatives.

Finally, descriptive statistics of the data collected through the primary data sources (such as Key Informant Interviews, Focus Group Discussions and Observations) and secondary data sources (research reports, journals and newspaper articles) were used to justify the research objectives.

**Choice Sets**

Choice cards were prepared using the crucial attributes and the attribute levels. An example choice set is presented in Table 3.1. Orthogonalization procedure was used to recover only the main effects, consisting 32 alternative profiles and the profiles were randomly blocked into eight different versions, each with four different alternatives for polythene products. After the questionnaire, households were presented with the choice card and each respondent was asked to select the best preferred alternative for polythene from the four alternatives.
Table 1: Sample Choice Set Used for the Study

<table>
<thead>
<tr>
<th>Main Block 1</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
<th>Alternative 3</th>
<th>Alternative 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative Characteristics</td>
<td>Material/s</td>
<td>Frequency of usage</td>
<td>Degradable percentage</td>
<td>Availability</td>
</tr>
<tr>
<td>Material/s</td>
<td>Crop leaves &amp; residue</td>
<td>Only once</td>
<td>100%</td>
<td>Any retail outlet</td>
</tr>
<tr>
<td></td>
<td>Degradable plastics</td>
<td>Multiple times</td>
<td>100%</td>
<td>Any retail outlet</td>
</tr>
<tr>
<td></td>
<td>Papers</td>
<td>Multiple times</td>
<td>75%</td>
<td>Any supermarket</td>
</tr>
<tr>
<td></td>
<td>Cloths</td>
<td>Only once</td>
<td>75%</td>
<td>Any supermarket</td>
</tr>
</tbody>
</table>

Source: HARTI Field Survey, 2018

Each choice card is consisted of four alternative choices and each alternative has five attributes and the sixth attribute is a proxy for blocking purposes. It is not feasible to select one alternative from a large number of alternatives; hence the main purpose of blocking was to reduce the number of alternatives for a respondent. From all five attributes two consisted of four levels and the rest of two levels. Attribute is a feature of the particular alternative and the level refers to possible stages of that attribute.

Besides, Conditional logit model was deployed in both scenarios for data analysis. In direct utility from each system takes the form as follows:

\[ V_{ij} = \beta_1 \ln (Z_1) + \beta_2 \ln (Z_2) + \beta_3 \ln (Z_3) + \beta_4 \ln (Z_4) + \beta_5 \ln (Z_5) \]

Where \( \beta \) refers to the coefficient, which is specified to account for the proportion of choice of participation in household level. The term \( \ln \) refers to the vector of coefficients associated with the vector of attributes describing system characteristics and the fifth represents the monetary attribute.
RESULTS AND DISCUSSION

Overview of the Stakeholders

Composition of the Customer Sample

Perception, difficulties faced and practices by various stakeholders on PBLS ban may vary based on the gender. Therefore, it is a vital component of the study. When considering the gender of the selected respondents, it could be observed that three fourth were female while the males were only one fourth.

In another instance, respondents’ perception and behaviour may differ according to the place of shopping. Therefore, respondents of 723 were interviewed in different places in each district from the Western Province and table 1 shows it in a descriptive manner.

Table 2: Distribution of Customers/Consumers Participated in the Study

<table>
<thead>
<tr>
<th>District</th>
<th>Sathosa Super</th>
<th>Keells Super</th>
<th>Cargills Super</th>
<th>Laugf Super</th>
<th>Arpico Super</th>
<th>Fair/ Central Market</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombo</td>
<td>51</td>
<td>24</td>
<td>27</td>
<td>21</td>
<td>21</td>
<td>76</td>
<td>220</td>
</tr>
<tr>
<td>Gampaha</td>
<td>45</td>
<td>30</td>
<td>-</td>
<td>14</td>
<td>66</td>
<td>100</td>
<td>255</td>
</tr>
<tr>
<td>Kalutara</td>
<td>150</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>98</td>
<td>248</td>
</tr>
<tr>
<td></td>
<td>246</td>
<td>54</td>
<td>27</td>
<td>35</td>
<td>87</td>
<td>274</td>
<td>723</td>
</tr>
</tbody>
</table>

Source: HARTI Field Survey, 2018
Table 3: Composition of the Remained Samples of the Study

<table>
<thead>
<tr>
<th>Sample</th>
<th>District</th>
<th>No. of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households</td>
<td>Colombo</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>Gampaha</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>Kalutara</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>192</strong></td>
</tr>
<tr>
<td>Retailers/Sellers</td>
<td>Colombo</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Gampaha</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Kalutara</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>66</strong></td>
</tr>
<tr>
<td>Food Vendors/Restaurateurs</td>
<td>Colombo</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Gampaha</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Kalutara</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>128</strong></td>
</tr>
<tr>
<td>Different Types of Supermarkets</td>
<td>Colombo</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Gampaha</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Kalutara</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>27</strong></td>
</tr>
<tr>
<td>Alternative Producers</td>
<td>Colombo</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Gampaha</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>50</strong></td>
</tr>
</tbody>
</table>

Source: HARTI Field Survey, 2018

The majority (82 percent) of the alternative producers in the sample is small-scale. This is true to both the districts projected here. However, entrepreneurs who have introduced and attempted to promote material and products as substitutes have expressed their disappointment with authorities who have done little in terms of providing support. This was clear with what was observed in the study, where very few alternative products were found to be available and in use.
Prevailing and Potential Alternatives for PBLS

During the study, Professor Jagath Premachandra, the University of Moratuwa was interviewed on the ban on polythene. According to him, agricultural waste and waste products in the garment industry can be used for producing alternative bags. In addition, traditional ingredients such as cans and straws can be used for producing the alternatives. The University of Moratuwa is conducting a research to produce alternative bags with agricultural waste and waste products in the garment industry. There are several issues with regard to the production of biodegradable polythene. The process is heavily time consuming. Another issue in Sri Lanka is the absence of technical facilities to test the time taken by biodegradable polythene complete degradation and decompose into carbon dioxide, water and humus. In addition, it is possible to make lunch sheets by using the polylactic acid is imported for producing bio-degradable lunch sheets, mixed with starch (sugarcane, corn, rice) instead of HDPE and lunch sheets. These products are already being manufactured in countries such as India and England. Even it is possible to use oxo biodegradable; it must be mixed with heavy metals to direct decompose in the first stage. In this process, after it decomposes up to 90 percent, the remaining 10 percent is decomposed by soil microbes. In certain countries, this method is banned, but is a common practice in Saudi Arabia. According to the Premachandra, Sri Lanka can produce polythene by using oxo biodegradable as a raw material, if approved by the Sri Lanka Standards Institution. Nevertheless, it was not environmental friendly and he pointed out those heavy metals added at the initial stage of the process may be added to the environment.

According to the study, the most prominent alternatives for lunch sheets in the Western Province were banana leaves, areca nut leaves (“Kolapath”) and lotus leaves used by food vendors. Yet, the study revealed that 97% of food vendors still relied on the use of lunch sheets (both biodegradable and not) in their business. The most common alternatives identified for polythene grocery bags at super markets and grocery stores were fabric bags, paper bags and bags made of starch based biodegradable plastics.

Although consumers use banana leaves, lotus leaves and other types of leaves instead of lunch sheets, there is no sufficient supply for the current demand. In the meanwhile, Dr. Sujatha Weerasinghe; a lecturer of the University of Colombo conducted a study applying bio technology to produce banana leaves in a large area to wrap food while gaining a bumper harvest (Source: HARTI Survey data of this Study, 2018). Therefore, amenable officers should promote such programmes. Moreover, the research team visited the National Craft Council, Pelawatta twice at the initial stage of the study (May, 2018) as well as at the latter stage of the study (January, 2019) to observe that a few projects producing eco-friendly alternatives for polythene products were afoot in the latter visit.
Kolapath Plates/Plates Made of Arecanut Leaves and Lunch Boxes

Mr. Ananda of the National Craft Council revealed that there are kolapath plates and lunch box suppliers registered with the National Craft Council. Besides, they have the ability to supply these products in mass quantity and the kolapath plate price starts from Rs. 10.00. At that time, they have been put in supermarkets for trial. According to him, the products can be reused for a month.

Stakeholders’ Perception on Alternatives

Households’ Perception on Alternatives

Based on the key informant interviews and discussion conducted with the experts in the field, five important attributes related to alternatives for polythene products were derived. Key attributes are: basic material used to produce the product, usability of the product, relative recyclability of the product, availability of the product and price of the product. Accordingly, four basic materials were also identified as material derived through plant and biomass, recyclable plastics, paper base and cloth base. Usability was defined as frequency of using the product: one-time usage and several times usage. For recyclability again two levels: 75 percent recyclability and 100 percent recyclability were derived. Availability of the product was defined as relative accessibility to the product at two levels: only from retail shops and only from supermarkets was derived.

Table 4: Conditional Logit Estimates for Alternatives

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of recyclable plastic</td>
<td>-0.177</td>
<td>0.568</td>
</tr>
<tr>
<td>Paper base</td>
<td>0.081</td>
<td>0.797</td>
</tr>
<tr>
<td>Cloth base</td>
<td>0.740**</td>
<td>0.023</td>
</tr>
<tr>
<td>Usability</td>
<td>-0.061</td>
<td>0.568</td>
</tr>
<tr>
<td>Recyclability</td>
<td>-0.029</td>
<td>0.929</td>
</tr>
<tr>
<td>Availability</td>
<td>-0.229</td>
<td>0.483</td>
</tr>
<tr>
<td>Price of the product</td>
<td>1.06e-12***</td>
<td>0.010</td>
</tr>
</tbody>
</table>

***Significant at 1% level, **Significant at 5% level, *Significant at 10% level
Source: Authors’ Estimations based on Field Survey, 2018
According to the conditional logit estimates, respondents’ willingness was placed only for the material which the alternative was made and the price is at 95 percent confidence level. All other attributes: usability, recyclability and availability were not significant at 95 percent confidence level. Interestingly, respondents are willing to use an alternative product made of fabric. Also, respondents have placed a relatively low price for the alternative. Hence, it is envisaged that, new alternative products should be manufactured using cloths and when pricing, it is suitable to place a relatively low or penetration price for that alternative product. Penetration pricing is a pricing strategy where the price of a product is initially set low to rapidly reach a wide fraction of the market and initiate word of mouth. Through penetration price more customers may switch to that product promptly. This would be the best strategy to promote as well as attract households to use these types of products. Anyhow, descriptive statistics shows that 11 percent of customers still were not following any practices to promote eco-friendly alternatives.

Alternative Producers View on Customers’ Purchasing Behaviour on Alternatives and Promotion of Eco-friendly Alternatives

Various responses were received when asked about the buying behaviour of the customers of eco-friendly alternatives by producers. According to the producers, every person wishes to use alternatives. But, half of the producers stated that although customers wish to buy the alternatives, the high price keeps them away from buying.

When questioning the producers’ view on promotion of the eco-friendly alternatives, 12 percent stated that polythene shopping bags must be banned totally while another 22 percent held the view that the government should encourage people to use eco-friendly alternatives. Furthermore, 30 percent expressed that people should be educated on the quality of the eco-friendly alternatives while 14 percent stated that stalls for selling alternatives for polythene products should be established. Moreover, the rest 22 percent said a subsidiary is essential for machinery used to produce alternatives.

Government Officials View on Alternatives

An official in CEA informed that the government has taken steps to promote production of lunch sheets, which are biodegradable as alternatives to the banned polythene. According to him, the Central Environmental Authority has requested the government to grant tax concessions to import raw materials to produce biodegradable polythene shopping bags and lunch sheets. Further, he mentioned that if traditional polythene manufacturing factories are converted to ones that make biodegradable polythene, they are to be provided 50 percent concession for machinery repairs. Accordingly, polythene manufacturers should be paid for the machines they possessed. According to the
manufacturers, cost per machine is around Rs. 400,000.00. However, when inquired about on the situation about the concession from polythene manufacturers by February 2019, they informed they were paid only Rs. 200,000.00 (Irrespective of the number of machines) instead of the above concession for repairs. Therefore, they were disappointed over the relevant government officials especially in the CEA. In addition, he informed that the government is planning to impose more taxes on imported raw materials for polythene production.

Similarly, according to a senior officer in the Sri Lanka Standards Institution, standards have been outlined to produce biodegradable and composting polythene by now. Therefore, the Institution provides the CEA with an opportunity to check the quality of imported raw materials and the quality of production. However, according to him, although the government is offering such relief the industrialists are not interested in producing biodegradable polythene. The Institute had granted approval to 16 individuals to import biodegradable polythene materials by end of May 2018. In addition, only six to seven industrialists have handed over applications to obtain the standards of biodegradable polythene manufacturing.

**Food Vendors’ Perception on Alternatives**

The suitability of bio-degradable polythene for food wrapping in food courts has been questioned. Accordingly, around 74 percent of food vendors (canteen owners and bakery owners) said it is difficult to use bio-degradable polythene in food wrapping.

As shown in Figure 1, 34 percent of food court owners called for low cost alternatives while 24 percent of food court owners from total expressed that the government should support entrepreneurs to make eco-friendly alternatives.
Obstacles for not using the Eco-friendly Alternatives by Stakeholders

There are few eco-friendly alternatives in our country, but due to various issues stakeholders refrain from using them. The main constraint in not using the alternatives as per the food court owners was the high cost (68 percent). Thirteen percent of food court owners pointed out the free availability as an issue. In addition, 32 percent of customers said that the price of every alternative is high. In another way, the majority of households (59 percent) said the free availability of LDPE bags in the market discouraged them to switch to alternatives. Besides, 24 percent expressed that ‘polythene bags are easy to use’ and five percent of households claimed the less availability of alternatives as reason not to use the alternatives.

Moreover, the polythene manufacturers asserted that although large-scale factories comply with the polythene law, it is difficult to control the production of unregistered domestic industrialists. In addition, lunch sheets, produced by LDPE polythene released to the market in the name ‘biodegradable’ tag is another problem that is yet to address.
On the other hand, bio-degradable additives are costly. Therefore, producers tend to use fewer amounts of additives, which would lead to less effectiveness of degradable material. Besides, when interviewed the polythene manufactures they held that the government should have discussed the matter (ban) with them before enforcing.

Nevertheless, according to former Chairperson, Anura Wijethunga of All Ceylon Polythene Manufacturers and Recyclers Association, demand for biodegradable polythene products is minimum as the market is flooded with bogus HDPE. Also, the scent of these biodegradable lunch sheets stocks has attracted mice, cockroaches and animals. Moreover, he stressed the need for a proper waste management system for polythene in Sri Lanka in place of polythene ban.

Mr. Asela Sampath, President of the Sri Lanka Canteen Owners Association charged that following the ban a bio-degradable lunch sheet was introduced but with poor discrimination. Consequently, most traders were tempted to sell LDPE lunch sheets in the guise of biodegradable lunch sheets at a high price in the market. So he stressed the need for a mechanism to identify the genuine biodegradable lunch sheets.

**Positive and Negative Qualities of PBLS Prevailing in the Market**

**Stakeholders’ Behaviour on PBLS Usage**

According to descriptive statistics, 97 percent of food vendors (bake houses/pastry shops and canteens) use polythene to serve foods. Here, a quarter of food vendors still use LDPE lunch sheets to wrap foods. It was confirmed by checking the number of lunch sheets that were in store at that moment. In addition, 51 percent of households have got used to reuse the plastic bags while 49 percent have not. Out of the households who reuse the plastic bags, 36 percent reuse them to carry other goods while 26 percent reuse them to store vegetables in the refrigerator. Moreover, another 26 percent of households use them to carry goods when buy things the next time while 12 percent of households use them as a garbage bag. See Figure 2.
According to descriptive statistics, after the ban, 42 percent of total households said they use lunch boxes while 32 percent of total households said they use lunch sheets available in the market. Moreover, 15 percent of the total households have opted for banana leaves. Only one percent said they use lunch sheets made from HDPE. Despite their claim, it is hard to distinguish the HDPE lunch sheet from that is made of bio-degradable material.

**Material Cost of PBLS**

When considering the material cost per unit item of different food carriers before and after the ban, we can clearly identify that the price has increased in every category. For an example, earlier the price of a lunch sheet was less than a rupee whereas presently it has increased to five rupees.

**Stakeholders’ Perception on Prevailing PBLS**

According to the results, 31 percent of customers stated that new plastic bags are decomposable while 41 percent expressed doubt about their degradability. Altogether 72 percent do not have adequate knowledge on the degradability of new bags. Additionally, 60 percent of customers said the new bag’s strength is poor. Accordingly, half the customers interviewed said that the use of bags has increased due to the poor strength of the bags. Moreover, 67 percent of households’ perception on the new bag is its strength is poor and 27 percent claim that the strength is moderate. Further, 74 percent of
supermarket-authorized persons said strength of the polythene bag which came after the ban, is low. Similarly, 17 percent supermarket authorized persons said that they received complaints from their customers on the bags. For an example, a Senior Trade and Marketing Manager of Lanka Sathosa stated that more expenses are incurred now than before the ban to buy LDPE shopping bags. Hence, he mentioned that due to the inferior quality of LDPE shopping bags the customers ask for more bags now as the bags cannot hold much weight and tends to tear off easily. This was clear with what was observed in the study, where six percent of customers were embarrassed sometimes as the polythene bags easily broke down with the goods. Besides, one fourth of the food vendors state that the strength of the prevailing alternatives is poor. At the same time 14 percent vendors complain that the heat resistant quality of the prevailing PBLS is poor. Accordingly, these reasons have caused to rise the PBLS usage of the public.

According to the literature and the polythene manufacturers, HDPE bags’ strength and recyclability rate is higher than the LDPE. Also, its production cost is low. When the study was conducted, the reason for replacing HDPE by LDPE was inquired from few government officials. According to them, the main objective of this was distancing the consumers from using polythene owing to the poor quality of the LDPE bag. On the contrary the study reveals that stakeholders’ demand has not changed much.

Further, according to former Chairperson, Anura Wijethunga of All Ceylon Polythene Manufacturers and Recyclers Association, shopping bags and lunch sheets have become an essential commodity in today's busy life. Therefore, with the laws imposed on polythene shopping bags and lunch sheets, customers as well as the polythene manufacturers are in an embarrassing situation. However, abiding by the law they have now converted the machinery in their factories to make LDPE. However, according to him unlicensed HDPE polythene products are rampant in the market a reason that hinders consumers from buying LDPE at a higher cost.

**Raid by CEA Officials on Supermarket Chains for Polythene Investigation**

Raiding helps trace illegal polythene products and it is vital to discourage the producers and sellers involved in these activities. Accordingly, the questionnaire survey conducted up to end of August 2018 revealed that 67 percent of supermarkets were investigated by the CEA officials. Around 63 percent of supermarkets out of the total supermarkets raided were checked only one time. Punitive measures were taken against offenders last year for violating polythene laws. Those first time offenders were fined Rs. 10,000.00 while it was five times for repeating the offence. According to the key person interviews, observations and focus group discussions, CEA is in good stead in terms of the polythene raiding compared to year of 2018. The fine should be revised for raiding to be more
effective. Consequently, CEA has to increase the frequency of raiding to limit the illegal producers, sellers and etc. For this, more staff is needed, which is a constraint.

Yet, the researchers found quite a few limitations in the processes used in the detection of illegal products. The government has to rely on the importation certificates confirming legitimacy of the raw materials used in the manufacturing process, while having only limited resources and methods to check for banned substances in the finished products. It was also identified that the government sector, at present, has no laboratory facilities to test degradability of material, so as to confirm whether the required standards are met by the manufacturer.

CONCLUSIONS

The public had been largely misinformed regarding the PBLS ban, as the study found 31 percent of the surveyed public assuming the newer grocery bags to be biodegradable, while 41 percent being uncertain about its make.

According to manufacturers of grocery bags, compared to the previously used HDPE, LDPE based bags used at present were not only of poor strength, but also incurred a higher production cost while being more difficult to recycle after use. A similar issue was raised with regard to the new lunch sheets by 74 percent of the food vendors surveyed, that these lunch sheets were easily damaged, leading to leaking of wrapped food while making the wrapping process more difficult compared to the polythene sheets used before.

With entrepreneurs that have introduced and attempted to promote material and products as substitutes have expressed their disappointment with authorities for their meagre commitment in providing support. As a result, very few alternative products were found to be available. Of those alternatives for lunch sheets in the Western Province, the most common were banana leaves, Areca-nut leaves (“Kolapath”) and Lotus leaves used by food vendors. Yet, the researchers found that 97 percent of food vendors still relied on lunch sheets despite the ban. The most common alternatives identified for polythene grocery bags at supermarkets and grocery stores were fabric bags, paper bags and bags made of starch based biodegradable plastics. These alternatives for lunch sheets and polythene bags had failed to become popular for the disadvantages they have in terms of price, availability and convenience.

The most preferred alternative for polythene shopping bags was cloth bags due to its physical attributes, while the high price was a main limitation for it to become popular.
Sixty-seven percent of the households and 74 percent of the supermarkets interviewed in the research had pointed that their polythene bag usage is higher than prior to the ban due to inferior quality of the current one (LDPE).

Another aspect revealed in the study was the prevalence of “black market” polythene lunch sheets which sometimes were passed off as biodegradable. This was a major concern raised by manufacturers of biodegradable lunch sheets, as they have to compete with lower priced fake products that undermine the environmental benefits of the imposed regulations.

Enforcement of the law by the government would play a major role in making the “polythene ban” effective. According to the Central Environmental Authority, an increasing number of inspections and raids had been carried out at retail shops, supermarkets and manufacturing facilities to detect illegal polythene products. Yet, the researchers found quite a few limitations in the processes used in the detection of illegal products. The government has to rely on the importation certificates confirming legitimacy of the raw materials used in the manufacturing process, while having only limited resources and methods to check for banned substances in the finished products. It was also identified that the government sector, at present, has no laboratory facilities to test degradability of material, so as to confirm whether the required standards are met by the manufacturer.

**RECOMMENDATIONS**

If the consumers of Sri Lanka are to move away from polythene related products, those that introduce and manufacture eco-friendly alternatives should be encouraged. Therefore, attention and support should be provided to entrepreneurs and producers of eco-friendly alternatives for plastics and polythene by the state and a systematic campaign should be implemented to promote their use among the general public.

Establishment of a systematic approach in monitoring of violations with increased allocation of officers to the environmental units of police stations is needed. The task of these police officers should include raising awareness of the public as well as conducting inspections and raids to unmark the offenders. It was also apparent that the existing fines to punish the offenders fall for short of any effect. Therefore, it is recommended to increase the fines to create more impact in the society.
ACKNOWLEDGEMENTS

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REFERENCES


Abstract

Recreation and tourism represent a major opportunity and nexus for managing the interaction between ecosystems and people, including particularly to urban ecosystems, where people living in an environment, that its’ contact with natural or semi natural ecosystems is often limited. The Negombo lagoon has proven to be an important recreational site in a greater urban area in the face of the growing demand for urban recreational amenities. This study evaluates the recreation demand for Negombo lagoon while specifically, identifies the current status of recreational activities in Negombo lagoon to motivate and sustain public support for lagoon protection and conservation through monetary signals. The study employs both Individual Travel Cost Method and Zonal Travel Cost Method in order to estimate the welfare gains from recreation. The social welfare derived for both local (USD 4.7 Million) and foreign visitors (USD 911 Million) demonstrates the trade-off and synergies of sharing lagoon for recreational activities.

Keywords: Ecotourism, Negombo lagoon, Non-market valuation, Recreation, Travel cost, Urban coastal ecosystems

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INTRODUCTION

Coastal ecosystems are viewed as important ecological resources to generate significant activities associated with tourism and outdoor recreation in many coastal communities that endorses protecting and managing coastal lands. Assessing the benefits generated by coastal lands against the costs associated with their protection as well as management has led to a growing literature examining the recreational value of coastal ecosystems (Ghermandi et al., 2010).

Recreation and tourism represent a major opportunity and nexus for managing the interaction between eco systems and people, including the development and protection of ecosystems. Recreational activities, such as walking, boating, photography, nature study and swimming, offer an opportunity for many people to experience the benefits of ES directly. This applies particularly to urban ecosystems, where people living in an environment, that its’ contact with natural or semi natural ecosystems is often limited.

Recreation and tourism also provide many important benefits in both physical as well as psychological wellbeing through aesthetic experiences, intellectual stimulation, and inspiration. In literature, recreation in form of everyday or short term in nearby green spaces, day tourism, and overnight tourism are often lumped and discussed together. Although the overnight tourism seems to be recognized and integrated to some extent, everyday outdoor recreation is not even mentioned in literature. Further the existing literature on coastal recreation is devoted almost exclusively to estimate the value of recreation but not to identify the trade-off among external and local visitors who have often free access to a variety of outdoor recreation activities (Everard and Kataria, 2011; Wang et al., 2010).

This study uses travel cost methods to examine the recreational demand for Negombo lagoon in Sri Lanka. The site is typical of the many local and foreign, free-access coastal locations throughout Sri Lanka are alternative destinations to large, more popular beaches. With this background, the purpose of the present study is to derive recreational demand for both local and foreign visitors in Negombo lagoon. Specifically, the objectives of the study are to identify the current status of recreational activities in Negombo lagoon and, to motivate and sustain public support for lagoon protection and conservation through monetary signals.

Literature review

Nonmarket valuation techniques for wetlands can be broadly categorized under two methods, direct; (that use surveys to ask an individual’s valuation of the goods in a hypothetical market) and indirect (methods rely on the behaviour of consumers in related markets) methods. Further recreational value can be measured through those two categories under three basic approaches: single site demand (Travel Cost) method, site
choice (Random Utility) method, and stated preference (Contingent Valuation) method (Haab and McConnell, 2002). Often in Literature revealed preference and stated preference methods had been used either individually or in combination, in order to estimate the welfare changes due to quality changes in recreational sites (Whitehead et al., 1999).

Travel cost method (TCM) is a revealed preference method based on observed behaviour reflecting utility maximization subject to a constraint, that developed by Hotelling, is one of the oldest methods in environmental valuation (Freeman, 1993). TCM measures Marshallian consumer surplus that approximates and bounded by the compensating variation (CV) and equivalent variation (EV) welfare measures (Brander et al., 2006). This method uses the travel cost as a proxy for the price of recreation assuming rational behaviour on the part of the consumer while the sole decision variable is the number of visits paid by the consumer to a certain recreation site within a time period. The travel cost varies with distance from the recreational site, a surrogate demand curve can be derived based on the varying cost information that can be used to estimate the consumer surplus as a measure of welfare (Gunatilake, 2003).

There are two alternates, (a) Individual Travel Cost Method (ITCM) which is appropriate for sites with high individual visitation rates and, (b) the Zonal Travel Cost Method (ZTCM) which is applicable for sites with very low individual visitation patterns (Rolfe and Prayaga, 2007). The advantage of ITCM over ZTCM is that it takes into account the inherent variation in the data compared to the aggregation and can be estimated using a smaller number of observations. Although the researchers prefer ITCM over ZTCM for reasons such as statistical efficiency, theoretical consistency, and increasing heterogeneity among populations within zones, the application of the correct TCM depends on the identification of the dependent variable and reason of some studies for using both methods (see Rolfe and Prayaga, 2007; Nam et al., 2005; Bowker and Leeworthy, 1998).

According to Groot et al., 2012 TCM has extensively used in natural recreation research (19%) but not very often in South Asian continent. There are only few evidences from Sri Lanka (Gunatilake and Vieth, 1998; Marawila et al., 2010) and many more conceptual, theoretical and methodological aspects not being explored yet.

In many studies the Ordinary Least Squared (OLS) estimation has been using in order to estimate the parameters of the recreational demand equation and the maximum likelihood method seems more appealing for the purpose of analyzing truncated samples due to the non-negative values and the trips occur in integer values (Creel and Loomis, 1990). Further the ordinary regression methods require the dependent variable to take on values over the full range of real numbers as it leads to biased coefficient estimates in the analysis of recreational demand curves.
Assessing the opportunity cost of time is a major issue in recreation demand analysis as ignoring the time cost can generate significant bias in the analysis. Researchers recognize the importance of the opportunity cost of time but forced to make strong assumptions due to the unavailability of a direct methodology to address it. The often-used strategy is to use a fraction of wage to evaluate time costs. Researchers have extended recreational demand studies to compute the welfare loss through wetlands disintegration (Farber, 1996), preserving through restrictions on development (Grigalunas et al., 2004) as well as in public investment (Mcgrath, 2006).

**THEORETICAL FRAMEWORK**

Individual preferences for non-market goods are derived in correspondence to the costs of travel to acquire is known as travel cost method. This method is predominantly applied to outdoor recreation modelling and is applicable to valuation of certain amenities in biodiversity and ecosystem. It is often assumed, that there is an associate cost with the recreational experiences as a direct or an opportunity cost. The change of the quality or quantity can be valued through the demand function for visiting the site that is being studied. There are range of issues including; analyst’s judgements with regard to the treatment of costs, extent of the access (closer sites with large number of visitor and restricted areas with no value under the TC), and difficulty in recognising the importance or existence of a site (Chee, 2004; Farber et al., 2002).

Travel cost model is based on that the cost of travelling to a site as an important component of the full cost of a visit and also wide variation in travel costs across any sample of visitors to that site. According to McConnell (1992), the individual's utility “u” depends on bundle of other commodities (x), number of visits to the recreational site (r), quality of the recreational site (q); and can be expressed by \( u = u(x, r, q) \).

The consumer faces the budget constraint: \( M + pw \cdot t_w = x + c \cdot r \) , where "M" is exogenous income "pw" is wage rate "t_w " is hours of work and c is monetary cost of a trip.

In addition to the above budget constraint, the consumer faces the following time constraint: \( t^* = t_w + (t_1 + t_2) \cdot r \) , where \( t^* \) is total discretionary time, \( t_1 \) is round trip travel time, and \( t_2 \) is time spent at site. Substituting the \( t_w \) to budget constraint; \( M + pw \cdot t^* = x + r[c + pw(t_1 + t_2)] \). This equation implies that the total income of the individual is spent on recreation site as well as the bundle of other commodities.

Total income has two facets i.e. the exogenous income and the potential income earned by allocating all the available time for work. Consumer's expenditure includes cost of the other commodities and cost of recreation. The price of recreation (Pr) \( [c + pw(t_1 + t_2)] \) includes the monetary cost of travel to the site (c), the time cost of travel to the site and the cost of time spent at the site \( (t_1 + t_2) \). The monetary cost of travel has two
components; the admission fee and the monetary cost of travel. If the admission fee represents by \( f \) and the monetary cost of travel is given by \( p \cdot d \cdot d \) where \( p \cdot d \cdot d \) is the cost of travel/Km and \( d \) is the distance travelled. Thus, the utility maximization problem of the consumer can be represented as: \( \text{Max: } u(x,r,q); \text{St. } M + pw \cdot t^* = x + r \cdot \{ f + p \cdot d \cdot d + pw(t_1 + t_2) \} \). The Lagrangian function of the maximization problem is: \( L = u(x,r,q) + h(M + pw \cdot t^* - [x + r \cdot \{ f + p \cdot d \cdot d + pw(t_1 + t_2) \}] \) where \( h \) is the marginal utility of money income.

By using the first order necessary conditions of the utility maximization problem are: \( M + pw \cdot t^* = x + r \cdot \{ f + p \cdot d \cdot d + pw(t_1 + t_2) \} \). This equation shows the consumer's income to his expenditure. Solution to the above equations provides demand function for number of visits to the recreation site that can be expressed as: \( r[p \cdot r(f,p \cdot d \cdot d,pw,t_1,t_2),M,Q] \)

Economic valuation of a recreational site involves the estimation of the demand for recreation through calculation of the associated consumer surplus. Observable Marshallian demand curve is used to estimate the value.

Those who live close to the recreational site would be expected to make more visits to the site as implicit price measured in terms of travel and time cost is lower than the other visitors. Therefore, according to the law of demand the visitation rate should have a negative relation to the travel cost. Consumer surplus is expected to be lower for the other visitors than for the visitors from adjacent. Thus, the demand function for an un-priced commodity can be estimated by using visitation rate and the travel cost that can be used to calculate the total consumer surplus or the welfare derived from the recreational site.

In this study, the recreational demand of local visitors was derived through individual travel cost method (ITCM), where the number of visits that the individuals actually made to the site during a specified period of time that depends on the travel cost, time costs, monthly household income and other individual characteristics.

Then the Zonal Travel Cost Method (ZTCM) was applied to derive the recreational demand of foreign visitors, where the site has very low individual visitation patterns.

**METHODOLOGY**

**Study site**

Negombo is one of foremost cities in Sri Lanka, located on the west coast of the island and at the mouth of the Negombo Lagoon in Western Province. Negombo is the fifth largest city and the second largest city in the Western province after Colombo. Negombo is also the administrative capital of the Negombo Division. It is one of the key commercial hubs in Sri Lanka with about 128,000 inhabitants within city limits. The economy of Negombo is mainly based on tourism and fishing industry. Although the lagoon is state
owned the surrounding areas are partly state owned and partly private. Over 100,000 people live in Negombo lagoon area where livelihoods of most of them are based mainly on fishing and natural resource harvesting, with a minority of residents earning income from employment and small-scale trade. The lagoon area is characterised by high levels of poverty. The clearing of mangroves for housing projects, cutting of mangroves for firewood and illicit manufacture of liquor are the major threats been facing by the lagoon.

The estuary socially perceived as a major tourist destination and ideal place of luxury and tropical life style with those who want quick access to international airport and Colombo city. Estuary includes Muthurajawela Marshland, which has a substantial biological value with the protected mangroves that are home to over 190 species of wildlife.

**DATA COLLECTION AND DATA ANALYSIS**

By using the inputs of our primary study, we have selected highly dense 9 recreational and tourist sites but not hotels or restaurants. Data were collected from those sites that were located within the study area during five months started from December, 2016 to April, 2017. Data were collected from Monday to Sunday (to identify the variation within weekdays and weekends) and also 4th week of Dec, 3rd week of Jan, 2nd week of Feb, 1st week of Mar, and 4th week of April to identify the seasonal variation in visits. Primary data were collected from pre tested and numbered questionnaire and the secondary data from Sri Lanka Tourism Development Authority. Data were collected at the entry point and from those only who were over the age of 16 and, only one member per group. At the end of five months we had 1055 filled questionnaires from local (domestic) respondents and we removed all the questionnaires that were filled by respondents who were visiting the site from more than 25km distance. This was done in order to treat very low visiting rates and multi-destination trips. It is difficult to allocate the travel cost to different recreational sites visited by multiple sites visitors, and it may overestimate the travel cost if the visitors stop at other sites. But this was minimized by restricting respondent within 25km and within city limits. Then there were 990 pre-numbered questionnaires that were filled by respondents who were visiting the site from Negombo city limit. Then we generated random numbers and weighted the sample of 330 visitors to capture the variation by obtaining a representative sample. Recreational data were collected only from 100 foreigners due to lack of cooperation. We consider all the respondents, as the sample was very small.

Recreational demand of local visitors was were derived through ITCM and number of average trips per month taken by an individual to the recreational site was taken as the dependent variable. The explanatory variables include the travel cost per individual to the site, age, and household income. Gender, type of employment, educational level, and marital status were used as dummy variables. Travel cost was derived by aggregating
round trip travel cost to the site and opportunity cost of the time. Different modes of transport were considered and average per km travel cost was calculated using the data from the questionnaire.

Total time was derived by adding round trip time with the onsite time. Time cost was derived by multiplying a fixed fraction (0.004/hr on weekday and 0.002/hr on weekends) of the wage rate as proxy to the opportunity cost of time. The basic count data model that satisfies discrete probability distribution and non-negative integers is Poisson regression. Therefore data were analyzed by using negative binomial regression in generalization of Poisson regression by generalized linear model. Consumer surplus of a local person per year was derived by using the travel cost and average visiting rate.

Recreational demand of foreign visitors was derived through ZTCM. Visitation rate was taken as the dependent variable and it is derived by collecting data on the number of visitors and their country of origin was collected. Only eight countries were considered and others were excluded since the number of visitors from these countries were very low or one during the period of the study. The countries considered in this assessment include USA, England, Germany, Netherland, Australia, Malaysia, Singapore and India. Travel cost per individual to the site, age, and income were used as the explanatory variables while gender, type of employment, educational level, and marital status were used as dummy variables. Travel cost was derived by aggregating airfare, round trip travel cost to the site, accommodation cost and opportunity cost of the time. Including airfare gives recreation value for Sri Lanka rather than recreation value of lagoon. Therefore, a fixed fraction (0.01) of airfare, accommodation cost at Negombo, and transport cost from hotel to the lagoon was taken as the travel cost. Time cost was derived as a fixed fraction (0.004) of income. Per capita income for the country was used as the income. The same method was used to estimate the consumer surplus/recreational benefits accrued by foreigners. Visiting rate was calculated by dividing the total count of visitors to the lagoon from total number of visitors to Sri Lanka that was obtained from the Sri Lanka Tourism Development Authority. Based on normal p-p plots and variance inflation factors, OLS regression model was fitted for the visitation rate.

RESULTS AND DISCUSSION

Table 1 shows the demographic characteristics of local respondents. The average visiting rate of the respondents was 2 times with a minimum of 1, and a maximum of 7 years and a standard deviation of 1. The monthly income of the respondents varied considerably with a standard deviation of LKR 48,137. The mean monthly wage of the respondents was LKR 54,195 while the maximum was LKR 450,000. Majority of the visitors were ranked above the national urban minimum monthly income. Average travel cost was LKR 232 with minimum and maximum of LKR 30 and LKR 1000 respectively.
In the sample, nearly three fourths (n= 234) of the visitors were male while approximately 65% percent of the visitors were married.

**Table 1 Demographic -Local respondents**

<table>
<thead>
<tr>
<th>Demographic factors</th>
<th>Count</th>
<th>Per (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25</td>
<td>78</td>
<td>23.6%</td>
</tr>
<tr>
<td>26-35</td>
<td>93</td>
<td>28.2%</td>
</tr>
<tr>
<td>36-45</td>
<td>93</td>
<td>28.2%</td>
</tr>
<tr>
<td>over 55</td>
<td>66</td>
<td>20.0%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>234</td>
<td>70.9%</td>
</tr>
<tr>
<td>Female</td>
<td>96</td>
<td>29.1%</td>
</tr>
<tr>
<td>Marital stage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Un-married</td>
<td>114</td>
<td>34.5%</td>
</tr>
<tr>
<td>Married</td>
<td>216</td>
<td>65.5%</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>24</td>
<td>7.3%</td>
</tr>
<tr>
<td>GCE O/L</td>
<td>102</td>
<td>30.9%</td>
</tr>
<tr>
<td>GCE A/L</td>
<td>120</td>
<td>36.4%</td>
</tr>
<tr>
<td>Degree</td>
<td>84</td>
<td>25.5%</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>36</td>
<td>10.9%</td>
</tr>
<tr>
<td>Employed</td>
<td>192</td>
<td>58.2%</td>
</tr>
<tr>
<td>Freelancer</td>
<td>60</td>
<td>18.2%</td>
</tr>
<tr>
<td>Pensioner</td>
<td>21</td>
<td>6.4%</td>
</tr>
<tr>
<td>Student</td>
<td>21</td>
<td>6.4%</td>
</tr>
</tbody>
</table>

Source: Based on survey data

More than 75 percent of the respondents had a secondary education while the less literate percentage was comparatively low. Only 17% of the respondents were unpaid family workers or students over 16 years.

**Table 2 Demographic -Foreign respondents**

<table>
<thead>
<tr>
<th>Demographic factors</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-25</td>
<td>23</td>
<td>23%</td>
</tr>
</tbody>
</table>
Table 2 shows the demographic characteristics of foreign respondents. Only 8 countries (Figure 1) were considered and the monthly income of the respondents varied considerably with a standard deviation of USD 20,642. In the sample, nearly three fifth (n= 61) of the visitors were male while approximately 60% percent of the visitors were married. Only 3% of them were below the high school education. Only 6% of the respondents were unpaid family workers or students over 16 years.
The purpose of visiting lagoon was examined for both local and foreign visitors. A high percentage of local visitors in the sample visited the site for the purpose of meeting friends while fishing, swimming, and boating were the other major interactive activities (Figure 2).

A high percentage of foreign visitors in the sample visited the site for the purpose of watching sunset while boating, swimming, and photography were the other major interactive activities (Figure 3).

### Figure 2 Purpose of visit-Local residents

Source: Based on the survey data
Recreational demand for local visitors was derived through ITCM and was analyzed by using negative binomial regression in generalization of Poisson regression by generalized linear model. The negative sign and the significance of the travel cost variable suggest a downward sloping demand curve and indicate that the visitation rate decreases as the travel cost increases. Consumer surplus of a local person per year was derived by using the travel cost and average visiting rate.

All the occupational categories show a significant (95% CL) positive impact on the visitation rate with pensioners and freelancers with highest impact. The effect of income was also significant and leads to conclude that a higher income and the availability of more leisure time produce a higher visitation rate. All the other variables were not significant and lead to conclude that the age, gender, marital stage and educational level has no impact to the visitation rate.

Consumer surplus presents the difference between the individual willingness to pay and the actual expenditure, which was derived as LKR 5,228/yr/visitor. Social welfare value or the aggregate consumer surplus can be derived by using the total annual visits by the population of visitors to the site. Since there was no official estimate of the annual population of visitors to the site, population within Negombo city was assumed as the population of visitors. Urban population was taken due to two reasons; (a) all the respondents in sample were taken within distance of 25Km and, (b) majority of the visitors in sample were ranked above the national urban minimum monthly income. Hence, we estimated the total social welfare for the population of visitors as USD 4.7 million.
Recreation demand for foreign visitors was derived through ZTCM, and was analysed through OLS regression model that was fitted for the visitation rate. Visiting rate was calculated by dividing the total count of visitors to the lagoon from total number of visitors to Sri Lanka that was obtained from the Sri Lanka Tourism Development Authority. The negative sign and the significance of the travel cost variable suggest a downward sloping demand curve and indicate that the visitation rate decreases as the travel cost increases. The effect of per capita income, education and marital stage were also significant and leads to conclude that a higher income, higher educated and married foreigners produce a higher visitation rate.

Table 3 Social welfare from the foreign visitors

<table>
<thead>
<tr>
<th>Country</th>
<th>Consumer surplus/visitor/Yr (USD)</th>
<th>Number of annual visits according to the sample Method (a)</th>
<th>Social welfare Method (a) USD Million</th>
<th>Annual visitors to the Sri Lanka Method (b)</th>
<th>Social welfare Method (b) USD Million</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>522.0633</td>
<td>96</td>
<td>0.050118</td>
<td>356,729</td>
<td>186.2351</td>
</tr>
<tr>
<td>Malaysia</td>
<td>911.3167</td>
<td>48</td>
<td>0.043743</td>
<td>24,727</td>
<td>22.53413</td>
</tr>
<tr>
<td>England</td>
<td>1169.141</td>
<td>216</td>
<td>0.252534</td>
<td>188,159</td>
<td>219.9844</td>
</tr>
<tr>
<td>Australia</td>
<td>1485.667</td>
<td>60</td>
<td>0.08914</td>
<td>74,496</td>
<td>110.6762</td>
</tr>
<tr>
<td>Germany</td>
<td>1376.542</td>
<td>72</td>
<td>0.099111</td>
<td>133,275</td>
<td>183.4587</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1525.747</td>
<td>168</td>
<td>0.256325</td>
<td>41,373</td>
<td>63.12411</td>
</tr>
<tr>
<td>USA</td>
<td>1535.815</td>
<td>96</td>
<td>0.147438</td>
<td>54,254</td>
<td>83.32411</td>
</tr>
<tr>
<td>Singapore</td>
<td>2220.054</td>
<td>72</td>
<td>0.159844</td>
<td>19,033</td>
<td>42.2543</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.0982</td>
</tr>
</tbody>
</table>

Source: Based on the survey data

Consumer surplus was estimated for each country (Table 3) and the highest was recorded for Singapore. Social welfare value can be derived by using the total annual visitors from each country to the site. There was no official estimate or record of the annual foreign visitors to the site. Therefore, social welfare value or the foreigner’s recreation demand was derived in two ways; (a) by taking the average visitors of study as the population, and (b) by taking the average annual visitors to Sri Lanka from different regions and valued derived are USD Million 1.098 and USD Million 911.59 respectively.

CONCLUSION

Travel cost model was used to estimate the recreational demand for Negombo lagoon through welfare that visitors derive from tourism and recreational activities in the Negombo lagoon. The total consumer surplus generated from the wetland for the
foreigners was higher for the total annual tourist visits and would be far higher for the local community if we were to incorporate other use- and non-use values into it.

Both ITCM and ZTCM methods have been used to estimate the recreational value for both local and foreign visitors as an innovative approach while identifying the most influential aspects on visiting rate. The socio-economic variables used in the study reveal important information that should be of interest to resource managers and planners. The consumer surplus derived for both local and foreign visitors demonstrates the trade-off and synergies of sharing lagoon for recreational activities. Lagoon as a tourism destination is not only compatible with local tourism activity but can also contribute to diversifying the recreational activities through the restoration and managing of the sites. Further, the mass tourism and ecological preservation can find synergies in tourists who want to enjoy natural areas and their cultural services while enjoying lagoon and recreational opportunities.

The lagoon carries high potential for development into an important urban recreational site while both concern and criticism are growing regarding the implementation of development. Study highlights the preference of visitors for to enhance the quality of the wetlands as well as the willingness of people to pay for the recreational services provided by the wetlands. The study therefore recommends that the authorities should develop urban recreational activities with least disturbance to the natural environment which include eco-friendly restaurants on stilts, nature trails, board walks, waterfront snack bars and viewing decks for bird watching and sunset. Negombo, as an area experiencing rapid social and environmental transformations, there is a need to develop capacity for coastal ecosystem management to respond to changes and to develop policy directions that can help to enhance the outdoor recreation as well as ecotourism.

POLICY IMPLICATIONS

Coastal ecosystems are incredibly important habitats for wildlife. They also provide valuable recreational benefits to people that further extends when they are located close to urban communities. This idea is examined in this study that highlights two issues to be considered in policy implications: the preference of visitors for there to be an enhancement in the quality of the lagoon view; and the value of recreational services provided by the wetlands. The study therefore recommends that the authorities should design recreational projects with the least disturbance to the natural environment. Further lagoon as an ecotourism hotspot need to be counted in development models. Therefore, the policymakers should chart their development projects to balance the development strategies which emphasize economic growth but do not jeopardize lagoon sustainability.
REFERENCES


Where play become effective: The moderating effect of gamification on the relationship between work stress and employee performance

W.D.N.S.M. Tennakoon
W.M.S.M. Wanninayake

Abstract

Gamification; use of games in the non-gaming contexts is satisfactorily tested for many contexts including education, training and performance. But the gamification was hardly tested for its moderating effect on established relationships. Hence, the aim of this research was to assess the moderating effect of the gamification in manipulating the association between work stress and employee performance. Using quantitative approach, a field survey of randomly selected 310 non-managerial employees from Sri Lankan commercial banks was conducted. Results confirmed the moderating effect of gamification towards work stress and employee performance relationship. Implications suggest to employ gaming elements in controlling the possible adverse effect of work stress on the employee performance.

Keywords: Gamification, Moderator, Performance, Sri Lanka, Work Stress

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INTRODUCTION

Mental and emotional pressure affect performance and productivity of a worker at the job. Work stress occurs when the requirements of the job do not match with the capabilities, resources aspiration or need of the worker. Consequently, it affects the overall job performances and branched in to lower performance, customer service problems, workplace conflicts, grievances and much more (Luthans, 2013).

The National Institute for Occupational Safety and Health (NIOSH) defines work stress as “harmful physical and emotional responses that occur when the requirements of the job do not match with the resources, capabilities or needs of the worker” (NIOSH, 1999, p.6). Furthermore, it states that the work stress leads to poor health and even injury (NIOSH, 1999). People those who undergo high level of work stress may not be satisfied with their job and therefore, they will not be contributing at their best towards organizational goal achievement. Frustration and burnout have been found to be the negative effects of extreme level of stress (Luthans, 2010, 2013; Premavathy & Rafiq, 2014). Further, Luthans (2010, 2013) has mentioned that too much stress from heavy demands, poorly defined priorities and little on the job flexibility may lead health issues. By leaving stress unaddressed, employers invite an increasing unscheduled time off, absence rates and health care costs result in lower performance. Stress is a situation where employee cannot cope with. Inconsistencies in employee’s knowledge, skills, abilities and attitudes as oppose to work demands and pressures in organizations found to be the lead cause of the stress (Jex & Bliese, 1999; Bliese & Jex, 2002; Ratnawat & Jha, 2014). It decreases the ability of employees to control and manage psychological pressures and cannot meet their job duties and responsibilities as a member of the organization.

Work stress is usually thought of negative terms. Stress builds negative work environment and create unsatisfied human behaviours. Stress can increase job dissatisfaction (Reilly, Dhingra and Boduszek, 2014). Job dissatisfaction may occur number of dysfunctional outcomes such as increasing employee absenteeism, employee turnover and decreasing employee performance (Kreitner and Kinicki, 2007). Consequently, work stress has greater impact on employee performance in an organization and very often reported to be negatively affecting the performance (Premavathy & Rafiq, 2014; Reilly, Dhingra and Boduszek, 2014; Kreitner and Kinicki, 2007). Yet, some authors emphasis the necessity of moderate level stress to achieve optimum level of performance (Luthans, 2010; Robbins, 2002). Once, the direction of the association is disregards there are ample empirical evidences to claim that the work stress is related with job performance.

In an ever changing, competitive economic setup, increasing the job performance of the employees and subsequently the performance of the organizations have become survival-critical. Consequently, any issue, direct or indirect, major or minor that is having an impact on performance is utter important for organizations. Based on previously
presented empirical evidences, work stress, among many factors predicts the employee job performance (either negatively or positively) to a greater extent (Maneze, 2005; French & Caplan, 1972; Arnold S Feldman, 1989; Palmer et al., 2004; Ahmed & Ramzan, 2013; Seibt, Spitzer, Blank & Scheuch, 2009; Garge, 2010; Fairbrother & Warn, 2003; Murphy, 2002; Behar & Newman, 1978; Ray, 1982). These individual level dysfunctional job outcomes are well-established to be affecting the job performance of individual employees. Additionally, they affect group/organizational level outcomes too (Gabriele, et al., 2017). Hence, from the organizational standpoint, the strength and the direction of the association between work stress and job performance has to be always manageable.

Gamification; use of games in the non-gaming contexts is satisfactorily tested for many contexts including education, training and performance (Deterding, Khaled, Nacke & Dixon, 2011). Many industrial bodies increasingly utilize the gaming principles for addressing numerous issues of organizational set ups (Aparicio, et al., 2012; Jaroslaw & Krzysztof, 2015). For instance, gamification is been applying in increasing the persistence of treatment plans of both kids and adults (Gerling & Masuch, 2011), raising the engagement of employees (Brewer, et al., 2011), involvement of e-business activities (Santhanam & Webster, 2017), improving student engagement in learning and educational environment (Dicheva, et al., 2015)...etc. Among the tested applications, educational and learning gamification applications were tested extensively. Importantly, gamification is found to be well work with non-attractive activities (Aparicio, et al., 2012; Deterding, Khaled, Nacke & Dixon, 2011; Hamari, et al, 2014). Further, it has been theoretically linked with several constructs, while empirical evidences for the same are prevalent frequently (Kim, 2008; Hamari, 2014; Huotari & Hamari, 2017). Importantly, it has been conceptualised in numerous areas those can be grouped in to three namely, motivational affordance, psychological outcomes, and behavioural outcomes (Hamari, 2014). Out of them behavioural outcomes so far received a greater attention by both scholars and practitioners (Santhanam & Webster, 2017). Surprisingly, as per Hamari et al (2017) only few studies have focused business or managerial-centred behavioural and psychological outcomes of gamification. Additionally, it was not tested for its intervening effect (neither mediation nor moderation). Meta-analysis review of Hamari et al supported that no study yet used the gamification in controlling the effects of dysfunctional variables on the performance of a system. With the understanding of proven association between work stress and job performance, which is reportedly undesired in many contexts, this study attempted in investigating the role of gamification on the relationship between work stress and employee performance. Additionally, based on the reviewed sources, this is the first of this kind in the Sri Lankan organizational context, particularly in the banking industry of Sri Lanka is used in performing this scientific investigation. As such the main objective of the present study is to test the moderating effect of gamification on the relationship between work stress and employee performance.
Given the market competitiveness, and the burden on the organizational performance, work stress is a crucial issue for every industrial sector. Particularly, in Sri Lanka, employees of banking sector too are found to be undergo extreme level of work stress (Siyambalapitiya & Sachitra, 2019; Prabaharan & Panchanatham, 2014). This is due to the complexities and competitiveness of banking sector (Gabriele, Giulio, Milda, Chiara, Antonio, Javier, Annamaria and Nicola, 2017). Hence, the authors selected the employees of banking industry in Sri Lanka to perform the research study.

Next, the theoretical background of each key variable is reviewed.

**THEORETICAL BACKGROUND**

**Employee performance**

Employee performance is an individual level measure of work output. It is often known as performance or individual performance too. Job performance relates to the act of doing a job. On a very general level, job performance can be defined as “all the behaviours of employees engage in while at work” (Jex, 2002). It is true that a fair amount of employee’s behaviour displayed at work is not necessarily related to job specific aspects. Hence, job performance more commonly refers to how well someone performs at his or her work. Aguinis (2013) stated that “the definition of performance does not include the results of an employee’s behaviour, but only the behaviours themselves” (p.11). As to him, performance is about behaviour or what employees do, not about what employees produce or the outcomes of their work (Aguinis, 2009, 2013).

Job performance is a mean of reaching a goal or set of goals within a job, role, or organization (Campbell, 1990), but not the actual consequences of the acts performed within a job. Campbell (1990) affirmed that job performance is not a single action but rather a “complex activity”. Performance in a job is strictly a behaviour and a separate entity from the outcomes of a particular job which relate to success and productivity.

Individual performance is of high relevance for organizations and individuals alike. Showing high performance when accomplishing tasks results in satisfaction, feelings of self-efficacy and mastery (Bandura, 1997; Kanfer et al, 2005). Moreover, high performing individuals get promoted, awarded and honoured. Career opportunities for individuals who perform well are much better than those of moderate or low performing individuals (Van Scotter, Cross, & Motowidlo, 2000).

Every competitive organization need optimum employee performance, as successful organizational performance depends on employee’s creativity, innovation and commitment (Ramlall, 2008). Employee Performance is the successful completion of tasks by a selected individual or individuals, as set and measured by a supervisor or
organization, to pre-defined acceptable standards while efficiently and effectively utilizing available resource within a changing environment.

Performance is a multi-dimensional concept. On the most basic level, Borman and Motowidlo (1993) distinguish between task and contextual performance. Task performance refers to an individual’s proficiency with which he or she performs activities which contribute to the organization’s ‘technical core’. This contribution can be both direct (e.g., in the case of production workers), or indirect (e.g., in the case of managers or staff personnel). Contextual performance refers to activities which do not contribute to the technical core but which support the organizational, social, and psychological environment in which organizational goals are pursued (Frese, Garst & Fay, 2000). It is too a multidimensional and not represent a single set of uniform behaviors (Van Dyne & LePine, 1998). On the other end, concept of adaptive performance is defined in general terms as an individual’s ability to adapt to dynamic work situations (Hesketh & Neal, 1999). Employees demonstrate adaptive performance by adjusting their behaviours to the requirements of work situations and new events (Pulakos et al., 2000). Among many proponents, Pulakos et al. (2000) were the first to propose a global model of adaptive performance comprising of eight dimensions.

In recent years, researchers paid attention to specific aspects of task performance. For example, innovation and customer-oriented behaviour become increasingly important as organizations paid greater emphasis on customer service (Anderson & King, 1993; Bowen & Waldman, 2018).

**Work Stress**

Job stress or occupational stress differs from stress in general. Job stressors may refer to any characteristic of the workplace that poses a threat to the individual. These job stressors can relate to either job demands a person cannot meet or the lack of sufficient resources to meet job needs (French & Caplan, 1972).

Occupational stress has been variously described. French and Caplan (1972) have defined occupational stress as any characteristic of the job environment which poses a threat to the individual either excessive demand or influencing suppliers to meet his needs. Job stress is organizational in nature, and may occur when there is misfit between an employee's abilities and the skills required to perform the job effectively, Job stress is therefore an inevitable feature in almost all occupations, job stress is an awareness of feeling of personal dysfunction as a result of perceived conditions or happenings in the workplace, and individual's psychological and physiological reactions to these uncomfortable, undesirable or threatening workplace conditions.
People with varied individual’s characteristics react to events in deferent ways. When job stress disturbs one’s equilibrium, people frequently deviate from their normal behaviour that would affect their work outcomes. It is a condition arising from the interaction people and their job characterized by changes within people that force them to deviate from their normal functioning (Behar & Newman, 1978). Behar and Newman (1978) defined job stress as the interaction of work condition with worker’s traits that changes normal psychological functions. This confirms that work stress affects the performance. Murphy (2002) defined job stress as work demands that exceed the worker's coping ability. It is often referred as an adaptive response to an external situation that results in Physical, psychological and/or behavioural deviation for organizational participants/employees. Stress is also viewed as the reaction of individuals to new threatening factors in their environment (Fairbrother, Warn: 2003).

As to Karasek (1979) this is important for both industry & employees. It is recognized world-wide as major challenge to individual mental and physical health, and organizational health (ILO, 1986). According to Arnold & Feldman (1989) stressed workers are also more likely to be unhealthy, poorly motivated, less productive and less safe at work and their organizations are less likely to succeed in a competitive market. Job stress is generally identified as a result of excessive pressure or demands placed on employees at work. In other words, work related variables (job stressors), when interpreted by the individual (cognitive interpretation), may lead to stress. As such, work stress meant to the harmful physical and emotional responses that occur when job requirements do not match the worker's capabilities, resources, and needs. This is may lead in reluctance to come to work and a feeling of constant pressure accompanied by the general physiological, psychological and behavioural stress symptoms (NIOSH, 1999). As per Larson (2004), people experience job stress when they have little or no control over their jobs or when work demands exceed their abilities. By some estimates work-related stress costs, the national economy a staggering amount in sick pay, lost productivity and health care and litigation costs (Palmer et al., 2004).

Kreitner and Kinicki (1998, 2004)) proposed two variables in job stress; stressors and outcomes. Stressors lead to job stress and provide variety of outcome. The individual differences tend to moderate the stressor stress-outcome relationship (Kreitner and Kinicki (1998, 2004). Luthans (2010) suggests absenteeism, escaping from work responsibilities, arriving late, leaving early, deterioration in work performance, more of error prone work, memory loss, cribbing, over-reacting, arguing, getting irritated, anxiety, deteriorating health, more of accidents, improper eating habits (over-eating or under-eating), excessive smoking and drinking, sleeplessness, etc. Healthy work and family life could be achieved through effective stress management strategies in an organization. Otherwise, the detrimental repercussions of stress on the employees as well as their performance would be inevitable and uncontrolled.
Stress is a multidimensional construct. Beeh and Newman (1978) pointed out that stress is a function of uncertainty that may occur at individual, group and organizational level. Robbins (2007) too reported two conditions under which the potential stress may lead to actual stress. They are uncertainty over the outcome and the importance of the outcome (Robbins, 2007). He (2007) concluded that the stress is highest for those individuals who perceive that they are uncertain as to whether they will win or lose and the lowest for those individuals who think that winning or losing is a certainty. Similarly, when the winning is an important outcome the stress tends to be high while it will be low for unimportant outcomes. Ray (1982) viewed stress as a result of discrepancy between actual and desired state where the stress is too high for greater discrepancies.

Selye (1974) mentioned that any kind of normal activity can produce considerable stress without causing any harmful effects. Robbins (2007) too emphasised that moderate level of stress is required for optimum level of performance while ill-stress and distress both lead to poor performance. Luthans (2010) in advising the management of stress noted that the stress should be managed rather than weeding off. As oppose to this idea, Chaplain and Van Harrison (1982) perceived stress as only in negative contents, to refer to any of the objective misfit, a variable in the objective environment which is presumed to pose a threat to the person, a variable in the subjective environment which the person perceives as threatening.

Stress found to be resulted by many factors, such as external environment, organizational structure and culture, job characteristics, personal factors, work relationship and domestic/social situation have been reported as the causes of stress (Linden, 2004; Robbin, 2002). Figure 1 and Figure 2 exhibit the models of stress by Robbins (2002) and Linden (2004) respectively. Both explain the potential sources and consequences of stress.
Figure 1 Model of Stress

Where play become effective: The moderating effect of gamification

Figure 2. Model of Stress


Both models presented relatively identical groups of influencers affecting and resulting the stress. Much of the studies of stress based on the model proposed by the Robbins (2002). Work stress; the independent variable of the present study was operationalized based on the Robbin’s model of stress considering the relevance of the key dimension of stress applicable to the chosen sample of the study; the bank employees.
Gamification

The term gamification originated in the digital media sector which was first documented in 2008 (Deterding, Khaled, Nacke & Dixon, 2011). Later from 2010 onward rapid adoption of the concept led popularized it among researchers and practitioners.

In recent past, gamification has increased interest both in industry and academia (Kim, 2008; Hamari, 2014). Gamification can be defined as the approach of using game design elements into a non-game context (Deterding, Khaled, Nacke & Dixon, 2011). Gamification is a trending topic as a mean of supporting user engagement and raising positive aspects of performance such as increasing quality and productivity of activities, social interaction and user activities (Hamari, 2013). Gamification has become a tool of motivating people towards targeted behaviours. Considering the widespread use of the concept, Robertson (2010) suggested that the gamification would sooner available at the banks, gyms, jobs, government and healthcare.

Huotari and Hamari (2012:2017) has mentioned that gamification is a process of enhancing services for game-full experiences in order to support users overall value creation while Liu, Santhanam and Webster (2017) say that gamification is the incorporation of game design elements into a target system while retaining the target system’s instrumental functions.

Many companies have realized that the concept of gamification has a power to change human behaviour. On the other hand, Jaroslaw & Krzysztof (2015) have stated that “Gamification is widely perceived as a magic bullet – a universal solution to a variety of contemporary problems, not only efficient and cheap, but also infusing our world with lots of fun” (p.6). Furthermore, they stated that the term gamification presents a critical approach. The approach usually put on the fun-factor doesn’t explain anything; in fact, it includes the social, political and cultural consequences of gamifying all circumstances of our lives.

Gamification is the use of game play mechanics for non-game applications (also known as ‘funware’), particularly consumer-oriented web and mobile sites, in order to encourage people to adopt the applications. It also strives to encourage users to engage in desired behaviours in connection with the applications. Gamification works by making technology more engaging, and by encouraging desired behaviours, taking advantage of humans’ psychological predisposition to engage in gaming. The technique can encourage people to perform chores that they ordinarily consider boring, such as completing surveys, shopping, or reading websites.
Implementing of gamification gives many advantages and benefits. Most of the companies are choosing to implement gamification to improve productivity and competitiveness. Those advantages are improving productivity, increasing motivation, encouraging creativity, strengthening communication process, favouring employee’s engagement, introducing innovative dynamics, developing specific skills and transmitting corporate images.

Gamification can be used as a tool to improve employee engagement by implementing a tracking and rewarding system. Points can be tracked by attending events such as education talks, working overtime, winning awards or new business, completing tasks ahead of time and filling in time sheets (Levon, 2016). It can also be used in the human resource management. Hackertrail has used gamification to recruiting employees by pitting two developers against each other in online coding challenges, with main prize being a job interview (O’Connell, 2015). Furthermore, Deloitte has used the concept in training with transparency in scoring so players can compare their performances against others during a training program (O’Connell, 2015).

Gamification allows users to get more out of their real lives compared to the games they play as a form of escapism (Kim, 2015; Osheim, 2013). Gamification can give the fun of playing games into the real world, and is exciting because it helps to make the hard stuff in funny life (Smith, 2015).

With gamification integrated into the workplace the job itself becomes a fun and enjoyable experience. Team members can compete with one another to achieve higher customer service ranking which leads to an increase in engagement through friendly competition. By adopting gamification into the workplace, companies are more likely to see lower turnover, improved productivity (Hamari, Koivisto, & Sarsa, 2014). Therefore, it is clear that the concept of gamification has much importance for engaging with many processes of the challenging world of work.

**Work Stress, Job Performance and Gamification**

Job stress has become a frequent problem across occupations as many organizations nowadays pressurize their employees with higher performance target to outrun their competitors. Additionally, transformed patterns of work-life balance create complexities in delivering the demands of both parties. Taken together, numerous stressors drive individuals in to challenging and stressful situations. The work stress and job performance relationship has extensively investigated by different scholars in diverse contexts. Some reported that it is positively affecting (Manze, 2005; French & Caplan, 1972; Arnold $ Feldman, 1989; Palmer et al., 2004) while some argued it to be negative association (Ahmed & Ramzan, 2013; Seibt, Spitzer, Blank & Scheuch, 2009; Garge, 2010; Fairbrother & Warn, 2003; Murphy, 2002; Behar & Newman, 1978; Ray, 1982). Yet,
considerable number of studies evidenced the mixed results too (Robbins, 2007; Luthans, 2010; Kreitner and Kinicki, 1998) Hence, many believe it can either be helpful or harmful to job performance.

Job related stress according to Maneze (2005) has been interpreted by most companies as a low alarming situation but it poses a very high impact on individual’s health that also affect directly his/her performance. When its absent, job challenge is limited, and performance become low. But as stress gradually increases, job performance trends to increase because stress helps the employee to gather and use resources to meet the job requirements. Garge (2010) has mentioned that job or occupational job stress is an outcome of mismatch between the individual capabilities and organizational demand. Work stress is always present among employees and it can be reduced by improving the working conditions and quality of benefits in the companies (Seibt, Spitzer, Blank and Scheuch, 2009). Rising job has become a challenge for the employers and higher level of job stress result in a low productivity, increasing absenteeism and collection to other employee problems like alcoholism, drug abuse, hypertension and host of cardiovascular problems (Meneze, 2005).

In contrast, several other studies concluded that job stress negatively affect employee performance considering the various factors involved and especially employee job satisfaction (Ahmed & Ramzan, 2013). Regardless of the nature if the association, the two concepts are comely theorised to be connected.

Despite the freshness of gamification as a concept, games have been played since the cave men wandered the earth (Bunchball, 2010). But it is not only humans who enjoy games. When watching nature shows one often sees cubs playing with each other as a way to learn skills for their adult life. More sophisticated animals, such as dolphins, are known for playing even when they are older. It seems, as Aaron Dignan concludes, like games are nature’s own reward system and that we are hard wired to find them engaging, a conclusion that naturally includes humans as well (Dignan, 2011). The places which have applied gamification characterized by healthy working setup and with high employee morale & increased productivity (Gears and Braun, 2013). Gamification can be used to create easier problem-solving methods by introducing at working environment with understanding of the problems arising at a work place (Hammed et al., 2017). This helps the business activities run smoothly and decrease unwanted pressures from employees (Saima, Sara, Rizwan, Dalia & Lolita, 2018). Though unwanted pressure directly influences for the stressful mind the term gamification is helpful for avoiding it.

Hamari et al. (2014), Seaborn & Fels (2015) has concluded that gamification in general seems to provide somewhat positive effects on user performance. An author, one of the most meaningful psychological models of work engagement has stated that engaged
employees felt energetically and emotionally connected with their job tasks (Maslach, 2011; Maslach, Schaufeli & Leiter, 2001).

Gamification has already established for its positive effect in motivating people for unattractive activities (Hamari et al., 2014 Huotari & Hamari, 2017 Jaroslaw & Krzysztof, 2015). Nevertheless, no study has tested it as a controller of uninvited associations at work. In the world of work, performance is the uppermost target. Improving performance demands controlling ill-effect factors while nourishing the driving factors. The association between work stress is already generalized to be negative in many contexts (Premavathy & Rafiq, 2014; Reilly, Dhingra & Boduszek, 2014; Kreitner & Kinicki, 2007). Based on this knowledge, the present study conceptualized gamification as a moderator on the association between work stress and job performance. More specifically, the objective of the study was to assess the moderating effect of the gamification on the association between work stress and job performance. Accordingly, the hypotheses of the study were:


H2 – Gamification impact the job performance of non-managerial employees of banks in Sri Lanka.

H3 – Gamification moderates the relationship between work stress and employee performance.

**RESEARCH MODEL**

Figure 3 illustrates the research model of the study.
METHODOLOGY

The reasoning approach of the study was deductive and followed a quantitative perspective. The present survey study used a cross-sectional study as it provides a snapshot of result at a given point in time. This type of study seemed appropriate as it can be used within a short space of time and data can be summarized statistically. Field study was used in collecting data for the identified variables of the research model. A self-administered questionnaire collected the data. The instrument consisted of 30 items out of which 5 items assessed demographic factors, 10 items measured the work stress of respondents, 10 items assessed respondents’ attitude relating to their job performance and 5 items assessed the degree of gamification that the respondents are exposed to. Dichotomous and multiple-choice questions ranked the responses of the demographic factors while a 5-point Likert scale was used in scaling the responses for study variables. The response scale ranged from 1 to 5 in which 1 denoted “strongly disagree” and 5 denoted for “strongly agree”. The instrument was tested for its measurement properties and ensured for its validity and reliability. The respondents represented the commercial banking sector of Sri Lanka. The banking sector is characterised by high level of work stress, due to its complexity and competitiveness (Gabriele, Giulio, Milda, Chiara,
Antonio, Javier, Annamaria and Nicola, 2017). Similarly, in Sri Lankan banking sector, employees found to be undergone extreme level of work stress (Siyambalapitiya & Sachittra, 2019; Prabaharan & Panchanatham, 2014). Hence, the research site it believed to be pertinent for testing the theorized assumptions. The study was primarily based on the Kurunegala district of Sri Lanka where there are 13 domestic licensed commercial banks with 156 branches. Total non-managerial work population of these branches is reaching 1800. Based on Morgan's (1970) recommendation on sample size, 325 non-managerial employees were chosen based on systematic random sampling technique. Total of 310 questionnaires were received resulting a 95% response rate. Data analysis was performed using the path analysis with the aid of SMART PLS 3 application.

**RESULTS AND DISCUSSION**

Table 1 illustrates the demographic profile of respondents.

**Table 1. Demographic profile of respondents**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number of employees</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>133</td>
<td>310</td>
<td>43%</td>
</tr>
<tr>
<td>Female</td>
<td>177</td>
<td></td>
<td>57%</td>
</tr>
<tr>
<td><strong>Age (in years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-35</td>
<td>237</td>
<td>310</td>
<td>76%</td>
</tr>
<tr>
<td>36-45</td>
<td>61</td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>46-55</td>
<td>12</td>
<td></td>
<td>04%</td>
</tr>
<tr>
<td><strong>Educational qualifications</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A/L</td>
<td>100</td>
<td>310</td>
<td>32%</td>
</tr>
<tr>
<td>Diploma</td>
<td>180</td>
<td></td>
<td>58%</td>
</tr>
<tr>
<td>Graduate</td>
<td>30</td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td><strong>Working experience (in years)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01-05</td>
<td>145</td>
<td>310</td>
<td>47%</td>
</tr>
<tr>
<td>06-09</td>
<td>156</td>
<td></td>
<td>50%</td>
</tr>
<tr>
<td>09-15</td>
<td>09</td>
<td></td>
<td>03%</td>
</tr>
</tbody>
</table>

Majority (57%) of respondents were female bank employees. Employees of age range 20-35 years dominated the sample (76%). Common education qualification of the sample was diploma qualification. A part from that, there were advanced level qualified respondents and graduate employees too. With respect to working experience, almost all the employees (97%) found to be having less than 10 years of experience. It implies
majority of the respondents are in their early career stage which may be challenging them to balance their capacity and job-related demand. On the other hand, it is an alarming fact of potential work stress. Many of them are in the age range of 20-35 years. Again, an indication of excessive demands from family/personal life too. These factors ensured the relevance of the sample for testing the assumed relationship.

Table 2. Descriptive statistics of the key variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Stress</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual factors</td>
<td>310</td>
<td>3.3753</td>
<td>.69210</td>
<td>-.285</td>
</tr>
<tr>
<td>Group factors</td>
<td>310</td>
<td>3.6398</td>
<td>.80295</td>
<td>.099</td>
</tr>
<tr>
<td>Organizational factors</td>
<td>310</td>
<td>3.0468</td>
<td>.74623</td>
<td>-.019</td>
</tr>
<tr>
<td>Gamification</td>
<td>310</td>
<td>3.2168</td>
<td>.61857</td>
<td>.260</td>
</tr>
<tr>
<td>Employee Performance</td>
<td>310</td>
<td>3.1629</td>
<td>.49790</td>
<td>.662</td>
</tr>
</tbody>
</table>

Work stress was at moderate level and appeared relatively identical among three main dimensions of it. Gamification and employee performance too showed a moderate level as per the response scale. None of the variable’s standard deviation was greater than one; an indication of relatively identical behaviour of key variable across sample elements.

Direct and indirect paths towards the endogenous variable were assess to identify the possible direct and indirect effects by the independent and moderator variable on the dependent variable. The initial model was developed using all the indicators of three variables. As per the operationalization, ten indicators for each were used in assessing the independent variable, work stress and the dependent variable, job performance. Five indicators were adopted for measuring the moderator variable, gamification (Figure 4).
Based on the factor loadings, the refined model only included seven indicators for work stress, six indicators for job performance and four indicators for gamification. Results of the path analysis indicated that the two direct effect and the moderator effect are statistically significant at 95% confidence level. Together the work stress and gamification were capable of predicting the behaviour of job performance at a statistically significance level. As such the $R^2 = 0.546$, $p = 0.000$. Work stress negatively and significantly associated with the job performance. Further, the main focus of this study, the moderating effect of gamification is too significant (Figure 5).
The bootstrapping process evidenced the statistical significance of the overall mode, and the three effects (work stress = -0.613, p = 0.001, moderation effect of gamification = 0.413, p = 0.000, and gamification = 0.425, p = 0.000). All the properties of the model comply with the standard values and are exhibited by Table 3.

**Table 3. Measures of the Model**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cronbach Alpha</th>
<th>rho A</th>
<th>Composite Reliability</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Performance</td>
<td>0.875</td>
<td>0.889</td>
<td>0.923</td>
<td>0.800</td>
</tr>
<tr>
<td>Moderator</td>
<td>0.797</td>
<td>0.800</td>
<td>0.881</td>
<td>0.711</td>
</tr>
<tr>
<td>Work Stress</td>
<td>0.818</td>
<td>0.822</td>
<td>0.891</td>
<td>0.732</td>
</tr>
</tbody>
</table>

The model is evidenced to be statistically significant and powerful as all the measures of reliability and validity comply with the standards figures.
Where play become effective: The moderating effect of gamification

All the hypotheses are supported by the results and confirmed by the p-value of path coefficients (figure 5). The H1 assumed an association between work stress and job performance. The results confirm the existing generalized negative association between work stress and job performance (-.613, p = 0.001). Robbins (2007) alarmed that the potential stress may lead to actual work stress and is often associated with job performance negatively. Many others researchers too have already generated similar outcomes (Ahmed & Ramzan, 2013; Seibt, Spitzer, Blank & Scheuch, 2009; Garge, 2010; Fairbrother & Warn, 2003; Murphy, 2002; Behar & Newman, 1978; Ray, 1982). The strength of the relationship demonstrated to be moderated. Previous studies have investigated the same association from moderate to very strong based on varied research setups. Thus, the finding of the study complies with the negative moderate level association between work stress and job performance.

Work stress is multi-dimensional. It may possess diverse effect on individual, group and organizational levels. Thus, the impact of work stress might lead to undesired results not only at individual level, but also as a collective effect on group and/or organizational level too. Hence, the work stress at individual level should not be underlooked. In particular, the sample represents the non-managerial employees of Sri Lanka banking sector. Extensive number of studies evidenced for the high level of work stress at Sri Lankan banking industries (Siyambalapitiya & Sachitra, 2019; Prabaharan & Panchanatham, 2014). Banking industry, in general is characterized by the high level of competition. Further, they operate in highly volatile markets: financial/ investment. These market pressures, at the operational level create over-boarded individual targets, which the employees often unable to cope with. The findings of the present study in that line established the existing empirical evidences pertaining to work stress and job performance relationship with respect to non-managerial employees of Sri Lankan banking sector.

The H2 assumed an association between gamification and job performance. The direct path of gamification on the job performance is found positive and statistically significant (0.425, p = 0.000). The strength of the relationship appears to be moderated. Gamification, a fairly new way of raising the motivation and driving the individual attention, motivation and engagement researched to be generating many positive results in the world of work. Nevertheless, the studies reported low to high level of impact, the effect found to be positive across almost all the reviewed studies (Bunchball, 2010; Dignan, 2011; Gears and Braun, 2013; Hamari et al., 2014, 2017; Seaborn & Fels, 2015). Accordingly, the finding of the resent study confirms the existing state of relationship between gamification and job performance. Yet, the present study is the first of this kind which tested the application of gamification in the Sri Lankan working set up, specifically, the banking sector.

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Thirdly, it was hypothesized that the gamification can moderate the established relationship between work stress and job performance. The work stress is negatively correlate to job performance. Gamification, which is already established to be sharing a positive association with job performance (Bunchball, 2010; Dignan, 2011; Gears and Braun, 2013; Hamari et al., 2014, 2017; Seaborn & Fels, 2015) was tested for its moderating effect on manipulating the established negative association. The moderating path of the tested model is positive and significant (0.413, p = 0.000). Path coefficient, 0.413 is moderate in its strength. Thus, the present study succeeds in establishing the theoretical support for the moderating effect of gamification in the organizational context. Addressing the moderating effect is considered the originality of the present study whereas existing studies so far focused only on the direct effect of it on several endogenous constructs.

Gamification, where gaming principles are used in non-gaming contexts proven to be established for its positive effect on performance. Hence, it is theoretically rational enough to be tested for its moderation effect on a negative association connected with job performance. Findings of the present study supported the said claim theoretically and empirically.

CONCLUSION

Empirical evidences by many researchers held that the relationship between work stress and employee performance is negative. Gamification is too has been confirmed to be positively affecting the job performance. The present study was aimed at testing the gamification as a moderator on to the relationship between work stress and employee performance. The results disclosed a significant moderating effect of gamification on the main effect. Accordingly, the study concludes gamification as a significant moderator of the relationship between work stress and employee performance. The implications of the study are two forth; theoretical and managerial/practical. First, the study unearths the theoretical implication of moderating effect of gamification to affect the negative association between work stress and job performance. This novel theoretical contribution is ahead of the prevailing theoretical linkages of gamification in non-gaming contexts. Second, it holds the practical implication of utilizing gaming elements to raise the desired outcomes at the work place. Specially, when the jobs are too bored and tiring and less-attractive, managers are invited to merge work with gaming elements for better results. Hence, it is suggested to use gaming concept in work settings where work stress is inherent and inevitable due to individual, group and/or organizational determinants. Researchers acknowledged the methodological limitation of the study those may undermine the scientific merit of the findings and suggested future studies to incorporate potential mediators with sound methodological arrangements.
REFERENCES


Where play become effective: The moderating effect of gamification


Abstract

Conspicuousness is a phenomenon which is in wide praxis today, and we need not to go far to observe such consumption conducts that are rooted upon the motives to exhibit one’s monetary strength, to showcase exclusiveness or belongingness to a specific crowd while gaining prestige, respect and status. Yet, much little attention has been devoted towards this obtrusive consumer desire in Sri Lanka and elsewhere in the world. In the light of this, the purpose of this study was to explore the impact of socio-demographic cohorts on the conspicuousness of luxury automobiles in Sri Lanka. This paper reports the outcomes of an exploratory survey conducted using a sample of 200 luxury automobile owners in Sri Lanka to examine the reflection of conspicuousness under different age groups, gender, religions, educational attainment levels, occupations, and monthly incomes. The results highlighted that; there is a downward trend on conspicuous consumption in luxury automobiles as the owners grow older, males are more conspicuous than females, the level of educational attainment and conspicuousness has a negative relationship, employers are more conspicuous than employees and respondents in the lowest income band are most prone towards conspicuousness when compared to other income groups. In the context of Sri Lanka, all socio-demographic antecedents that were incorporated in the scope of the present study showcased to have a significant impact on conspicuous consumption of luxury automobiles. However, the reasoning behind such behavioral patterns warrant further research.

Keywords: Conspicuous Consumption, Luxury Automobiles, Socio-Demographic Determinants, Sri Lanka

JEL Codes: D11, D12, D90, D91, L62
INTRODUCTION

Today, it is a common sight to witness people, clinging on to the luxuriousness and the higher prices of goods in order to demonstrate their purchasing power and social status to others. Moreover, it can be learnt through literature that, people are prone towards purchasing flashy goods not merely for their intrinsic use value \(^1\) but simply, because of the “higher price tags” which reflect much greater values than what is mirrored through their “use values” (Goenka & Thomas, 2019; Murphy, 2018; Sirong, 2016; Kim, 2015). It is in that respect, Conspicuous Consumption, which signifies purchasing of expensive goods to showcase wealth, comes in notion.

It is evident from prevailing literature that, there is an upsurge in conspicuous consumption in developing countries owing to income inequality, relatively significant societal relationships & traditions (customs) and owing to the urge of showcasing one’s pecuniary strength (Narayanan, 2014; Memushi, 2013; Vijayakumar & Brezinova, 2012). Conspicuousness is thus, essentially a timeless and a universal construct, which requires in-depth scrutiny in terms of a developing country like Sri Lanka which is stuck in the middle-income trap.

Even though a number of research studies on conspicuousness could be found in literature (for example: Goenka & Thomas, 2019; Hammerl & Kratischnig, 2018; Perera, et al., 2013; Rucker & Galnisky, 2009), none has examined this aspect, rendering special focus on the impact of socio-demographic drivers, taking the case of luxury automobiles. No studies of this nature have so far been conducted pertaining to the Sri Lankan market either. Thus, the present study not only focuses on a timeless topic but also addresses the research gaps.

In the light of the above, this paper examines the impact of socio-demographic cohorts (age, gender, religion, level of educational attainment, occupation and monthly income) on conspicuous consumption of luxury automobiles in Sri Lanka. The case of automobiles was chosen after an in-depth investigation on past research studies conducted in the field of conspicuous consumption as it is proven that, automobiles are highly linked to conspicuous behavior of man-kind (for example Dong & Koo, 2018; Boonyanuso, 2017; Memushi, 2013).

\(^1\) ‘Use value’ signifies the value rendered towards a good/service based on the characteristics inherent to that particular good/service or in other words based on the ‘functionality’ of the good/service.
REVIEW OF LITERATURE

Theoretical Review

Conspicuous Consumption

“Conspicuousness” is a phenomenon that is being extensively discussed and expansively practiced by common populace in today’s society and we need not to go far to observe such consumption conducts which showcase the pecuniary strength engulfed by motives to showcase superfluous wealth, exclusiveness, belongingness to a specific crowd whilst gaining prestige, respect and status. The theory of Conspicuous Consumption is evolving with time and thus, is dynamic. As asserted by Weber (2011), the community seeks for newer, better and more subtle mannerisms of displaying wealth which is repetitive.

Conspicuous Consumption as termed by its begetter, Thorstein Bunde Veblen in his globally renowned man oeuvre, The Theory of the Leisure Class is the consumption of expensive goods and services in order to showcase wealth. In accordance with Veblen’s definition Murphy (2018), in his study, theorizes conspicuous consumption as the purchasing of goods or services merely for the purpose of public display of wealth, on top of covering basic needs. As affirmed by Jain & Sharma (2018) conspicuous consumption is the purchasing of luxury goods and services in order to manifest one’s economic power and the accumulated wealth of the buyer publicly. Similarly, Yan in his study on Luxury Consumption, claims that consumers conspicuously consume goods which have a higher price tag than a normal one so that they could showcase their wealth and thereby gain social status even though such products might not necessarily hold great quality (Yan, 2004).

While the exhaustive examination on past and prevailing literature suggest that, the term ‘Conspicuousness’ which was originally introduced by Veblen, depicts his lasting influence among notable scholars across many disciplines; it was also revealed that there exists many researchers, theorists and economists who have contradictory views on his theory.

Moving away from Veblen’s theoretical underpinning, in contrast Campbell, on his critique on Veblen’s theorization and formulation of the concept of conspicuous consumption, argues that, Veblen’s most famous concept is not sufficient and clear enough to permit any general agreement on its definition. Instead, he remodels the term conspicuousness to refer to any non-utilitarian form of consummation or simply to that which is judged luxurious, extravagant and wasteful (Campbell, 1995). While agreeing upon the view of Campbell, Tilman in his study, claims that motive to emulate others in terms of being conspicuous is challenging in terms of the trustworthiness of psychological
and sociological research studies as people will be denying the fact that they engage in conspicuous consumption while imitating higher class people (Tilman, 2006).

However, Chaudhuri et al. (2011) define conspicuous consumption as an intended engagement in symbolizing the act of purchasing through procuring visible goods with the motive of exhibiting one’s self-image to others. As asserted by Leibenstein in his study, conspicuous consumption is a subset non-functional demand where consumers purchase goods not necessarily for their intrinsic use value but because of external qualities of the goods such as giving the consumer status, prestige and recognition (Leibenstein, 1989). Furthermore, past studies show that to specific groups; conspicuous consumption means not just showcasing how rich they are but also procurement of expensive items to gain social respect, recognition and enhancing their status (Kastanakis & Balabanis, 2014; Chen et al., 2005), high self-concept (Kastanakis & Balabanis 2014; Sirgy, 1982) and uniqueness (Tian et al., 2001). Moreover, one particularly interesting idea, relatively new to conventional economics, stated by Basmann (1956) as cited in Trigg (2001) is the concept that “conspicuousness is the utility provided to the user as a result of being seen consuming the product or service”. Furthermore, it can be learnt through contemporary literature that, conspicuous consumption plays a pivotal role even at present in shaping preferences among people in terms of gaining recognition and attention and it is ubiquitous and embraced by community on a mass scale (Goenka & Thomas, 2019; Wu et al., 2019).

**Luxury Automobiles**

Hanzaee and Fereshteh (2011) have defined luxury automobiles as expensive vehicles which have five specified values namely; conspicuous value, unique value, quality value, social value and a hedonic value. According to Zhang (2017) a luxury automobile is a high-end, expensive, branded product and are for extremely rich individuals for instance, private jets, limited edition cars and branded sports cars. Furthermore, Bergman (2010), in his study, emphasizes that luxury has a strong relationship with the high price and the brand of the vehicle and that is why some people prefer a BMW which signals status over a Volvo which is a cheaper option. However, according to Silverstein et al. (2005), when the new mini cooper was launched with facilities such as; a horse power engine, high speed, air-bags and a six speaker in 2001, back then it was considered to be the best choice of the people who prefer luxury even though the case may not be the same at present.

Past research suggests that, the term ‘luxury’ is multi-faceted and is very subjective, globally and thus, does not hold a common, single definition. When considering the context of Sri Lanka, an in-depth investigation on past Acts and budgets passed by the respective governing bodies, suggest that, there exists a vagueness in the term ‘luxury’ and as such it lacks a standard definition similar to the case in elsewhere in the world. For instance, according to the Act No.12 of 2012, Act No.15 of 2011 & Act No.16 of 1995
amended by the Act No.04 of 1999; the degree of luxuriousness of the vehicle and the luxury tax have been defined based on the vehicle’s ‘engine capacity’ (Department of Motor Traffic, 2012). Moving ahead, as revealed by the Finance Act 2018, ‘luxury tax’ is applicable only for three categories of vehicles. Furthermore, when considering the Budget 2019, the luxuriousness of the vehicle is decided based upon the ‘CIF value or the manufacturer’s price’ (Sri Lanka Budget, 2019).

Above notions prove that the term ‘luxury’, essentially when it comes to automobiles, is very ambiguous and tends to change quite often.

**Overview of Empirical Research**

**Factors affecting Conspicuous Consumption**

As expressed in many research studies, the antecedents of conspicuous consumption are multi-faceted and there is no single influence that is unanimously agreed upon by researchers. According to Veblen (1899), the factors affecting Conspicuous Consumption are: high price and the ability of the good to showcase wealth and class. According to Leibenstein (1950), any factor rooted upon non-utilitarian aspect of demand could be considered as antecedents of conspicuous consumption for instance, the uniqueness and the popularity of the good. As asserted by Rege (2008), factors of conspicuousness include the ability to showcase one’s capabilities and abilities. Furthermore, according to many other economists and sociologists, it constitutes of the factors such as ceremonial, obtrusive, ostentatious display, visibility, brand prominence and explicit signal (Lee & Shrum, 2012; Berger & Ward, 2010; Young et al., 2010). As revealed by Kastanakis & Balabanis (2014), the drivers of conspicuousness are high self-concept, respect, recognition and high status. Therefore, as per the prevailing literature, it is evident that the factors of conspicuous consumption and the root causes of it are a combination of many different variables and it is possible that the extent of influence by aforementioned factors or variables depend on the consumer.

**Evolution of Conspicuous Goods**

Moving ahead of various definitions and several theories rendered for conspicuous consumption, it is imperative to note that the term conspicuousness expresses more or less the same perception in contrast to Veblen’s contradictory comebacks. Past and

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2 Petrol vehicles with cylinder capacity more than 1800 cc, Diesel vehicles with cylinder capacity more than 2300 cc and Electric vehicles with more than 200kw power
3 Valid from the 6th March 2019 onwards only - This includes all Diesel vehicles of which the cost exceeds by Rs.3.5 million, Petrol vehicles of which the cost exceeds by Rs.3.5 million, Hybrid Diesel & Petrol when the cost exceeds by Rs.4 million, Electric vehicles when the cost exceeds by Rs.6 million and for imported vehicles which are locally assembled
contemporary studies on this construct show that the means which people reach to
showcase their ability to afford obtrusive or rather pretended goods have transformed
with time. It can be learnt through past and most recent literature that many theorists,
researchers, economists, sociologists and marketers have attempted to continuously
explore the goods that can be categorized as conspicuous (See Table 1).

Table 1: Most Quoted Conspicuous Goods based on Literature

<table>
<thead>
<tr>
<th>Past &amp; Present Literature</th>
<th>LA</th>
<th>J</th>
<th>DC</th>
<th>FW</th>
<th>BH</th>
<th>BW</th>
<th>BHB</th>
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<tr>
<td>Wu et al. (2019)</td>
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<td>Dong &amp; Koo (2018)</td>
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<td>Jain &amp; Sharma (2018)</td>
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<td>Karunanayake &amp; Gunaruwan  (2018)</td>
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<td>Hammerl &amp; Kradischnig (2018)</td>
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<td>Wu et al. (2017)</td>
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<td>Sirong (2016)</td>
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<td>Loureiro &amp; Ruediger (2016)</td>
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<td>Kruger &amp; Kruger (2016)</td>
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<td>Okulicz-Kozaryn et al. (2015)</td>
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<td>Narayanan (2014)</td>
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<td>Perera et al. (2013)</td>
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<td>Memushi (2013)</td>
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<td>Lee &amp; Shrum (2012)</td>
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<td>Souiden et al. (2011)</td>
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<td>Sivanathan &amp; Pettit (2010)</td>
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<td>Patsiaouras &amp; Fitchett (2009)</td>
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**LA**: Luxury Automobiles; **J**: Jewelry; **FW**: Fine Wine; **DC**: Designer Clothes; **BW**: Branded Wristwatches; **BH**: Bigger Houses; **BHB**: Branded Hand Bags; **P**: Perfumes

Source: Compiled by Author based on Literature

As suggested by Hammerl & Kradischnig (2018), using visible goods to display wealth,
uniqueness, conformity and social stature have been prevailing, since the time people
started consuming goods and services. According to them, weapons, clothes and musical instruments are a few examples for conspicuous goods. Furthermore, Memushi (2013), in his study, claims that in times of yester years where the emergence of human civilizations emanated, the wealth was displayed through material showcase of power as the upper/elite classes embellished themselves with rare, unusual, exotic jewelry by exceptional hand woven ceremonial wear. For instance, researchers have identified vacations, luxury automobiles, wrist watches, designer clothing, branded hand bags, jewelry, fine wine & champagne, perfume, mobile phones and furniture as popular conspicuous goods (For example Wu et al., 2019; Dong & Koo, 2018; Miller, 2018 & Krisberg, 2017)

The Table 2 below borrowed from work of Patsiaouras & Fitchett (2009), clearly illustrates the evolution of conspicuous consumption behaviour with time.

Table 2: A Structural analysis on the evolution of conspicuous consumption during time

<table>
<thead>
<tr>
<th>Social Structure</th>
<th>Primary Objects of Consumption</th>
<th>Drivers of Behavior</th>
<th>Consumers</th>
<th>Principal Behavior Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Capitalist-Feudal</td>
<td>Slaves, Women, Food</td>
<td>Military and Political Powers</td>
<td>Nobility</td>
<td>Pure Ostentation</td>
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<tr>
<td>Modern-Capitalist</td>
<td>Very Expensive Products e.g. Diamonds</td>
<td>Social Power and Status</td>
<td>Nobility and Upper-middle Class</td>
<td>Ostentation and Signaling and Uniqueness</td>
</tr>
<tr>
<td>Post-Modern</td>
<td>Image and Experience</td>
<td>Self-expression and Self-Image</td>
<td>Middle-class and the “Masses”</td>
<td>Uniqueness and Social Conformation</td>
</tr>
</tbody>
</table>

Source: Patsiaouras & Fitchett (2009)

Conspicuousness in Luxury Automobile Industry

In the dearth of research studies conducted on the conspicuousness of automobile industry, some studies lead to the inference that customers of the automobiles are persuaded by the product’s attributes such as functionality, tangibility and visible characteristics or utilitarian necessities (Keller, 1993; Havlena & Holbrook, 1986; McClelland, 1967). In contrary, the research conducted on Consumer Behaviour on Luxury Automobiles based on UK and Thai customers’ perception by Pacapol et al. (2015) reveals that the buyers will only idolize high priced, high ended cars from any other vehicle. He further asserts that such automobiles are produced in order to enhance owners’ prestige and stature wherever it travels. According to the study conducted by Engel, Blackwell, & Miniard (1990), an impeccable determinant of purchasing a
luxurious automobile is the culture and the influence of society. His study concludes that even a poorer country could have more purchasers for luxury cars than rich countries owing to the perceptivity to social impact. For instance, his study reveals that a less poor country like Thailand could have more buyers for Mecedez than a rich country like the UK. Thus, in a world where majority’s wish is to be well-placed in the eyes of others, luxury automobiles play a significant role in enabling consumers, realize their dream of showcasing how rich they are, through engaging in the process, conspicuous consumption.

**Socio-Demographic Drivers behind Conspicuous Consumption of Luxury Automobiles**

Considering handful of studies conducted on the scope of the present study, it could be identified that there is an impact from socio-demographic factors on the conspicuousness of automobiles. As asserted by Lansley (2016), there is a very solid relationship between socio-demographic and cars. Similarly, Evans (1959), in his study asserts that each type of car is inevitably likely to be purchased by a particular socio-economic segment owing the prices and marketing strategies.

When considering the socio-demographic factor, age; Shukla (2008) has identified that, middle-aged individuals who are prone to have low spending obligations (such as young children, old dependents) and higher incomes relatively to other age groups are most likely to engage in status-based conspicuous consumption through purchasing luxury automobiles. Furthermore, Boonyanuso (2017), in his study on factors affecting purchasing of Porsche determines that older consumers are more prevalent to buying luxury automobiles.

In terms of socio-demographic aspect gender; the findings of the study conducted by Loureiro et al. (2016) reveal that, male consumers are more interested in luxury car purchases in terms of engaging in conspicuous consumption as they have a better know-how on luxury automobile brands and strong affiliation to a given brand (being affiliated to luxury-car consumer ‘tribe’). However, in contrast to the findings of Loureiro et al., (2016), the empirical evidence of Boonyanuso (2017) focusing on ‘The determinants of luxury automobile purchase among consumers in Bangkok, taking the case of Porsche’, asserts that there is no significant impact from gender towards the purchasing of luxury car brands. Furthermore, according to the study conducted on demographic characteristics influencing premium car brands by Sharma (2015), it is evident that females are more prone towards the brand of cars than males and they have a higher preference towards luxury cars on top of men (p.24). Moreover, Dunn & Searle (2010), in their study, asserts that women find men who engage in purchasing and driving prestigious and luxurious automobiles to be more attractive.
As per the findings of Charles et al. (2009), black people spend more on luxurious and conspicuous automobiles than whites irrespective of their income patterns. Thus, according to him, race has a significant impact on conspicuousness of automobiles. Moving away from consumers’ race, Boonyanuso (2017) shows that there is a significant difference between the education levels of the people who have a Bachelor’s or a Master’s Degree and those who do not possess either when it comes to purchasing luxury automobiles such as; Porsche.

When examining the impact of socio-demographic factor monthly income on the conspicuous consumption of luxury automobiles, it is quite interesting to note that, many researchers have examined the impact of income taking cases such as; Porsche and Mercedes-Benz. For instance, the results of Michman & Mazze (2006) indicate that, consumers in the higher income level are more prone towards purchasing of luxury automobiles such as; Mercedes-Benz. However, in contrary to that, the study by Boonyanuso (2017) demonstrates that, consumers in the lower income bands have a relatively significant impact on purchasing luxury automobiles such as; Porsche relatively to that of the high income consumers. Furthermore, Loureiro & Ruediger (2016) suggest that, an individual should be falling into the High-Income category to demonstrate one’s conspicuousness in terms of owning luxury automobiles such as; BMW, Audi and Mercedes-Benz.

METHODOLOGY

The present study was conducted within the positivist paradigm in which Remenyi, Williams, Money & Ethné (1998) suggest that “the observer is independent and the world is objective and external”. The reason behind the followed philosophy is that the present study adhered to factual knowledge gained through the survey, including measurement. Moreover, since the study involved in focusing on factors that are analyzed statistically which were observable and quantifiable, it further generalizes the chosen philosophy.

In terms of realizing the fundamental objectives of the study, quantitative approach was utilized and the research strategy intended to be carried out in the present study was a survey which was conducted through various channels of social media and other online platforms. This study incorporated primary data collection method owing to its higher reliability, validity, consistency and the ability to gather most updated data that is directly specific to research aims.

Primary data was gathered through questionnaires that were prepared utilizing the online survey tool “Jisc” (formerly, known as BOS) and were sent out, through various modes namely; e-mail, social media and various mobile apps. The questionnaire constituted 23 questions in total with specifically designed questions under each aspect of conspicuous
consumption to make sure that the dominant factors of conspicuous consumption as identified in the literature survey, are captured in the form of questions (i.e. consumption of high priced luxury automobiles in order to showcase wealth, status, exclusiveness, popularity of the brand, self-respect, dignity, prestige, to gain peers’ attention and to enhance self-confidence) - Please refer Annexure for the detailed statements of the questionnaire.

The questionnaire was designed carefully with the purpose of collecting information on the impact of socio-demographic factors on the conspicuousness of luxury automobiles. For this course, the study incorporated six (06) independent variables and one (01) dependent variable.

Given the time constraint, present study involved a cross-sectional time horizon in which the data was collected within a certain time obtaining an overall picture as it stands at the time of the study.

Non-probabilistic snow ball sampling technique was deployed in terms of selecting the sample. Snowball sampling technique is generally deployed when the sample is difficult to locate. As explained by Bhat (2018), once the researcher comes across suitable subjects for the study, they are asked for assistance to identify similar subjects to form a considerably an effective sample size. For instance, if the researcher is to do a study about a particular illness such as HIV/AIDS or Cancer or the researcher will have to find people suffering from those diseases as they are the subjects of the research. Another example would be a study on LGBT community. In such case, the researcher will essentially have to find people who fall into the LGBT categories (individuals who are lesbian, gay, bisexual, and transgender) as the study focuses on a specific issue by which random sampling will not provide sufficient evidence. Thus, in such cases, the researcher is forced to follow snow ball sampling even though it could be subjective to some extent. Therefore, since the main focus of the study lies upon the conspicuous consumption of luxury automobile owners, the researcher was compelled to choose this technique, as this was the best option given the unavailability of personal details of the customers. As such, in terms of approaching the expected sample, initial respondents were asked to forward the questionnaire to others that met the sampling criteria. A total of 200 valid questionnaires were used for the analysis.

**Steps followed:**

1. Contacts were established with two/more initial cases from the sampling (for example: family, friends, colleagues, relatives and etc.).

   The questionnaire link was sent through emails, mobile apps and social media to the researcher’s contacts.
Socio Demographic Determinants Behind Conspicuous Consumption

Questionnaire Link: (https://uw1.onlinesurveys.ac.uk/drivers-behind-consumption-of-personal-luxury-automobiles-3).

(2) After establishing contacts with initial cases, they were requested to identify more cases and new cases were asked to identify further more cases. The procedure was continued until the expected sample size (i.e. 200) was met.

(3) Sampling procedure was concluded with the reach of 200 samples, as pursuing further cases will make the study unmanageable and complex due to the large sample size.

Furthermore, the submission option was made possible only to those who have completely filled out the questionnaire to make sure the purpose of the research is met. Furthermore, submission of more than one questionnaires from a single respondent was restricted by the system, to avoid the same person filling out many questionnaires. All questions were close-ended ones and were based on ranking and rating system.

Since, past literature suggests that there is no standard definition for ‘luxury automobiles’, this study defines luxury automobiles based on expertise advice in the field and the JB Securities’ report, given the ambiguity of the definition. In this paper, automobiles of “Premium Brands” are considered to be those under the category of luxury automobiles and as such, will be the subject of the study. The main reasoning behind the aforementioned classification, is to ensure that the validity of this study remains unchanged and significant irrespective of the changes in laws, acts and governments.

CONCEPTUAL FRAMEWORK

Figure 1 illustrates the conceptual framework on which the analysis of the study is based. As depicted below, the study incorporates six independent variables which fall under socio-demographic attributes in order to test the hypotheses.
Figure 1: Conceptual Framework of the Study

An “Index” to represent the degree of Conspicuousness of consumption was computed per participant, based on the ‘Decorative Consumption Model’ developed by Gunaruwan & Karunanayake (2017) and the Decorative Consumption Index constructed based on that model by Gunaruwan & Karunanayake (2017) which is as follows:

$$DCI_{ij} = \sum_{k=1}^{n} \frac{DCV_{jk} + (6 - ADCV_{jk})}{n_j}$$

Where:

DCI\textsubscript{ij} = Decorative Consumption Index for jth dimension for ith person (j = 1, 2 signifying Conspicuousness and Snobbism, respectively)
DCV<sub>jk</sub> signifies Decorative Consumption value for jth dimension and kth question and

ADCV<sub>jk</sub> signifies Anti-Decorative Consumption value for jth dimension and kth question and

nj = number of questions (or statements) applicable for the jth dimension

Anti-Conspicuous effects as reflected in the relevant responses, were reciprocated (difference between 6 and the relevant rank given by the respondent for each question was calculated) before averaging the responses to arrive at the index. Descriptive statistics and univariate analysis using SPSS (version 24.0) were deployed as analytical techniques in examining the research aims.

\[
CI = \sum_{i=1}^{n} \frac{CV_i + (6 - ACV_i)}{nc}
\]

Where:

CI = Conspicuous Consumption Index

CV<sub>i</sub> signifies Conspicuous Consumption for ith respondent

ACV<sub>i</sub> signifies Anti-Conspicuous Consumption value for ith respondent

nc = number of questions (or statements) applicable for Conspicuous Consumption

Pilot Study

The researcher performed a Pilot Survey on 8 questionnaires, which was filled by voluntary friends and colleagues prior to sending out the questionnaires formerly, in order to make sure the questions are accurate and understandable. Two questions based on ranks, which created confusion among respondents and consequently, misinterpreted by them, were thereby deleted before sending out the questionnaire to the expected sample in order to make sure respondents give their honest opinion in the questionnaires sent.

Internal Consistency

According to Sekaran & Bougie (2010), internal consistency depicts the homogeneity of the indicators and he further affirms that, the most welcomed test of internal consistency is Chronbach’s Coefficient Alpha. Furthermore, past research suggests that, generally accepted lower limit of Chronbach Alpha is 0.7 (Warnakulasooriya, 2010).

Mentioned below are the test results:
Table 3: Measuring Internal Consistency

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cronbach’s Coefficient Alpha Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conspicuous Index</td>
<td>0.875</td>
</tr>
</tbody>
</table>

Source: Survey Results

As depicted in the Table 3 above, Cronbach's Alpha value of the Conspicuous Index (incorporated all 23 questions pertinent to Conspicuousness) is 0.875 which is greater than the bench mark confirmed by previous studies and the consistency among Likert Scales is high.

Convergent Validity

Convergent validity refers to the degree of correlation among the scales that are intended to measure the same variable/construct (Malhotra & Dash, 2011). This can be measured by conducting a Factor Analysis. The KMO statistic value and the Bartlett’s value are two major outputs derived by SPSS in this regard. According to Kaizer (1974), the KMO statistic value fluctuates between 0 and 1 and KMO statistic above 0.5 is considered acceptable. As affirmed by Field (2005), the Bartlett’s value should be significant (i.e. have a significance value less than 0.05)

Table 4: Statistic and Bartlett’s Measure of Sphericity

<table>
<thead>
<tr>
<th>Variable</th>
<th>KMO Statistic</th>
<th>Bartlett’s Measure of Sphericity (P Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conspicuous Index</td>
<td>0.717</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Source: Survey Results

As depicted in the table 4 above, KMO value of all variables are above 0.5 and Bartlett’s test value is significant as p-values are <0.001. Hence, we can conclude that the measurement instrument has partially fulfilled the requirements to achieve convergent validity. Mentioned below is the factor loading of each variable.

Normality Test

As reflected in the Central Limit Theorem, if the sample data are approximately normal then the sampling distribution too will be normal (based on the shape) and in quite large samples (n > 30 or 40), the sampling distribution is prone towards being normal irrespective of the shape of data. Furthermore, if samples are sufficiently large (if the study consists at least of 20 elements for each dependent × independent variable combination), then the univariate central limit theorem holds and we can assume the univariate normality assumption holds. However, a normality test was conducted, as
assessment of the normality of data is a prerequisite for many statistical tests because normal data is an underlying assumption in parametric testing. Since, sample size $3 \leq n < 2000$, Shapiro Wilk Test was conducted.

Mentioned below is the hypothesis to measure the normality of the distribution.

Ho: Variables are normally distributed

H1: Variables are not normally distributed

Table 5: Testing the Normality of Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Significance</th>
<th>Normality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conspicuous Index</td>
<td>0.214</td>
<td>Normally Distributed</td>
</tr>
<tr>
<td>Age</td>
<td>0.870</td>
<td>Normally Distributed</td>
</tr>
<tr>
<td>Gender</td>
<td>0.245</td>
<td>Normally Distributed</td>
</tr>
<tr>
<td>Religion</td>
<td>0.324</td>
<td>Normally Distributed</td>
</tr>
<tr>
<td>Highest Educational Attainment</td>
<td>0.571</td>
<td>Normally Distributed</td>
</tr>
<tr>
<td>Occupation</td>
<td>0.512</td>
<td>Normally Distributed</td>
</tr>
<tr>
<td>Monthly Income</td>
<td>0.860</td>
<td>Normally Distributed</td>
</tr>
</tbody>
</table>

Source: Survey Results

Since, $p > 0.05$, we fail to reject the Null Hypothesis. As such, for the analysis of data, parametric tests namely; multivariate tests were thus, conducted.


**DISCUSSION ON THE RESEARCH FINDINGS**

The Table 6 below, represents the summary of statistical results of the study.

**Table 6: Summarized Results of the Survey**

<table>
<thead>
<tr>
<th>Socio-Demographic Cohort</th>
<th>Degree of Conspicuous Consumption $^a$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>18 – 30</td>
<td>3.81</td>
</tr>
<tr>
<td>30 - 45</td>
<td>3.76</td>
</tr>
<tr>
<td>45 - 60</td>
<td>3.56</td>
</tr>
<tr>
<td>60 &amp; Above</td>
<td>2.89</td>
</tr>
<tr>
<td>Significance of Age $^b$</td>
<td>0.000***</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>3.79</td>
</tr>
<tr>
<td>Female</td>
<td>3.20</td>
</tr>
<tr>
<td>Significance of Gender $^b$</td>
<td>0.047*</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
</tr>
<tr>
<td>Buddhism</td>
<td>3.87</td>
</tr>
<tr>
<td>Christianity</td>
<td>3.43</td>
</tr>
<tr>
<td>Hinduism</td>
<td>2.98</td>
</tr>
<tr>
<td>Islam</td>
<td>3.67</td>
</tr>
<tr>
<td>Significance of Religion $^b$</td>
<td>0.005**</td>
</tr>
<tr>
<td><strong>Educational Attainment</strong></td>
<td></td>
</tr>
<tr>
<td>Ordinary</td>
<td>3.72</td>
</tr>
<tr>
<td>Level/Advanced Level</td>
<td></td>
</tr>
<tr>
<td>Vocational Diploma</td>
<td>3.63</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>3.58</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>3.45</td>
</tr>
<tr>
<td>Doctoral Degree</td>
<td>3.19</td>
</tr>
<tr>
<td>Other</td>
<td>3.72</td>
</tr>
<tr>
<td>Significance of Educational Attainment $^b$</td>
<td>0.000***</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
</tr>
<tr>
<td>Employer</td>
<td>3.96</td>
</tr>
<tr>
<td>Employee</td>
<td>3.51</td>
</tr>
<tr>
<td>Significance of Occupation $^b$</td>
<td>0.000***</td>
</tr>
<tr>
<td>0 - 100,000</td>
<td>3.74</td>
</tr>
</tbody>
</table>
When considering the socio-demographic cohort age, the findings reveal that there exists a significant impact from age on conspicuousness of luxury automobiles \((p < 0.001)\). Young consumers (between 18 – 30 years) showcased a higher degree of conspicuousness whereas older consumers (60 years & above) showcased the contrary. The results further affirmed that, there is a downward trend towards conspicuous consumption of luxury automobiles as people grow older.

In terms of gender, findings showcased that there is a significant impact on conspicuous consumption of luxury automobiles \((p < 0.05)\) and male consumers were more prone towards conspicuousness than females. The revelations of the study, points to a glaring gender difference in conspicuous consumption of luxury automobiles in Sri Lanka. There could exist many reasons that drives males towards such behavior; for instance, past empirical evidence suggest that men are more prone to conspicuousness than women in terms of luxury automobiles as women consider automobiles simply as a way of getting from one place to another while men tend to view them tied to their image and accomplishments (Hennighausen, Hudders, Lange, & Fink, 2016; Kelly Blue Book, 2014). Furthermore, findings of the study conducted by Loureiro et al., (2016) reveal that, male consumers are more interested in luxury car purchases in terms of engaging in conspicuous consumption as they have a better know-how and a wider scope of understanding when it comes to luxury automobile brands and strong affiliation to a given brand (being affiliated to luxury-car consumer ‘tribe’). Another reasoning behind it could be the fact that, females have many other options to showcase wealth through procuring goods such as jewelry, designer clothing and branded hand bags whereas, the options available essentially for males are quite narrow. However, the present study only focused on the impact of socio-demographic factors on conspicuousness of luxury automobiles and as such, the causes for such behavior warrant further in-depth research.

Similarly, other socio-demographic cohorts, there existed a significant impact from religion on the conspicuousness of luxury automobiles \((p < 0.005)\). Furthermore, the results revealed that, Buddhists and Islamists are more prone towards purchasing luxury automobiles merely for vehicles’ ability to showcase their purchasing power/pecuniary strength, prestige and social stature. At this stage, it is important to note that, the revelations made by the present study in terms of purchasing behavior of those in the aforementioned two religions are quite contrary to what is being advocated by the two

<table>
<thead>
<tr>
<th>Monthly Income</th>
<th>Significance of Monthly Income</th>
<th>b</th>
</tr>
</thead>
<tbody>
<tr>
<td>100,000 - 300,000</td>
<td></td>
<td>3.58</td>
</tr>
<tr>
<td>300,000 – 400,000</td>
<td></td>
<td>3.37</td>
</tr>
<tr>
<td>400,000 &amp; Above</td>
<td></td>
<td>3.21</td>
</tr>
</tbody>
</table>

Source: Compiled by the Author based on Survey Results
religions in general. For instance, Buddhism encourages mindful consumption, simplicity and middle path and similarly, Islam suggests to lead a simple life rather than acquiring worldly possessions and encourages its followers to adopt modesty, discouraging show-off and vanity (Cherrier et al., 2009). Therefore, according to the findings of the present study, it seems that individuals that belong to Buddhism and Islam do not transform the teachings of their religions into practice, especially, when it comes to luxury automobiles. However, as opposed to Buddhists and Islamists, Hindus showcased a very low tendency towards conspicuousness, signaling that they obey their religion and its’ preaching in terms of their consumption patterns. Understanding the reasons for the differences in conspicuousness among different religious groups with regard to luxury automobiles goes beyond the scope of the present study and as such require in-depth research in future.

When considering the level of educational attainment of the respondents, it was evidently proven that education level plays a pivotal role in making the decision, to conspicuously consume and there exists a negative relationship between the two. According to the revelations of the study, consumers holding Ordinary Level / Advanced Level qualification were more conspicuous whereas, the least conspicuous group was the individuals with a Doctorate (PhD). The main reasoning behind it could be the fact that, their broad knowledge and extensive level of understanding have made them realize that spending lavishly on an automobile given that, it is only a piece of steel is an utter waste.

In terms of the occupation of the consumers, unlike the cases of other socio-demographic cohorts, which were previously discussed, conspicuous indices of both employers and employees were relatively high. However, employers had a higher tendency towards conspicuousness than employees with regard to luxury automobiles. Given their position of the job, the people they associate on a daily basis and the meetings they attend, luxury automobiles may facilitate them in maintaining their status and in gaining recognition from others. Therefore, purchasing a luxury automobile could be the best way for them, to demonstrate their background to community. However, these aspects warrant further attention.

Lastly, in terms of monthly income, there was a significant impact on the conspicuous behavior (p < 0.005) of luxury automobile owners. Findings suggest that there exists a downward trend in conspicuousness of luxury automobiles as the income increases. There could be many reasons for such tendency. For instance, people who earn more may be spending on goods which are relatively more expensive namely; pent houses, holiday bungalows and luxury apartments in highly developed urban areas. Another reason for this behavior could be the fact that, high income earners already own a status in the society and since the community already knows about their background and as such, they need not to impress anyone by spending extra in a visible manner. In contrary, the reasoning behind the high conspicuousness among low-income earners could be a result of them,
imitating the elites in the society. Since, the automobile could be driven wherever he/she wants. It is much worth for them to purchase such a good rather than purchasing a capital asset which are immobile and comparatively less visible. However, there rises a question on how low income consumers manage finance to get luxury automobiles. They might be taking loans through various channels, for instance, from relatives, unauthorized money lenders and brokers. If that is the case, necessary steps to discourage such consumption through controlling cheap credit sources such as; lease facilities and loans essentially to buy over-priced automobiles which are beyond their purchasing power need to be taken. If not, danger of conspicuous consumers, particularly low income segments, running into debt for wanting to acquire tax-pushed expensive consumables cannot be excluded. However, these aspects warrant further research.

CONCLUSION

The present study examined the impact of socio-demographic cohorts on the conspicuousness of luxury automobiles in Sri Lanka and subsequently explored fundamental behavioral differences among them.

The revelations of the study prove that, there is a negative trend towards conspicuousness, in terms of the age and monthly income of the respondents. However, when considering the gender of the respondents it was revealed that, males are more prone towards using luxury automobiles to engage in conspicuous consumption and as such there is a glaring gender difference in terms of conspicuous consumption of luxury automobiles in Sri Lanka. However, when considering the socio-demographic aspect, findings in terms of religion suggest that, Buddhists are most prone to conspicuously consume whilst the Hindus revealed to be the least conspicuous segment in the case of luxury automobiles. Findings of the present study also evidently prove that, the more educated a person is, the less conspicuous he/she shall be, in terms of luxury automobiles and as such there is a negative relationship in the level of educational attainment of a person and his/her conspicuous consumption. When considering occupation, findings revealed that, employers are more conspicuous than employees regarding luxury automobiles.

The outcome of this analysis indicates that, socio-demographic cohorts namely; age, gender, religion, educational attainment, occupation and monthly income have a significant influence on the conspicuous consumption of luxury automobiles. The present study not only explored a universal and a timely aspect which is certainly the subject of common interest in the contemporary world but also addressed the gaps in existing research by focusing on a previously untouched aspect. As such, the findings of the present research study are beneficial to policy makers & researchers to address prevailing policy gaps on this conduct, and marketers to identify their client based on the demographic cohort they fall into and further understand their behavioral patterns.
It is important to suggest that Sri Lanka follows a standard definition for luxury automobiles that would prevail for a significant period of time, instead of a vague definition that generally changes on a yearly basis. This would avoid room for complexities and confusions in terms of data collection and encourage more researchers to conduct studies in this aspect, as a majority of officials were not aware of what ‘luxury’ really meant when it comes to automobiles.

Conclusively, it is also recommended that, the reasons behind behavioral differences among different socio-demographic cohorts in terms of conspicuous consumption are identified and examined in depth in future research whilst comparing it with other conspicuous goods which go beyond the present scope of luxury automobiles.

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dhamma.net/tipitaka/sutta/khuddaka/dhammapada/dhp-contrast-reading/dhp-contrast-reading-en-chap24/


Socio Demographic Determinants Behind Conspicuous Consumption


ANNEXURE: QUESTIONNAIRE DESIGN

Table 1: Statements used on Ranking/Rating Scale to measure the Conspicuousness of luxury Automobiles

<table>
<thead>
<tr>
<th>Question Code</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>What does your Automobile mean to you? [A mode of showcasing my pecuniary strength]</td>
</tr>
<tr>
<td>C2</td>
<td>What does your Automobile mean to you? [A mode of showcasing exclusiveness]</td>
</tr>
<tr>
<td>C3</td>
<td>What does your Automobile mean to you? [A mode of showcasing belongingness to a specific elite crowd]</td>
</tr>
<tr>
<td>C4</td>
<td>The purchasing decision of your Automobile was based on: The ability of the Automobile to showcase status</td>
</tr>
<tr>
<td>C5</td>
<td>The purchasing decision of your Automobile was based on: Popularity of the Automobile</td>
</tr>
<tr>
<td>C6</td>
<td>The purchasing decision of your Automobile was based on: The limited edition/ exclusiveness of the Automobile</td>
</tr>
<tr>
<td>C7</td>
<td>Being the owner of your current Automobile: Has helped you immensely to display your social status and wealth</td>
</tr>
<tr>
<td>C8</td>
<td>Being the owner of your current Automobile: Has helped you to be the center of attraction among your peers</td>
</tr>
<tr>
<td>C9</td>
<td>Being the owner of your current Automobile: Has helped you to enhance your self-confidence as only rich people can afford to buy one</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>C10</strong></td>
<td>Being the owner of your current Automobile: Has enhanced your self-confidence &amp; uniqueness towards taste as most of your peers cannot afford one</td>
</tr>
<tr>
<td><strong>C11</strong></td>
<td>What does being a Luxury Automobile owner in Sri Lanka, mean to you? / How do you feel, being a Luxury Automobile Owner? [The choice of my Automobile has helped me gain dignity and respect in the society]</td>
</tr>
<tr>
<td><strong>C12</strong></td>
<td>What does being a Luxury Automobile owner in Sri Lanka, mean to you? / How do you feel, being a Luxury Automobile Owner? [The choice of my Automobile has helped me gain attention in the society]</td>
</tr>
<tr>
<td><strong>C13</strong></td>
<td>What does being a Luxury Automobile owner in Sri Lanka, mean to you? / How do you feel, being a Luxury Automobile Owner? [The choice of my Automobile has helped me gain status in the society]</td>
</tr>
<tr>
<td><strong>C14</strong></td>
<td>What does being a Luxury Automobile owner in Sri Lanka, mean to you? / How do you feel, being a Luxury Automobile Owner? [The choice of my Automobile has helped me gain acceptance in the society]</td>
</tr>
<tr>
<td><strong>C15</strong></td>
<td>Assume that, you can afford another luxury Automobile, which costs more than 10 Million Sri Lankan Rupees. What would be your decision? [I will definitely buy another one so that, I can double the showcasing effect]</td>
</tr>
<tr>
<td><strong>C16</strong></td>
<td>Assume that, you can afford another luxury Automobile, which costs more than 10 Million Sri Lankan Rupees. What would be your decision? [I do not need to buy one as I already have a luxurious Automobile which showcases my wealth]</td>
</tr>
<tr>
<td><strong>C17</strong></td>
<td>Assume that, you can afford another luxury Automobile, which costs more than 10 Million Sri Lankan Rupees. What would be your decision? [I will definitely buy as it will add more value to my-self in terms of self-respect, dignity and status]</td>
</tr>
<tr>
<td><strong>C18</strong>*</td>
<td>What does your Automobile mean to you? [Just another mode of Transport]</td>
</tr>
<tr>
<td><strong>C19</strong>*</td>
<td>What does your Automobile mean to you? [An asset which can be regarded as a great Investment which is worth for its value]</td>
</tr>
<tr>
<td><strong>C20</strong>*</td>
<td>The purchasing decision of your Automobile was based on: My purchasing power, higher durability and functions of the Automobile (Speed, Engine Capacity, Mileage)</td>
</tr>
<tr>
<td><strong>C21</strong>*</td>
<td>Being the owner of your current Automobile: This won’t make any difference towards your concerns/interests as you only regard its use value</td>
</tr>
</tbody>
</table>
What does being a Luxury Automobile owner in Sri Lanka, mean to you? / How do you feel, being a Luxury Automobile Owner? In vain, could have spent that extra money for some other investment like buying a land or investing on education

Assume that, you can afford another luxury Automobile, which costs more than 10 Million Sri Lankan Rupees. What would be your decision? [I will spend that money for a worthy cause than spending it in vain in just a piece of steel]

Please note that marked with an asterisk mark are the reversed version of the questions (signifies Anti-Conspicuousness).
Systemic Debt Crises in International Disequilibrium System

Hema Senanayake
Rev. W. Wimalaratana
Kumar David

Abstract

Global Savings Glut (GSG) hypothesis has become the predominant and official theory attempted to explain the global financial crisis of 2008 and the Great Recession of 2008 – 2009. “… it is impossible to understand this crisis without reference to the global imbalances” (Bernanke, 2009). Any possible “global imbalance” must be connected to the international terms of trade and international exchange rate mechanism. GSG theory argues that the overwhelming credit (debt) growth occurred in the U.S. prior 2008, was due to savings made by certain trading partners, which resulted for the U.S. to have a persistent Current Account deficit and prevented the ability to increase interest rates by the U.S. monetary authorities to reduce current account deficit, as significant capital inflows from those countries took place. Yet, the paper observes that debt crises take place in countries where there are Current Account surpluses. This conundrum needs to be examined. Hence, the paper finds that another empirically verifiable proposition could possibly be used to explain the systemic debt crises better.

Keywords: Exchange rate mechanisms, Global debt crises, Savings glut, Systemic gap.

JEL Codes: E60, E61, F52, F54, F62

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INTRODUCTION

The objective of this paper is to examine systemic debt crises in International Disequilibrium System which disequilibrium is typified by the disequilibrium in terms of trade. This disequilibrium has led to have “savings glut” in certain countries like China, South Korea, Japan, Saudi Arabia, etc. while having saving deficiency in certain major economies like the USA. Then, the mentioned global savings glut was identified as the main cause to create a severe unsustainable debt bubble prior to the Great Financial Crash of 2008 in the United States and European Union. This proposition was hypothesized as “Global Savings Glut Hypothesis” by a former Federal Reserve chairman, namely, Ben S. Bernanke. This paper observes that debt crises occur in countries where there are continuing trade surpluses too. Hence, the objective of this paper is to examine this conundrum.

The invisible hand controls the market economy making the highest wellbeing of the all involved parties. It is assumed that market forces guarantee the equilibrium even though there are fluctuations. Adam Smith maintains that the "Every individual necessarily labors to render the annual revenue of the society as great as he can. He generally neither intends to promote the public interest, nor knows how much he is promoting it ... He intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention.” He further maintains that "It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest." (The Wealth of Nations, 1776). The early economists, especially those who promoted market mechanism, emphasized only the supply side of the economy. They trusted self-correction of the market mismatches by market forces themselves.

The long history of market economies provides ample evidence about long lasting and ever persisting mismatches of the supply and demand forces of economies. The savings surplus in certain countries is assumed to be one of them. Observations on such savings glut paved the way for a new hypothesis in the middle of the first decade of this century, call “Global Savings Glut (GSG) Hypothesis.” Subsequently, GSG hypothesis has become the predominant and official theory attempted to explain the “global” financial crisis of 2008 and the Great Recession of 2008 – 2009. Ben S. Bernanke observed that, “In my view … it is impossible to understand this crisis without reference to the global imbalances” (Bernanke, 2009). According to Bernanke, Global Imbalances have created a GSG which led to create overwhelming debt in the U.S. and in European Union which

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4 Ben S. Bernanke served two terms as the Chairman of the Federal Reserve, the central bank of the United States, from 2006 to 2014. During his tenure as chair, Bernanke directly involved in designing the Federal Reserve's response to resolve the Great Recession of 2008 – 2009
created the great financial crash. Accordingly, this paper intends to briefly investigate GSG and its validity in explaining debt crises.

Any possible “global imbalance” must be connected to the international terms of trade and international exchange rate mechanism. It is obvious that this subject cannot be satisfactorily discussed without understanding the historical evolution of international exchange rate mechanism. Since, this paper, immediately after the methodology section, begins with a discussion of international exchange rate system, starting from the end of World War II, as it marks the first fully negotiated fixed global exchange rate system started with the Bretton Woods agreement.

However, it may presume that such discussion would be purely academic and has no practical value for policy makers, as the world is moving with no significant signs of long-term severe crises. Yet, it seems, that such optimism is not well founded on the backdrop of rising global debt levels. By the end of 2018, global debt amounted to USD 188 trillion; global debt to GDP ratio edged up to 226%. Surprisingly, developed economies bear the much of the burden than emerging and developing economies except China, hence it poses continuing higher risk to global economy. This discussion is timely at least out of academic curiosity. The paper ends by examining another empirically verifiable proposition that could possibly be used to explain the systemic global debt crises accurately.

**REVIEW METHODOLOGY**

It has been observed that, “Traditional literature reviews often lack thoroughness and rigor and are conducted ad hoc, rather than following a specific methodology” (Snyder, 2019). Hence, a comprehensive search of peer reviewed journal articles related to the topic was conducted. Since some concepts like Global Savings Glut hypothesis, are rather new and hence, searched for the author’s original propositions, published in authoritative documents such as Federal Reserve Board papers etc. Further, the key words were used to make an enhanced search to track key journal papers written on the international disequilibrium system. As a result, landmark journal paper written in 1961 was found. This paper titled “Optimum Currency Area” (Mundell, 1961) which has had tremendous influence in major policy applications with global implications in the United States and Europe. This paper argued to do away with fixed exchange rate mechanism established under Bretton Woods Agreement of 1944 and it was done in 1971 by implementing a flexible exchange rate mechanism to eliminate terms of trade disequilibrium that the U.S. had with Europe. Also, the same paper argued in favor of establishing monetary unions and it contributes to the creation of European Monetary Union. “The modern intellectual background of monetary unification was provided by the optimum currency area (OCA) theory, first elaborated by Mundell (1961) and then further developed by McKinnon.
(1963) and other scholars” (Dabrowski, 2019). Further, the impact of this paper continues. In the paper, it was argued that the flexible exchange rate mechanism would not work if monetary authorities of the countries which have surpluses prevent the natural adjustment of exchange rate and this analysis contributes to the imposition of tariffs by the U.S. under president Trump’s administration, against major trading partners including China. Any such ‘discovery’ of major peer reviewed article/s would open the path for systematic and focused review. This review got that opportunity.

FULLY NEGOTIATED FIXED EXCHANGE RATE SYSTEM BORN

The World War II ended in September 1945. Even before the end of the war, the leaders of the allied nations and economic thinkers such as John Maynard Keynes⁵ and Harry Dexter White⁶ had paid attention to create a new stable international payment system. A system was agreed upon in July 1944, in Bretton Woods in New Hampshire. This agreement became known as Bretton Woods Agreement. The Bretton Woods Agreement⁷ established a new global monetary system. It replaced previously existed gold standard with the U.S. dollar as the global currency. The system agreed upon was, for a fixed exchange rate system.

Under the agreement, countries promised that their central banks would maintain fixed exchange rates between their currencies and the dollar. And the United States promised that Federal Reserve would issue one ounce of gold for every 35 dollars presented. The promise of the U.S. seemed to be credible as the U.S. had nearly 2/3 (two third) of gold reserves in the world by that time. Thus, a fixed exchange rate system came into effect.

However, under this system, if any country faces a temporary balance-of-payment problem, it might need to borrow US dollars. In order to facilitate and regulate this process, an institute by the name of International Monetary Fund (IMF) was established. The IMF was officially established on December 27, 1945 when twenty-two member countries signed the Articles of the Agreement of IMF.

After the World War II, this system of fixed exchange rate worked very well until the “Nixon shock” in 1971. The West European countries were devastated by the world war II, re-built their economies rapidly with the support of the Marshall Plan. Yet, in the decade of 1960s the fixed exchange rate system began to create problems even though it worked fairly well in late 1940s and 1950s.

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⁵ John Maynard Keynes, an advisor to the British Treasury
⁶ Harry Dexter White, Special Assistant to the U.S. Secretary of the Treasury
⁷ Bretton Woods Agreement of 1944 is a multilateral agreement entered by allied nations of the World War II, excluding Soviet Union which declined to be a party to the agreement
FLEXIBLE EXCHANGE RATE SYSTEM EMERGED

A landmark paper titled “A Theory of Optimum Currency Areas”, published in 1961, set the initial theoretical basis for the United States to unilaterally jettison the Bretton Woods System in 1971 and also to adopt the common currency by the European Union by the year 1999. The author of the said paper Robert Mundell\(^8\), with reference to balance-of-payment said that “…fixed exchange rates and rigid wage and price levels prevent the terms of trade from fulfilling a natural role in the adjustment process.” The natural adjustment process he meant is that, a system of flexible exchange rates is considered as a device “whereby depreciation can take the place of unemployment when the external balance is in deficit, and appreciation can replace inflation when it is in surplus.” In a fixed exchange rate system, the said natural adjustment does not take place. Since, he insisted that the fixed exchange rate system has created an “international disequilibrium system.” In a way, this exercise could be considered as the reemphasizing of pure market forces and the supply-side of the economy.

Mundell, at the very beginning of the above mentioned paper insisted that, “It is patently obvious that periodic balance-of-payment crises will remain an integral feature of the international economic system as long as fixed exchange rates and wage and price levels prevents the terms of trade from fulfilling a natural role in the adjustment process.”

To get rid of the said “international disequilibrium system” allowing the terms of trade for fulfilling a natural role in the adjustment of balance-of-payment transforming the “disequilibrium system” into a system of natural equilibrium, Mundell advocated two systems.

A system of national currencies connected by flexible exchange rates,

A common currency for some regions with having elastic supply for inter-regional payments and connected to a flexible exchange rate system for international payments.

Both systems adopted subsequently. On August 15, 1971, President Richard Nixon addressing the nation, declared to end the fixed exchange rates system which had been established under the Bretton Woods System. Accordingly, the world adopted flexible exchange rates connected to national currencies. Thereafter, this has been the IMF’s official policy in supporting countries which are having balance-of-payment issues.

The second proposition about a common currency was subsequently adopted by the European Union creating the world’s largest economy, and establishing a totally new

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\(^8\) Robert Mundell received the Nobel Memorial Prize in Economic Sciences in 1999 for his pioneering work in monetary dynamics and optimum currency areas
currency called Euro for inter-regional payments which reduced transaction cost within Euro area while adopting a flexible exchange rate system for international payments.

DEBT CRISES BEGIN IN FLEXIBLE EXCHANGE RATE SYSTEMS

Like the post-World War II fixed exchange rate system, for a certain time period flexible exchange rate system worked well, say, until the Great Recession of 2008. Similarly, the system of common currency adopted by the European union seemed to have worked well until when the troubles appeared in 2008, even before the ten years of adopting the common currency, the Euro.

Yet, still, both systems namely, flexible exchange rate system and common currency of EU continue to provide for international payment system and for inter-regional payment system in the case of Euro area.

Both above alternatives have been proposed to eliminate what had become an “international disequilibrium system” under the fixed exchange rate system created by Bretton Woods System. Yet what occurred in 2008 – 2009, during the Great Recession, has shown that “alternatives” did not put the “disequilibrium system” into an equilibrium system. The world is struggling being unable to use physical capacity of production for the production of goods and services for the wellbeing of citizens of every country. Shrinking economies, high unemployment, reduction of global trade and investment volumes and poor performance of the capital markets were some of the major features of the crisis. This time the apparent problem is overwhelming debt in the EU and in the United States. In other words, the crisis is a debt crisis. Interestingly, again the culprit is the “international disequilibrium system” but the cause is not Fixed Exchange rate system, instead to many economists, the cause is “savings glut.”

GLOBAL SAVINGS GLUT (GSG) HYPOTHESIS

This is a novel hypothesis that has been used to explain the Great Recession triggered in the U.S. and EU almost simultaneously. This is the hypothesis, used by Ben Bernanke (the then Chairman of Federal Reserve) for the first time in 2005 to explain increasing debt burden in the U.S. economy. Competing theory is the Larry Summers’ Secular Stagnation Hypothesis which will not be discussed here as it is beyond the scope of this short essay.

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9 Larry Summers is a Professor at Harvard University, has published an article in February issue of Foreign Affairs titled “The Age of Secular Stagnation: What It Is and What to Do About It,” The article explores how expansionary fiscal policy by the U.S. government can help overcome secular stagnation problems and get growth back on track.
By the year 2005, Ben Bernanke identifies two reasons for the increasing debt burden in the U.S. One is continuing long term low interest rate and the second is the ever-increasing current account deficit. Interestingly, according to him, both issues were caused by the Global Savings Glut. How did it happen?

First, take the issue of current account deficit. The current account deficit of the U.S. had been increasing as a chronic economic problem. He argues, “In the first three quarters of 2004, the U.S. external deficit stood at $635 billion at an annual rate, or about 5-1/2 percent of the U.S. gross domestic product (GDP). Corresponding to that deficit, U.S. citizens, businesses, and governments on net had to raise $635 billion on international capital markets.” Such borrowings increase domestic debt burden.

However, in turn, when the interest rates are low, households and businesses sans government tend to borrow more and as a result such borrowings tend to increase imports while contributing to increase current account deficit further.

Then, the solution would have been to increase both long term and short-term interest rates. In the event, domestic borrowing from businesses and citizens would be less by reducing the external deficit. Ben Bernanke, the incumbent Chairman of the Federal Reserve, was not pursuing that policy. He says that he did want to do it but he could not do it. Why did he fail? Global Savings Glut was the excuse! He argues that, “my conclusion was that a global excess of desired saving over desired investment, emanating in large part from China and other Asian emerging market economies and oil producers like Saudi Arabia, was a major reason for low global interest rates. I argued that the flow of global savings into the United States helped to explain the “conundrum” (to use Alan Greenspan’s term) of persistently low longer-term interest rates in the mid-2000’s while the Fed was raising short-term rates. Strong capital inflows also pushed up the value of the dollar and helped create the very large US trade deficit of the time, nearly 6 percent of US gross domestic product in 2006” (Bernanke, April 2015).

Main argument of GSG can be explained as follows.

If a country invests more than it saves, then that country should have a current account deficit. Also, in that case the country would have a surplus on its financial account as the balance-of-payments account must balance. Surplus in the financial account means that the inflow of funds exceeds outflow. In other words, if a country invests more than it saves, that country would have a deficit in the current account and a surplus in the financial account.

Investment > Savings = Current Account Deficit

On the contrary, if a country saves more than it invests, then that country would have a surplus in the current account and a deficit in the financial account.
Savings > Investment = Current Account Surplus

So that the country saves more than it invests would have a savings glut and that country can lend more to the savings deficient countries like the United States. Such flow of funds, prevents the Federal Reserve from increasing interest rates to curb the credit (debt) growth in the United States. With this argument Federal Reserve effectively attempted to negate the blame thrown by many economists that the Federal Reserve which kept the rates too low for a period too long than necessary must be blamed for the 2008 credit crisis and for the Great Recession. If the FED increased the rate, there would have been more inflows of more funds into the country and thereby deteriorating the adverse situation further. The low interest rates, however, encouraged households and corporate sector to borrow more as the cost of borrowings were low.

However, from what is called pragmatic approach, the United States had been demanding especially from China to appreciate its currency Renminbi (which is commonly known as yuan) or to allow its currency to show the “true” value. The U.S. observed that the yuan was continued to be undervalued. In other words, China’s alleged policy was to fix its currency to the U.S. dollar, restraining prices going up of Chinese products in the world market, especially in the US market in addition to the inflation in the domestic market. It appears that China has been preventing externally influenced inflation. But the U.S. considered, such Chinese policy had created a situation in the U.S. to decline output and employment for which situation president Donald Trump10 responded by imposing high tariff for goods from Chinese origin. This kind of situation has been explained by Robert Mundell as far back as 1961 by the same paper mentioned above.

He insisted that, “The policy of surplus countries in restraining prices therefore, imparts a recessive tendency to the world economy on fixed exchange rates or (more generally) to a currency area with many separate currencies.” To illustrate this problem Robert Mundell used a simple model of two countries; country A and B.

Assume that initially in both countries there is full employment and equilibrium in balance-of-payments. Assume that both have national currencies; money wages and prices cannot be reduced in the short run without causing unemployment and monetary authorities act to prevent inflation (as is being done by China). Now, this equilibrium is disturbed by a shift of demand for goods from B to A. In other words, A is exporting to B now. The shift of demand from B to A causes unemployment in B and inflationary pressure in A. This disequilibrium resulted from the shift of demand will be adjusted to relieve B to the extent that prices are allowed to rise in A. But if the monetary authorities

10 Donald Trump is the 45th President of the U.S. He said, “From now on, we expect trading relationships to be fair and to be reciprocal.” May 29, 2018, President’s Briefings, whitehouse.gov.
in the country A prevents the prices from rising all the burden of adjustment is thrust onto country B causing a reduction in B’s real income as this cannot be rectified by a change in the terms of trade because B cannot lower wages out of concerns for political imperatives and A will not raise prices – then it might have resulted by a decline in B’s output and employment. Presumably, this might have been the thinking behind president Trump’s trade war with trading partners.

However, Mundell’s above explanation will too, strengthen the argument that excessive savings would create excessive debt in the United States as trading partners’ monetary policies prevent the natural adjustment process in terms of trade.

GLOBAL SAVINGS GLUT IN A SYSTEM WITH ELASTIC MONEY SUPPLY

The Global Savings Glut Theory of Ben Bernanke became the official theory that attempted to explain the system-wide debt crisis occurred during the Great Recession of 2008 -2009. They blamed the global imbalance, savings in the eastern countries like China, Japan, South Korea, Taiwan and Saudi Arabia in the middle east. Some economists reject this notion. Particularly, economists of Austrian School criticize GSG because GSG has not accounted the money created in the financial system under the Fractional Reserve System, as such, it is not purely the savings that created the overwhelming debt crisis; an argument that cannot be simply ignored.

DEBT CRISES AND LOOMING DEBT CRISES IN COUNTRIES WITH HIGH SAVINGS

Ben Bernanke questions, “Why is the United States, being the world's largest economy, borrowing heavily on international capital markets--rather than lending, as would seem more natural?” (Bernanke, 2005). The answer derived from the GSG theory is the unavoidable current account deficit. Further, the same current account deficit led the U.S. citizens, businesses and the government to be heavily indebted being unable to increase interest rates in curbing heavy credit growth. Then, vice versa too, must be true. In other words, if a country has a continuing surplus in the current account, that country’s citizens, businesses and the government would have been free from heavy indebtedness. Data show the exact opposite of it. Those countries which have current account surpluses have accumulated heavy debts in their economies. Two notable examples are the Japan and China.

By Q2 of 2019, Japan’s Total Credit to Non-Financial Sector stood at 379.6% of GDP, in China corresponding figure was 261.5% of GDP. For comparison the corresponding figure for the U.S. was 249.7%. (Data source: Bank of International Settlement).
Both China and Japan post surpluses in the current account and the U.S. has external deficit. Credit (debt) sores in all. What is this “conundrum?”

UNDERSTANDING THE REAL PROBLEM THROUGH THE SOLUTION APPLIED

During the Great Recession, the United States used a new policy tool in order to rescue collapsing banks in resolving the debt crisis and to spur growth. That policy device is known as “Quantitative Easing (QE).” During the said recession Federal Reserve dramatically reduced the rate of interests anticipating that citizens and businesses would borrow as credit was so cheap but that did not happen. Simultaneously, fiscal policy kicked in by reducing taxes with a hope that investment and consumption would recover. Unfortunately, economy did not produce results expected. So, Federal Reserve opted to use “Quantitative Easing” in expanding its liabilities by increasing liquidity in the financial system until the economy is turned around and that policy ended in October 2014. Accordingly, QE was the chosen policy by the U.S., which is a current account deficient country, in resolving a severe debt crisis.

Japan was and is a current account surplus country but began to show difficulties starting from early 1990s. As in the case of the U.S. Japanese monetary authorities brought down the interest rates but economic slowdown continued. Japanese rate of interest for the next two decades had been near zero, however, rates can never be brought down more than zero. Then, Japan began QE, becoming the pioneer in using this policy which was the same policy later experimented by U.S. during the Great Recession.

Accordingly, the same solution was used by a large economy which had current account deficit and another large economy which had been posting surpluses in the current account. Through the solution used, it may be concluded that crises in both countries had the same cause. In fact, the root cause of the crises was same, being the cause was overwhelming debt in the system. It can be argued that Japan virtually created fixed exchange rate system with the U.S. preventing “the terms of trade fulfilling a natural role in the adjustment process” thus creating a disequilibrium with having the benefit of disequilibrium for Japan. Yet, Japan suffered from a bigger debt crisis before the U.S. and expanded the balance sheet of its central bank much faster than any nation; and Japan continue to be a current account surplus country. How this conundrum be explained? Income inequality in Japan is a proposition put forward to explain it, but it is not a sound theory.
ANOTHER DIMENSION OF DEBT CRISES: ECONOMIC SYSTEM GAP THEORY

A paper titled “Economic System Gap Theory” was presented at the Cambridge Business and Economic Conference held in July 2018 in Cambridge, U.K. This piece of theory explains that the international economic system is predominantly a disequilibrium system because by design the system is required to live beyond its monetary means even if distributable income is distributed evenly. So, this dynamic will not change even if the savings glut is prevented by all central banks agreeing upon to corporate allowing terms of trade to fulfill a natural role in the balance of payment adjustment process transforming the international disequilibrium system into an international equilibrium system in regard to balance of payment.

Consider a system where the value of output purchased is much more than the income. This is the situation that defined as “living beyond means” and is a disequilibrium system. Then, it can be argued that the purchased output can be reduced to match the income. This can never be done in the contemporary global economic system, according to the theory. This difference between total expenditure and income is called a “systemic gap” hence this theory is called as “Economic System Gap Theory.” The said disequilibrium can be put into equilibrium only by creating debt exceeding savings, that led to accumulate overwhelming debt as a result.

Hence, the theory concludes that, “After a period of economic activity, it does not need necessarily be a period of economic growth, if private consumers are not in significant debt, then the government could be filling something defined … as “Economic System Gap” from a large amount of debt out of which a significant component cannot be paid back – and if both private consumer and the government are not in significant debt, then the “Economic System Gap” is being filled from income derived from stock and derivative markets, which means there should be a bubble in the stock market with heavy indebtedness of holders of stocks and derivatives. If none of the above is happening, then it must be an (immature) economy that is expanding by reinvesting the expanded capital and producer credit and mostly producing goods and services that do not satisfy the demand of immediate consumption. In all former scenarios except the last, the economic system may crash soon due to “over-indebtedness”, if systemic partial debt-deflation is not undertaken by design. In the latter case, the economy will fall into any one of the former scenarios as it grows. The only other two possibilities for an economy to avoid a (systemic) debt crisis is that it enjoys large non-credit based foreign reserve surpluses, or that over-indebtedness is resolved from time to time by accidental reflation. This is the general behavior of contemporary capitalist system explained by the economic system gap theory.”
Accordingly, the above mentioned disequilibrium is a disequilibrium that can never be corrected by preventing “savings glut” through adopting a flexible exchange rate system allowing the terms of trade fulfilling a natural role in the adjustment of balance of payment process or by replacing the natural adjustment process imposing tariff against the countries which have current account surpluses that do not allow the natural adjustment process.

CONCLUDING REMARKS

The world needs to resolve this conundrum pointed out above, theoretically and in practice. The existing global physical capacity to produce goods and services sustainably is enormous and also can presume that the physical ability to increase the productive power is immense. But both have been prevented continuously, especially since the Great Recession. This is a similar situation that existed just prior to the end of World War II. The world had the capacity to produce but was not producing. Economic thinkers who gathered in Bretton Woods in 1944 issued a “Joint Statement by Experts” which addressed the requirement of credible international payment system –And the problem was resolved by signing the Bretton Woods Agreement. By that time the agreement was timely.

The demise of the fixed exchange rate created by the Bretton Woods System in 1971 provided better space for central banks of sovereign nations to corporate under a more progressive flexible exchange rate system and as a result the global production continued to increase for the benefit of global citizens.

However, now the world is experiencing a similar situation just prior the end of World War II, being unable the international system to support global production, then due to lack of more flexible international payment system and this time due to debt crises. The world might need another “Joint Statement by Experts” that would address the issue properly as the current tariff war covered under petty patriotism cannot resolve the said international disequilibrium.

REFERENCES


PERSPECTIVE
Achieving Economic Development has been the main objective of every developing country for which various economic and political systems are adopted over the past decades by those countries. However, most of those countries are still struggling for achieving the economic development even though they have succeeded in some aspects of the economic development process. Sri Lanka has no an exemption in this regard when it come to the key aspects of the economic development such as volume of GDP, Growth Rate, Per Capita Income, Poverty Alleviation, Capital Accumulation etc., though the country can please with respect to the Human Capital Development aspects such as education, health, life expectation and quality of life.

It seems that the country has followed the right path on the development continuum over the past decades transforming the country’s economy from Agri based economy to Industrial economy to service economy now. In 2019 report of the Central Bank of Sri Lanka, it records that the service sector accounts for 57.7% of the GDP of the country while Industrial sector and agriculture contribute 26.1% and 7.0% respectively. However, it is evident that the country is struggling to achieve a satisfactory level of growth rates over the past years even though some internal and external factors stood unfavorable for the country. As an example, the economic growth rate of the country over the three years as an example, recorded 3., 2, 4 respectively. Some economist claimed that Sri Lanka has reached to what they refer as “Middle Income Trap” for which we need a comprehensive economic strategy for breaking the deadlock and achieve a higher growth rate.

Various aspects and factors have been highlighted as strategies for higher economic growth. Among them are export oriented economy, technology-based industrialization, knowledge economy, innovation and macro market approach, and Human capital development. No doubt, the economic strategy should address all these aspects simultaneously for achieving and sustaining a higher growth rate, a must for the development of the country in future. However, among these, the human
resource of the country seems to be promising, given the fact that, first, Sri Lanka is endowed with highly educated population, and second, the economy of the country is largely service based. Hagen (1986) proposed six strategies for economic development namely, (1) foreign trade, (2) technological transfer, (3) resource allocation, (4) structural transformation, (5) human capital formation, and (6) savings and investment among which human capital formation stands as pivotal making a interaction among others.

Harrison (1973:3) posited

“Human resource constitutes the ultimate basis for the wealth of a nation’s capital. Resources are passive factor of production; human beings are the actives agent who accumulate capital, exploit natural resources, build social, economic, and political organization. Clearly, a country which is unable to develop the skills and knowledge of its people and to utilize them effectively in the national economy will be unable to develop anything else”.

How human resources or human capital formation accelerate the economic development of a country. The objective of this paper is to examine the ways of how managing of human resource can contribute to the enhancing the economic development of the country. This paper will discuss the main areas of Human Resource Management (HRM) and Human Resource Development (HRD) as contributors for economic development.

1. Human Resources Management (HRM) particularly at national level will improve the factor productivity through effective deployment and mobility of human resources through economic sector of the country. This will improve the productivity of the concerned sector making a significant contribution to the economic development of the country by first, shifting the human resources from less productive sectors to high productive sector. For an example, it seems that employment in the industrial sector and service sector of the country is increasing while it declines in the agricultural sector. This happens alone with the growth and the expansion of the respective sectors which is a healthy human resource mobility in the economy. Second, the development of human resource, i.e. placing the right person to the right jobs will improve the productivity of those jobs resulting in a higher productivity in each sector. The improvement of productivity of the high productive sectors of the economy will accelerate the growth rate in those sectors.
2. Human Resource Development (HRD), which is branch of HRM, will increase the human capital formation of a country if it happens in a planned manner. Human capital is defined as the productive investments in humans, including their skills and health, that are the outcomes of education, health care, and on-the-job training (Todaro, 1994). The accumulation of human capital will improve the organizational effectiveness resulting in economic development. As an example, consider the international business sector of a country. If the corporate sector of a country will go for internationalization of their business with right strategic management insight, it will improve the external sector of the country resulting in expansion of earning and foreign capital formation. This is a vital aspect for economic development of a country in globalized world context. Thurow (1996) posits that countries wishing to develop and succeed in the future must begin to make long-term plans and commit major resources as investments in the education and the high skill formation of their society.

3. Economies emerging as knowledge economies seems to have an accelerating growth of their economies and a sizeable number of countries is in the process of transferring their economies to knowledge economies. Felin, Zenger, and Tomsik, (2009) claimed that across a broad range of disparate literatures, a consensus has emerged that our society is moving toward a postindustrial or post-bureaucratic society in which knowledge and information drive economic growth. It defines the knowledge economy as production and services based on knowledge-intensive activities that contribute to an accelerated pace of technical and scientific advance, as well as rapid obsolescence. The key component of a knowledge economy is a greater reliance on intellectual capabilities than on physical inputs or natural resources. As per this definition, the economies with knowledge intensive industries based on intellectual capability of its human resources would achieve higher growth particularly in external sectors. South Korea, Japan, China, India, and Malaysia can be cited as some of the countries having comparatively higher knowledge-based economies. The degree of the intellectual capability is a function of the level of the human resource development of that country. If a country invests in human capital development in education and training in a planned manner as it requires for the country, it will improve the intellectual capability of the country leading to creating of new businesses in both internal and external sector. As an example, the Information Technology (IT) can be sited. One of the emerging sectors in IT is developing of online computer games with sort of artistic features. If we can develop these game
designers with entrepreneurial skill, they will create online business which will be a vital sector, actually an emerging sector of the economy of the country.

4. Inventions and innovations have a critical role in today’s highly integrated and diversified market particularly in global market. If we can increase the number of inventions and innovations and commercialization of them, that will improve the trade volume since they lead to value creations, contributing to the expansion of the GDP. We need higher investment or spending on research and development for this purpose. This should happen both at national and corporate sector. This is an area where HRM matter a lot. Thompson (2018) claimed innovation has been the engine of growth in countries such as Austria, Finland, Sweden, the United Kingdom and the United States, between 1995 and 2006 (OECD, 2010), and, in their search for sustainable sources of economic growth, more industrialized and emerging nations are expected to become innovation economies. Inventions and innovations expand the value chain of the production process which results in creating and expansion of new business resulting in higher growth of the economy.

The role of HRM in this regard is to assess, identify, motivate, and guide the value creating process through inventions and innovations. HRM and HRD poster the innovation and inventions by creating innovative culture in organizations and developing innovators both at national and organizational level. The contribution of HRM for Innovations and creativity comes from recruitment and selection, performance management, training, and development and largely through strategic HRM.

5. Social Capital. Social Capital (SC) is one of key aspects of human resource development at individual and corporate level. Social capital is defined as the set of network-based processes, built upon generalized trust, that influence the ability of a country’s inhabitants to share, cooperate and coordinate actions. In short, social capital is generalized trust and its networks (Thompson, 2018). Creating a trusting and sharing environment both at organizations and national level is a key function of professional HR strategists.

The effect of social capital for economic growth can be identified at both Micro and Macro Level. Thompson (2018) claimed that regarding microeconomic channels, trust and cooperation within the firm, industry or market may lower transactions costs, help enforce contracts and improve credit access. This is what is called the Synergy at organizational level. The socio capital will increase the
corporation among the organizations such a manner that they will find the way to maximize the overall efficiency of the network. The overall value chain will improve further in term of cost, service, delivery, quality etc., so that the concerned industry will be expanded.

At the macro level, the effect of social capital on economy might come from different frontiers. First, social capital can increase the effectiveness of economic policies (Easterly & Levine, 1997). Since sharing of information between parties based on trust happens with high social integration, the outcome economic policies will be more realistic, and context bounded. Second, social capital will increase the level of innovations making a strong effect on economy. Akçomak and Weel (2009) argue empirically that, by facilitating interaction, cooperation and sharing, social capital influences innovation, thereby impacting on economic growth. As a result, the economy will be benefited with higher innovations in business sector and even with social sector.

6. Poverty Alleviation. One of the key objectives of economic development is to reduce the poverty of its population enhancing equal opportunity for economic engagement and income distribution of the country. According to a study of the World Bank, poverty incidence is greater than 16% if the bread earner in a household received less than 6 years of education; it decreases to 7% in the case of 6–9 years of education, and further to 2.5% in the case of 9–12 years of education; poverty is almost unlikely for a household with the laborer having received more than 12 years of education. People have started to realize that empowering the poor and capacity building are conducive to reducing the incidence of sinking back into poverty, consolidating anti-poverty achievements, and improving the sustainable development of the poverty-stricken population and regions (Eryong, & Xiuping, 2018).

HRM and particularly HRD acts as a mechanism for poverty alleviation through enhancing the capacity of people through education and training and development. Enhanced human capacity will expand the opportunities available for them to engage in productive economic activities resulting in creating and sharing of economic benefits of the country. The economic engagement of talented people doses not limit to a domestic activity, but they will have more opportunities in other countries as well. It is true to posit that the opportunities will be more for talented people in globalized economic context than in the
locally. Further, those who work in foreign countries can earn more than the domestically employed counterparts since they earn in foreign currency. However, to achieve this poverty reduction objective through HRD, there should be a national human development plan in line with the countries long-term economic development plan. The country should look at not only the domestic situation, but also the global situation if it needs to reap the full benefits of HRD in poverty alleviation.

7. Social Development. The concept of social development is an integrated part of sustainable development prescribed by the United Nations as one of the Millennial goals. Parise, (2007) cited four components of sustainable development, namely, environment development, economic development, individual development, and social development linking each other. HRM and particularly HRD is instrumental here for both individual and social developments with an integrated effect on other two sides.

Chow (2004) defined social development as process of leading transformation into the social system and institutions. It is having the objective of improving the capacity of societal members both individual and organizations according to the objective of the country. Social development implies qualitative change of the peoples in terms of serving the country through effective execution of the responsibilities assigned to social entities. This is to say that the people of the socially developed countries perceive that the development of their country is a part of their responsibility. For instance, residents of the countries like USA, UK, China, India, Australia and many other developed and developing countries are considering economic growth as one of the major responsibilities (Krypa, 2017). As result, the productive economic engagement of the individual and corporate citizens will be high resulting in enhanced economic dynamism.

What is the role of HRM and HRD in particular in the social development process? since HRD strategies are including factors like “economic, social, political, cultural, educational, physical, biological, mental and emotional traits of the peoples related to any organization or country economy” (Kurihara, 2008), HRD will facilitate the change of the overall mind set of the people and management philosophy of the institutions. This is a sort of capacity building process of individuals and institutions for higher productivity and achievement of outcomes. On the other hand, this is relating to motivating of constitutes of the society for higher achievement.
8. Performance Management. Performance Management (PM) is one of key aspects of HRM where the focus will be placed on achieving and maintain higher level of performance in people in organizations. PM is defined as an integrated approach to ensure that an employee’s performance supports and contributes to the organization’s strategic aims (Dessler, 2019). Performance management's goal is to create an environment where people can perform to the best of their abilities to produce the highest-quality work most efficiently and effectively. However, performance management involves development of work systems in organizations so that the strategic performance of organizations is enhanced.

The relationship between PM and economic development is quite linear. The key player of any economy is the corporations both in private and public sector operating in various sector of the economy. if they are performing well which is largely based on the performance of the human resources, the performance of the economy is enhanced. As an example, it is a noted fact that the loss-making corporates in the public sector in Sri Lanka, make a negative impact on economy since it is imposing a burden on the budget of the country. If it happens in other way round, it will be an impetus to the national economy. The role of performance management is instrumental for higher corporates’ performance which is necessity for economic development.

9. Talent Management. Managing the talent is one of the aspects of strategic human resource management which is contributing to the economic development in many ways in developing economies. Loosing of key latent at national level which is generally term as “Brain Drain” would be a barrier for economic development. common wisdom suggests that the migration of people endowed with a high level of human capital, the so-called brain drain, is detrimental for the country of emigration (Beine, Docquier, & Rapoport, 2001). This is highly materializing if a country loses its talent in the key economic areas of it. Talent migration might be caused by some factors among which the lack of opportunities for productive engagement is one of key factor.
The level of brain drain can be minimized if an effective talent management system is operating in the corporate sector of the country which is a part of strategic HRM. Collings, and Mellahi, (2009). define strategic talent management “As activities and processes that involve the systematic identification of key positions which differentially contribute to the organization’s sustainable
competitive advantage, the development of a talent pool of high potential and high performing incumbents to fill these roles, and the development of a differentiated human resource architecture to facilitate filling these positions with competent incumbents and to ensure their continued commitment to the organization”.

As described by this definition, strategic talent management deals with development of talented people and giving the suitable opportunities for them to contribute productively for the development of the organizations of the country reducing the brain drain in long run.

Achieving of economic development and sustaining the economy is one of the key objectives of every developing country irrespective of their nature. Different countries have implemented various economic strategies for achieving this objective. Sri Lanka, as a developing country has been implemented various strategies for economic development over the past decades. This paper highlights the fact that the economic development of the country can be accelerated if it can manage its human resources effectively. The ways that HRM can contribute to the economic development are through

1. Development, deployment and mobilizing the human resources from less productive sector to high productive sectors
2. Formation of human capital through human resource development
3. Transforming the countries economy to a knowledge-based economy through knowledge intensive industries.
4. Increasing the level of innovations and inventions of the country resulting in new venture creation
5. Increasing the social capital of the country particularly in the corporate sector resulting in increasing the efficiency of the value chain
6. Contributing to the poverty alleviation through increasing the economic opportunities for people
7. Contributing to the social development which is one aspects of sustainable development
8. Enhancing the performance of the corporate sector through performance management system
9. Reducing the level of latent leakage (Brain Drain) through strategic talent management process
References


BOOK REVIEW

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INTRODUCTION

Joseph Eugene Stiglitz, is an American economist and a professor at Columbia University and former Senior Vice President and Chief Economist of the World Bank. He is the recipient of the Nobel Memorial Prize in Economics in 2001. His book on ‘People, Power, and Profits: Progressive Capitalism for an Age of Discontent’ which accounts of the dangers of free market fundamentalism is an interesting volume. This book consists of main two parts: Part I titled as ‘Losing the Way’ includes first seven chapters of total eleven chapters of the book. Part II is titled as ‘Reconstructing American Politics and Economics: The Way Forward’ that includes the rest of the chapters. All the chapters of this book discuss the drawbacks of current economic and political system in America and a need of political and economic reforms to strengthen the economy and equality.

It is very important to read this book due to several reasons. First, currently America is going through a bad situation due to COVID-19 pandemic and reader will be able to get knowledge about the history of the political economy in United State of America (USA) which led to the current situation. Second, for Sri Lankan readers, this book is important to learn from American economic policies. This book can be used as a role model to avoid
adverse policies and improve and continue some of our policies because there are many similarities between USA and Sri Lankan economic and political situation.

CONTENT OF THE BOOK

Chapter one gives an introduction to this book. The author summarizes the American economy form past to present and critically evaluates the policies of every political regime. He emphasizes that America had a democracy at the beginning and later on economy and polity went well beyond economics. Stiglitz explains the way that American economic divide has led to a political divide and the political divide has reinforced the economic divide. Therefore, in this chapter, he highlights that those with money and power have used their power in politics to write the rules of the economic and political game in ways that strengthening their advantage. Further, he explains how globalization and deindustrialization left a majority of citizens behind, especially the less educated. With this background, Stiglitz shows that wealth is not equally shared and income inequality is very high. Hence, in this book he briefly discusses how America can restore shared growth by understanding the true source of nation’s wealth. Further, he mentions that it is worthy to analyses past economic and political agenda to understand the reasons for failure and why it does fundamentally wrong. Further Stiglitz discusses the alternative theories of wealth of the nation.

Chapter two critically discusses the slow growth and inequalities in America emerged over the past decades. The author explains the way that growth of the American economy slowed around 1980s and declined without recognizing the way that economy was failing to deliver prosperity for large part of the population. Stiglitz emphases that both policy makers and economists have not paid their attention on inequality. This chapter points out that the American economy and many other advanced countries has not been working well because of low growth, stagnating income and growing inequality which are deeply interrelated reflecting low living standards of the most of citizens. The author mentions that America has not been doing well in every dimensions since it didn’t grasp the true source of the wealth of a nation. He explains the way that low investment of human capital and physical capital naturally translate into lower rates of growth of productivity and low standards of living in future generation. The author deeply explains the different dimensions of inequalities existing in America: inequality in the use of environment and resource, inequality of wealth, income, health, education, opportunity, gender and race. Inequality of health is critical in USA because of weak policies regarding health sector. According to him, throughout the history of America, inequalities in race, ethnicity and gender have been critical especially in the labor market, education, opportunities, wealth and social and cultural aspects. Inequality of wealth has mostly influenced on opportunities. Inequality in opportunity is other dimension of inequality that describe in this chapter. The author explains that opportunities depends on the social status rather
than ability or knowledge. Therefore, he mentions that America is wasting its most precious resource: the talents of its young people. He states that the slogan ‘leave it to the market’ never made sense: one has to structure markets and that entails politics. Further, this chapter points out some key mistakes that America did when they restructure the market. Therefore, he reiterates that America downplayed key factors that were essential to the success of capitalism over the past two hundred and some years.

Chapter three critically explains how market power caused to slow growth and so little of that growth has benefited to ordinary citizens by increasing inequalities in the society. In this chapter, Stiglitz explains that although competitive model provides a good or even adequate description of the American economy long ago, today a few firms have earned a massive profit and continues their domination by creating high inequality. He nicely explains how market power allows firms to exploit consumers by charging higher prices and by taking advantage of consumers in a variety of other ways. Stiglitz critically explains that profit earn from market power has translated into political power and how it caused for weakening unions and the enforcement of competition policy which gives free rein to banks to exploit ordinary citizens. The author also explains how we can use innovation to reduce market power and increase competitiveness. This chapter also explains how economy can create wealth or grabbing wealth by exploiting others. Therefore, the author points out that innovation and learning is the only true source of creating wealth since it positively affects on national income. This chapter also discusses how market power and national income should be divided for labor income, the return to capital and rents according to public policy. Further, Stiglitz explains the big difference between income from work and rents. He highlights that only worker works more the size of the national income increases, but rents are unhelpful to growth and efficiency. The worst situation of rent is that it is harmful to good economic activities by ‘crowding out’ or by increasing monopoly power. The author further explains the way that the share of labor diminishing, while the share of rents is increasing by weakening of power of workers and their unions and with globalization. Also this chapter describes the evidence of how market power and profit increase in the American economy using innovation of new form of barriers to entry and clever ways of driving out existing competitors. Finally, he deeply explains how the economy can reduce market power and restore competition in the economy from both firms’ and consumers’ aspects. Further the author mentions the importance of changes required in legal framework to reduce market power.

In the fourth chapter, the author discusses how globalization led, in various ways, to American economic crisis and why it hasn’t lived up to its promises. He explains that globalization badly affected on the USA economy through the demand for low skilled labor, imports and exports, interest rate, and reducing tax revenues. The author criticizes that America has mismanaged the globalization and its consequences as well as the consequences of technological progress. Stiglitz mentions that protectionist policies do
not help to solve the problems arise from globalization such as deindustrialization, unemployment and inequality, but those policies caused to worsen them. He explains that the benefits of globalization are not fair for every one even though America increases its Gross Domestic Product (GDP) using comparative advantages. This chapter also describes the nature of twenty first century trade agreements. Over the past sixty years, tariffs have been vastly lowered but current trade negotiations typically focus on other issues including regulation and ‘non-tariff’ trade barriers, intellectual property and investment. Further, he mentions that renegotiation of trade agreements will neither reduce the trade deficit nor led to a return of manufacturing jobs. This is because the trade deficit is determined largely by macroeconomic factors such as monetary and fiscal policy, not by trade agreements. According to him, impact of globalization goes far beyond economics. The author here sketches out an alternative agenda for globalization which will work better for the both rich and poor, but not necessarily for the large multinationals who have taken over the globalization agenda. The author explains the importance of the rule based system for governing international trade and government intervention for correct the bad effect of globalization. Further, he suggests the need of good social protection systems to protect people harmed from globalization.

In chapter five, the author highlights that finance is central to the creation of today’s economic, and social and political malaise. This chapter discusses the financial sector’s misalignment of private and social interest and contagion to the rest of economy. The author explains how inequality increased in the American economy and slowing growth because of financial sector moved away from their central task of traditional intermediation. He highlights that because of financial sector’s shortcomings most talented young people’s knowledge does not contribute to strengthen the real economy. He emphasizes that financial sector should stop harming the rest of society through irresponsible lending, predatory lending, abusive credit card practice and exploitation of market power. Further, Stiglitz critically explains the way that financial sector harmfully affects on economy since banks have refused even to bear the risks associated with bad lending. He mentions that banks use its power not so much to serve society but to extract profit for itself. Hence, he mentions that a government in any country has to take an active role in the financial sector. Further, he highlights the importance of necessary reforms in politics to achieve economic reforms for well-regulated financial system with government intervention to reduce harmful side of the financial sector.

Chapter six explains how new technologies may exacerbate all of the problems that discussed in previous chapters such as jobs, wages, inequality and market power and other two new factors such that privacy and cybersecurity. The author mentions that advances in technology should be a blessing if they enable us to ensure that every one has access to the basic requisites of decent life. This chapter points out that although there are advantages of technological development, those advantages themselves create
disadvantages such as loss of jobs, low wages, numerous abuses, market power, invasion of privacy, and political manipulation. Stiglitz suggests some possible solutions for these problems. The author deeply explains how we can maintain full employment in technologically advanced world using monetary and fiscal policy. Moreover, he mentions that unemployment is a political problem since imposing sufficient fiscal stimulus is politically difficult. To overcome above mentioned issues, the author suggests that government should play a vital role such as assigning ownership of data, regulating how data can be used, assign a minimal price for compensation for a firm using personal data or imposing tax on usage or storage of data. Finally, the author emphasizes that it difficult to solve problems arise from advancement of technology by markets or individuals on their own unless we take strong collective action.

The objective of chapter seven is to explore both the need for and limits of collective action. It emphasizes that collective actions can do far more than individuals working alone. Idea of this chapter is that collective actions should be done through government with all the powers that implied to improve the societal well-being. However, because of the free riding problem, contributions have to be compulsory, that is, there has to be taxation. A well-functioning society thus requires a balance between individual and collective action. Political institutions are complex. One of the strategies of Cooperation and the Right has been to preserve the current imbalance of power by making such collective action more difficult. Political institutions have the power to do well, but also to do harm. Constructing institutions to enhance the likelihood that government will be a powerful force for good has been the challenge confronting democracies from the beginning. This is the challenge confronting US today.

Chapter eight discusses about the way of restoring Democracy in America. America was constructed as a representative democracy. As explained above, but the nation has evolved in practice into a country where a minority seems to wield power over the majority. With this background information, this chapter discusses about three main areas: ensuring fairness in voting, maintaining an effective system of checks and balances in government, and reducing the power of money in politics.

He suggests six reforms to ensure the fairness in voting: every American citizen should vote and every vote should count equally. This chapter further argues that strengthening the system of checks and balances and the role of the professional civil services and independent agencies is highly needed to prevent the agglomeration and abuse of power. The author explains the need of an amendment of term limiting for Supreme Court Justice as the Court has become ever more divided. To a large extent, Supreme Court is making problems. He presents an agenda for reducing the power of money in politics, the greatest falling of the American political system. This is an arena where what is required above all else if the right norms and ethics. American capitalism works against creating the right
norms. Therefore, he calls for a new movement. He highlights the need of re-conceptualizing the national parties along the natural political identities of the twenty first century. In short, two essential reforms discussed in this chapter are 1) we need to do more to curb the influence of money and 2) we also have to reduce the disparities in wealth.

Chapter nine discusses reforms which are necessary to restore growth and social justice and enable most citizen to have middle class life. All of this will be possible if there is more collective action- a greater role for government. This chapter begins with a discussion on growth by restoring the true foundations of wealth described in chapter one. Economic growth depends on two factors: growth in the size of the labor force and increase in productivity, output per year. The anxiety in recent decades is that neither labor force participation nor productivity have been doing well. The author presents some suggestions to increase the labor force participation such as changing the work place to accommodate more women and older workers, forming a healthier population, and higher investment in research. The only way to increase the productivity is more investment in research. Then the chapter goes on to address the challenge of the moment – making the transition from the industrialized economy of the twentieth century to the twenty first century service, innovation, and green economy in ways that maintain jobs and opportunity, provide for better social protection and better care for our aged, sick and disabled and provide better health, education, housing and financial security for all of our citizens.

This chapter explains the role for government in promoting social justice which ensures everyone has a livable income, public education, health, research, and infrastructure; running a good judicial system; and providing a modicum of social protection. For that, income distribution should be more equal through more progressive taxation, transfer, and public expenditure programs. There are many other ways to minimize inequality such as reforming corporate governance laws, passing better labor laws, strengthening and enforcing discrimination and competition laws, increasing minimum wages, and providing wage subsidies and an earned income tax credit. High-quality free public education can be a major force for bringing society together. The author identified that there are three aspects of intergenerational justice that have been given short shrift, and which a progressive agenda needs to correct: lack of investment, despoiling our world with climate change, and large fractions of young people don’t have the opportunities. Meanwhile, house prices, relative to incomes, have soared.

Chapter ten discusses about things that are at the core of a decent life: people care about jobs with fair pay and a modicum of security both before and after retirement, about education for their children, about owning a home, and about access to good health care. In each of these areas American style capitalism has failed large swaths of our population.
A central idea in the proposals is the public option. With a public option, the government creates an alternative, basic program to provide products like health insurance, retirement annuities, or mortgages. Competition between the public and private sectors will break the back of market power.

The Affordable Care Act (“Obamacare”) made an important start in ensuring that all Americans have access to health care. He suggests that the government should provide basic health insurance for all. Further, social security system should be revitalized, making sure that it is on sound financial footing, and providing a public option. Part of the revitalization of Social Security would involve expanding the instruments in which it can invest. For example, to invest money in a broad-based equity fund or in bonds to be issued by a newly created Infrastructure Investment Bank. By recognizing the changes in modern technology and information systems, government can create a twenty-first-century mortgage system. And also government could use the internal revenue service (IRS) as a mortgage payments vehicle. America needs, in short, to have a mortgage market with the kind of innovative public option suggested above. Access to universal education is a central part of an agenda ensuring a decent life for all Americans. There are many ways of ensuring the universal access to higher education, lower tuition and publicly provided income contingent loans. The federal government also should provide incentives for states to engage in more equalization of funding between rich and poor communities, and should itself provide more funds to help equalize opportunities among the states. Further, there should be even more special assistance from the federal government to districts with large numbers of poor individuals.

Chapter eleven discusses about the way of reclaiming America by summarizing the agenda the author presented in previous chapters and explaining the stronger points, which America has to achieve it. Over more than two centuries, America, based on the shared values and beliefs, has worked well. However, today America has problems such as high income inequality, and the fragility of our democratic norms and institutions. The deeper problems in our economy are unsolved or aggravated weak real wages, growing inequality, poor health, declining life expectancy, weak long-term investment. He further explains that current policies in America will move the country further away from the dynamic and innovative knowledge-based economy.

He mentions that America didn’t get into the present perilous position overnight. There were warnings that things were not going well for large parts of the country, and that if these failings were not addressed, our situation could easily give rise to a demagogue. Past governments chose to ignore these warnings. They got the economics, the politics, and the values wrong. They didn’t understand the true foundations of our well-being rested on the foundations of science, rational enquiry, and discourse, and the social institutions derived from them, including the rule of law based on democratic processes.
The damage that is being done to our economic and political institutions is palpable. It won’t be undone overnight: there will be a legacy for a long time. However, in each and every dangerous episodes of American history, they corrected their course. He points out that America has strengthening points to reclaim its position such as efficient government.

This book presents an alternative progressive agenda. It takes at its heart one part of the Preamble of the Constitution, to “promote the General Welfare.” He has outlined a platform that he believes can serve as a consensus for a renewed Democratic Party. It can show that the party is united in support of the kind of values. We have to have a sense about that the success of the economy is to be measured not just by GDP but by the well-being of citizens. The new social contract includes the preservation of the environment for future generations, modicum of equity and security, with everyone having a chance at a middle-class life without the blight of discrimination, bigotry, and exclusion, and restoring political and economic power to ordinary people. Thus, among the key terms of this new social contract would be those that provide for justice and opportunity for all, rich and poor, black and white: making the American dream a reality. An agenda focused on fostering progress has to be based on a deep understanding of the sources of the wealth of the nation, commitment to ensuring the advances in technology and globalization are both shaped and managed in ways that can benefit all. In this progressive agenda, government plays a central role, both in ensuring that markets work as they are supposed to, and in promoting the general welfare in ways that individuals on their own, or markets on their own, can’t. With the agenda he has proposed, all Americans can attain the life to which they aspire. Incrementalism policies as important as they are as components of an overall strategy, are not up to the challenges America faces today. We need the dramatic change in direction that this book’s progressive agenda calls for.

SUM UP

In this book the author wants to explain the reason for failure of economic system and what could be done about it. According to him markets often don’t work well and problems growing worse. Inequalities were increasing beyond anything that had been imaginable during the past period. Thus this book tries to answer the question about ‘how did American economy get such situation, and what can do to change the course’. According to him part of the answer lying in economic failures which failure to handle well in the deindustrialization process, to tame the financial sector to properly manage globalization and its consequences, and to respond to the growing inequalities. Special feature of this book is that Stiglitz considers both economics and politics in his book, while many other authors have focused only on economics in this regard. He nicely explains both growth has been so anemic and why the fruits of what little growth have been so unequally shared. So this book explains the next step that can be followed by policy makers. This alternative world is founded on reconstructing a realistic future, using
their knowledge of economics and politics, including what they have learned from these failures of recent decades. Properly designed, well-regulated markets, working together with governments and a broad array of civil society institutions, are the only way forward. Further he has emphasized the importance of truly understand the sources of the wealth of the nation, that can be achieved a more dynamic economy with greater shared prosperity. According to his view in this regards it will require government to take the major role.

This book has been written in the hope and faith that an alternative world is possible, and that there are enough Americans who believe this, that working together Americans can reverse this dire trajectory. These include young people who have not yet lost their idealism, those in older generations who still cling to ideals of equality of opportunity and shared prosperity, and those who recall the struggle for civil rights in which so many joined with their hearts and souls.

When he suggests options for his agenda for future development, he takes examples from other countries which is really important. For example, when he suggests options for higher education, he takes examples from Australia. Most importantly, he takes other countries’ example which can be applied in America. And also not only he identifies barriers for implications of those policies, but also he points out alternative amendments, required in those policies when they are implemented in America. He laid out an agenda which can be achieved within the financial constrained facing the country today.

He uses the simple language so that non-economist can also understand economics. When he explains the bad and good points of political and economic policies in America and their consequences, he does not use data to support his idea. One may find it as a bad point. However, we believe that is better because he addresses not only academia but also the general readers. Moreover, one might argue that he is against Republican Party and their policies. He does not merely criticize them, but using economics and facts. Therefore, his book cannot be criticized labelling that he is oppose to Republican Party in his political life.