

NSBM Journal of Management

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Tel: +94-11-544-5000
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From the Editor...

This issue of the *NSBM Journal of Management* (the third in the series) coincides with the opening, amid the greenery and quietude of a vast expanse of land in Pitipane, Homagama, of the NSBM Green University Town, a Sri Lankan state-of-the-art institute of higher education. It is dedicated to the cause of a greener planet, of innovative green (environmental management) practices with respect for Mother Earth and its elements, and of a green mindset among its student community that will be carried over to their places of work.

The two opening papers in the journal deal with the theoretical and practical perspectives respectively of green practices carried out in Sri Lanka, which we hope would provide useful guidelines for both the business and academic community to develop a green mindset.

The first paper by A D Nuwan Gunarathne gives an overview of the state of the current environmental management accounting practices in Sri Lanka with specific examples from different industry sectors. It covers green practices in areas such as accounting for energy, water, materials, carbon footprint, and biodiversity *and* life-cycle assessment. This is followed by the diffusion of management accounting practices both in organizations and in higher educational institutes.

The second paper by T Lalithasiri Gunaruwan and W Neluka Gunasekara presents a comprehensive and interesting narration of how management of solid waste is carried out in the empirical site of the Weligama Municipal Council, Sri Lanka. The study examines the economics of management of solid waste from a cost-benefit perspective, using the *Pilisaru* prescription of the Central Environment Authority. It concludes that the compost management model of managing solid waste would be economically viable. It further asserts that even achieving financial viability would be possible, if a compost management model with improved investment productivity is developed. The paper also provides a useful comparison with a few other empirical locations in Sri Lanka.

The third paper is a leadership study by Kumudini Dissanayake, based on a public limited company in the textile industry in Sri Lanka. It examines and theorizes how leaders emerge in a convergent process of self-and social-construction of leadership among operational level workers in the workplace. It recognizes the social processes followed by young workers and the significance of theorizing the leadership construction processes of emerging leaders, while identifying their implications for organizations in managing new generations of employees.

The findings are sure to be of value to HR managers, leader trainers, organizational line managers, and the academic community.

The next paper by Tharusha N Gooneratne and Gayashi Wijesundara gives a vivid account of how and why the well-known management accounting technique, the Balanced Scorecard (BSC), was diffused in a leading private sector financial institution in Sri Lanka. The evidence gathered through in-depth interviews shows that demand-side as well as supply-side forces have played an important role in the diffusion process. It offers a dynamic perspective of the diverse roles played by a variety of internal and external stakeholders, which will be of practical relevance to managers who wish to embark on similar projects in their organizations.

Moving into a macro-economic investigation, the next paper by Danusha Jayawardana and Prabhath Jayasinghe identify the short- and long-run determinants of inflation in Sri Lanka. The findings indicate that increased money supply, depreciation of the rupee and higher public wages are the major causes of both short- and long-run inflation, signifying the significant role of both demand and supply side factors. The authors advocate a prudent and effective implementation of monetary and fiscal policies so as to ensure a stable macroeconomic environment in Sri Lanka.

Though viral marketing seems to be the future of marketing the factors that determine successful viral marketing campaigns remain largely unknown. In the final paper Irosha Perera and Pradeep Dharmadasa attempt to address this gap using the Theories of Planned Behaviour and Fundamental Interpersonal Relations Orientation. The results reveal that perceived behavioural control, attitude towards viral marketing, subjective norms, and need for affection and for control are influential in determining the intention among young individuals to engage in viral marketing. The findings reveal that firms may need to develop different strategies to enhance the effectiveness of viral marketing campaigns.

In conclusion, I must apologize for omitting to state that the Book Review in the previous issue of this journal of *The Stronghold of Tradition and Tensions in Juxtapositions (Exploring the MOD-TRADI Consumer)* by Dinuka Wijetunga was authored by Sumanasiri Liyanage, Senior Professor and presently Dean, Faculty of Management and Finance SANASA Campus Ltd., and Chamari Jayani Wijayawardane, Lecturer, SANASA Campus, Ltd.

Prof. Mangala Fonseka
Editor

Environmental Management Accounting Practices and their Diffusion: The Sri Lankan Experience

A D Nuwan Gunarathne and Yasanthi Alahakoon

Abstract

When implementing environmental management strategies it is important to use effective accounting tools to facilitate corporate decision making. In this context, a body of accounting practices, known as Environmental Management Accounting (EMA), has emerged as an interface between management accounting and environmental management. This paper attempts to provide a snapshot of EMA practices in Sri Lanka using the authors' experience in dealing with several industries. It presents the commonly observed EMA tools and techniques used in Sri Lankan organizations while discussing how they have been diffused through adopters and propagators. Despite the rapid diffusion, the authors do not find a comprehensive and systematic adoption of EMA in Sri Lanka. This situation offers opportunities for Sri Lankan organizations to benefit from the proper adoption of EMA in the future.

Keywords: Corporate Sustainability; Diffusion; Eco-efficiency; Environmental Management Accounting (EMA); Environmental Strategies; Sri Lanka; South Asia

Introduction

The changes in today's ecological environment have affected businesses more intensely than at any other time in history. For instance, this is manifested in the fifteen-fold increase in the global cost of natural disasters between the 1950s and the 1990s (Benson & Clay 2004). Various recent man-made and natural disasters such as the British Petroleum oil spill in the Gulf of Mexico, hurricanes, the Asian tsunami and global warming have led to serious economic, social and environmental consequences (Gunarathne & Lee 2015). These incidents drew the increased attention, both globally and locally, to the need for

Nuwan Gunarathne is a Senior Lecturer of the Department of Accounting, Faculty of Management Studies and Commerce, University of Sri Jayewardenepura E-mail: nuwan@sjp.ac.lk (Corresponding author)

Yasanthi Alahakoon is a Senior Lecturer of the Department of Business Administration, Faculty of Management Studies and Commerce, University of Sri Jayewardenepura.

sustainable development (Hopwood et al. 2005). Due to the increasingly interconnected nature of the world economy, the impact of these disasters is felt not only in the specific geographic area where they occur but also on a global scale (Forbes 2011). Recently, in a bid to foster sustainability, world leaders responded by adopting the seventeen Sustainable Development Goals (SDGs) in September 2015 and gave high priority to climate change, among other focus areas (United Nations 2016). Alongside these developments, growing public awareness coupled with increasing media attention has forced corporations to address environmental concerns by adopting cleaner and safer environmental practices (Burritt et al. 2002, Soonawalla 2006). While many organizations consider the environment as subject to risks that should be managed, some organizations have used environmental strategies prudently to generate competitive advantage while achieving economic success.

In order to achieve superior environmental and economic performance simultaneously, it is important to identify and use effective (accounting) tools for corporate managers to make 'right' decisions (Schaltegger et al. 2013, Sroufe et al. 2002). The emergence of such tools reshapes the concept of environmental accounting and makes it essential for business success (Delmas & Toffel 2004, Lee 2009). In adopting environmental strategies/practices, a body of accounting practices referred to as Environmental Management Accounting (EMA) has emerged as an interface between management accounting and environmental management (Bennett et al. 2002). According to a Chartered Institute of Management Accountants (CIMA) survey on management accounting tools, EMA was ranked among the top five of the most widely used tools in management accounting (CIMA 2009).

A large number of studies on EMA now appear in academic journals, covering different issues and perspectives on the subject. While only a few studies are available on developing countries, most of the EMA studies have focused more on developed countries (Herzig et al. 2012, Gunarathne & Lee, 2015). Addressing this gap in research, Herzig et al. (2012) provide case studies on South-East Asian economies such as Indonesia, the Philippines, Thailand and Vietnam. However, the EMA practices in other emerging economies in South Asia are largely unknown, even though they play an important role in the global economy. This paper, therefore, attempts to provide a snapshot of EMA practice in Sri Lanka based on the authors' recent experience in several industries (such as apparel, hotel, manufacturing, and plantations). The paper covers the various EMA tools and techniques used by Sri Lankan organizations to highlight the situation while discussing the diffusion of these practices by focusing on the adopters and propagators¹.

¹ Adopters are the end users of innovations (Meyer, 2004) and propagators are the proponents whose aim is to maximize the pace and spread of the acceptance of innovation (Bjørnenak, 1997).

This paper makes several contributions. Firstly, though environmental issues are global, their profound impact is greatly felt in regions such as South Asia, which is home to twenty percent of the world's population who use only five percent of the world's land (United Nations Environment Programme -UNEP- & Development Alternatives 2008, South Asia Co-operative Environment Programme -SACEP- 2014). The South Asian region is plagued with many natural disasters such as floods, droughts, landslides, etc. Its population is heavily dependent on agriculture, which is susceptible to climate change. Hence, the understanding of EMA practices in this region has global importance since it can offer valuable learning experiences for the whole world. Secondly, the Sri Lankan economy, after three decades of civil war, is showing an impressive annual growth. Its average annual growth rate has been 6.4 percent for the period from 2003 to 2012. Further, strategies are under way to increase per capita income to USD 4,000 by 2016 from USD 1,000 in 2004 (Central Bank of Sri Lanka-CBSL-2013). These efforts to improve people's living standards have put great pressure on the ecological environment of Sri Lanka. Hence, an improved understanding on how environment is managed by Sri Lankan organizations offers many practical and policy implications for regulators and policy makers alike. Thirdly, Sri Lanka is said to be one of the world's 35 biodiversity hotspots with many threatened and endangered species in existence (Conservation International 2005). As a small island, Sri Lanka falls into the United Nations Framework Convention on Climate Change (UNFCCC²) and the Intergovernmental Panel on Climate Change (IPCC)'s³ category of 'vulnerable' small island nations which are under threat from various climate change impacts (Ministry of Environment and Renewable Energy 2011). Recent human and organizational activities have threatened Sri Lanka's forests and other natural resources. The lack of effective environmental laws, inadequate law enforcement and inconsistent and weak policies have posed many environmental challenges for Sri Lanka. They include, but are not limited to, deforestation; soil erosion; wildlife populations threatened by poaching and urbanization; coastal degradation from mining activities and increased pollution; mismanagement of land; pollution of freshwater resources by industrial waste and sewage runoff; urban and industrial waste disposal; and air pollution in city areas (CIA 2016). Thus, it is important to understand how the countries vulnerable to such climate change deal with the environment in their development process.

² UNFCCC is an international environmental treaty negotiated at the Earth Summit, in 1992, with the objective of stabilizing greenhouse gas concentrations in the atmosphere.

³ IPCC is the leading international body for the assessment of climate change that was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988.

The remainder of this paper is organized as follows: The next section presents a brief review of literature followed by the research method. It then presents the findings. The last section of the paper gives the conclusions and future directions.

Literature Review

Overview of EMA

Even though there is no exact definition of EMA, Bartolomeo et al. (2000), Bennett et al. (2002), Burritt, et al. (2002), Burritt (2004) and the International Federation of Accountants (IFAC) (2005) offer some definitions. Accordingly, EMA can be understood as the identification, collection, analysis and use of physical information on the use, flows and destinies of energy, water and materials (including waste) and monetary information on environment-related costs, earnings and savings. This indicates that EMA provides two types of information for internal decision making: physical information and monetary information (Burritt et al. 2002, IFAC 2005). Accordingly, two types of EMA systems, namely, physical EMA (PEMA) and monetary EMA (MEMA) can be identified. PEMA provides information on an organization's impact on the natural environment and is expressed in physical units such as kilograms, litres, cubic metres, joules, etc. MEMA provides information on the impact of corporate activities on economic systems and is expressed in monetary units. MEMA typically takes place when a financial value is assigned to PEMA information.

However, it can also arise without any relation to a physical measure. For example, costs such as license fees and environmental system maintenance costs are period costs that do not bear a direct relationship to a physical measure (Burritt et al. 2002, Gunarathne et al. 2014). By analyzing various EMA tools and techniques according to three dimensions/attributes, Burritt et al. (2002) suggest a comprehensive framework (see Figure 1). These three dimensions of EMA information are: time frame (whether the time period is past or future), length of time frame (whether the length of the period is short-term or long-term), and routineness (whether the frequency of information gathering/provision is ad-hoc or routine).

Table 1: Comprehensive framework for EMA

		Monetary EMA		Physical EMA	
		Short-term	Long-term	Short-term	Long-term
	Routine	Environmental cost accounting	Environmentally induced capital expenditure and revenues	Material and energy flow accounting	Environmental capital impact accounting
Past	Ad-hoc	Ex post environmental costing decisions	Environmental life cycle costing	Ex post assessment of short term environmental impacts	Life cycle inventories
	Routine	Monetary environmental budgeting	Environmental long term financial planning	Physical environmental budgeting	Long term physical environmental planning
Future	Ad-hoc	Relevant environmental costing	Monetary environmental investment appraisal Environmental life cycle budgeting	Relevant environmental impacts	Physical environmental investment appraisal life cycle analysis

Source: Burritt et al. (2002)

EMA Techniques/ Practices and their Benefits

As Table 1 shows, EMA encompasses a wide array of accounting tools and techniques used for internal decision making. Hence, it is not merely an environmental management tool but a broad set of principles and approaches that provide information for the successful implementation of environmental strategies (IFAC 2005). EMA includes a wide array of accounting practices such as accounting for energy, material accounting, carbon accounting, environmental capital budgeting, activity-based costing, environmental impact assessment, life cycle analysis, bio-diversity accounting, etc. (Bennett & James 1997, Environmental Protection Agency – EPA- 1995, IFAC 2005, Jones 1996, Soonawalla 2006). Day by day, new EMA practices are being introduced or existing management accounting practices adopted to fit various environmental management strategies pursued by the organizations (Gunarathne et al. 2014).

Since the range of decisions affected by environmental issues is increasing, EMA is becoming more and more important, not only for environmental management decisions but also for all types of management activities. Though the specific uses and benefits of EMA are numerous, its benefits can be divided into three broad interrelated categories, viz., compliance efficiency, eco-efficiency and strategic positioning (IFAC 2005, Doody 2010). Firstly, EMA facilitates compliance efficiency by ensuring compliance with external environmental regulations and self-imposed environmental policies. For instance, EMA provides the vital information for planning and implementing pollution control or introducing cost effective substitutes for toxic materials (IFAC, 2005). Secondly, EMA supports the simultaneous reduction of costs and environmental impacts via more efficient use of resources to achieve eco-efficiency. Eco-efficiency is a combination of both business case⁴ (to emphasize the benefits for the shareholders) and business performance (to achieve cost reduction and efficiency) (Williamson et al. 2006). Alternative environmental cost categorization methods in EMA allow organizations to carefully identify different environment costs (refer EPA 1995 and IFAC, 2005 for more details). Thirdly, the use of EMA will strengthen an organization's long-term strategic position. It can be used with the marketing strategy of an organization to improve the green image of the organization, to attract environment-conscious customers, suppliers and investors. This market success motivation enables companies to generate reputational and competitive advantage by providing analytics and reliable statistics to communicate with the markets on the improvements of the organization in relation to environment (Windolph et al. 2014). It should also be noted that these three broad benefits of EMA are not mutually exclusive (IFAC 2005). In essence, EMA, with its assortment of accounting tools and techniques, is a body of practices that supports various environmental strategies of an organization in order to derive its many benefits.

The next section of this paper explains the research method followed in the study.

Method

The paper is the culmination of mainly the authors' experience with many Sri Lankan organizations both in the private and public (and non-private) sector. Over the past few years, as a part of various research projects, industry collaboration and many other activities, the first author was able to gain a fair understanding of how EMA is practiced in Sri Lanka and how it has developed to the present level of application. The private sector organizations,

⁴ Business case is the economic rationale for corporate environmental or sustainability management (Salzmann, et al. 2005).

which the authors have interacted with, are from a variety of industry sectors such as apparel, hotels, manufacturing, banking and finance, and plantations while the other sectors include universities, professional accounting bodies (PABs), government institutions and non-governmental organizations.

In presenting the EMA practices of organizations, the authors use the term '*Sri Lankan enterprises*' with a specific meaning. They observed that some noteworthy EMA practices of some multinational Sri Lankan organizations have been largely influenced by the guidelines of their foreign parent companies. Since the authors needed to showcase Sri Lankan practices, only the companies under Sri Lankan ownership and control ('indigenous Sri Lankan enterprises' would be the more suitable term) are included in the paper. Due to this delineation, the practices of many companies that had been pioneers in environmental management in the country have been excluded. Moreover, the authors came across some companies following environmental management initiatives that are purely of a Corporate Social Responsibility (CSR) nature without any direct relationship with their core businesses. Hence, the EMA practices which have no direct impact on business performance have been excluded.

Findings

The findings of the authors' experiences are organized under two sub-headings: *use of EMA in Sri Lanka and diffusion of EMA practices in Sri Lanka*. In describing the diffusion of EMA in Sri Lanka, it describes the demand-pull diffusion by focusing on the EMA adopters and supply-push diffusion by focusing on how the propagators have taken initiatives to popularize environmental management/EMA.

Use of EMA in Sri Lanka

Sri Lankan enterprises, particularly the large private sector companies, follow several common EMA practices in the areas of energy, material, water, carbon, etc. The next section presents these EMA practices.

Accounting for Energy

In general, almost every Sri Lankan enterprise, irrespective of its size, is concerned about energy management and its associated accounting practices (Gunarathne et al. 2015). Similar to what Wilmshurst and Frost (2001) identified in Australia, a significant number of practices

has been developed in relation to efficient energy use. Hence, accounting for energy is a major EMA tool used by Sri Lankan enterprises. They record the types of energy used, analyze the consumption of energy for different time periods (e.g., during peak and off-peak times), calculate the energy intensity ratio (such as energy consumption per unit/standard minute) and assess the viability of new energy efficient practices. Installation of energy-efficient lighting and air conditioning systems, use of alternative types of energy including solar power and bio mass (see Figures 1 and 2), investment in energy efficient tools and equipment are common practices among Sri Lankan enterprises both in the service and manufacturing sectors. It is also becoming a common practice for organizations to carry out an energy audit to identify the energy saving potential. The authors perceive that the high cost of energy is the reason for this heightened interest in energy conservation. Hence, accounting for energy in Sri Lankan enterprises has been mainly driven by internal efficiency motives. This means that it is the eco-efficiency motivation that mainly drives the energy accounting practices among Sri Lankan enterprises.

Figure 1: Use of Alternative Energy Types in the Hotel Sector



A well-known hotel in Negombo has installed solar panel systems (representing the use of renewable energy) in order to reduce its reliance on electricity obtained from the national grid and to reduce its carbon footprint. Though these investments have a long payback period, the hotel is using its environmentally-friendly sources of energy generation and consumption to derive marketing benefits.

Figure 2: Physical EMA Applications

SOLAR POWER READINGS										
Month: June										Year: 2013
Date	Meter 01	Consump.	Meter 02	Consump.	Meter 03	Consump.	Meter 04	Consump.	Total	Technician
1	2266.1	3.1	1981.3	2.5	972.7	6	1290.6	7.4	25	
2	2269.2	0.2	1983.8	4.2	982.7	1.5	1298.2	4.8	11.2	Tudor
3	2269.4	0	1985.5	2.2	985.2	2.4	1303.0	1.8	11.2	
4	2269.4	0	2003.7	3.1	987.3	2.1	1304.8	2.3	9.1	Tudor
5	2269.4	0	2007.1	1.4	989.4	1.8	1302.1	3.6	7.8	Bladen
6	2269.4	0.1	2008.5	1	991.2	3.7	1301.2	2.1	6.8	
7	2269.5	5.7	2012.2	2.5	994.9	2.4	1301.2	2.1	10.7	
8	2275.2	1.8	2017.7	8.9	997.8	2.4	1315.6	2.5	16.5	
9	2285.2	6.9	2026.6	6.5	1002.0	4.2	1316.1	4.8	27.4	
10	2292.1	4.3	2033.1	2.8	1005.3	3.3	1320.9	3.4	28.1	
11	2296.4	4.3	2035.9	2.8	1009.7	3.4	1326.7	3.8	15	
12	2304.1	7.8	2038.3	3.4	1011.5	4.8	1330.8	4.5	18.3	Tudor
13	2308.9	5.7	2039.3	4.8	1011.1	1.7	1338.0	6.8	11.2	
14	2314.6	6.2	2045.7	10.1	1015.8	2.9	1342.6	5.7	18.9	Tudor
15	2320.8	8.9	2052.2	11.1	1018.2	5.0	1345.3	2.1	25.6	
16	2324.7	5.4	2064.7	11	1022.2	4.1	1354.7	6.8	31.8	
17	2328.1	2.7	2077.3	2.8	1027.8	1.2	1361.3	4.2	24.7	
18	2327.8		2080.8		1030.1		1365.2	1.2	9.6	
19										
20										
21										
22										
23										

In order to monitor and evaluate investment in solar panels, the hotel keeps daily records of energy generation. They show the electricity cost savings from the installation of the solar panels. These savings in units represent the use of PEMA information. In order to assign a monetary value these units are multiplied by the existing electricity tariff so that the company can use MEMA information.

Accounting for Materials

In addition to accounting for energy, another important EMA practice followed by Sri Lankan enterprises is accounting for materials particularly in the manufacturing sector (Gunaratne et al. 2015). Depending on the specific industry, the contribution of EMA in relation to the management of material varies. For example, when the raw materials used are costly in industries such as jewelry the authors noticed an intense application of accounting for material, and management commitment and enthusiasm. The authors also noted several accounting for material approaches such as material analysis as per cost centres (or usage centres) by the type of materials, consideration of alternative material, calculation of material cost per unit, analysis of material waste, etc. As Bennett and James (1997) suggest, the collection of data on material flows through an organization is vital for environment-related management accounting. It is the first step in successful waste minimization programmes and may help in accurate product costing. Contrary to the potential benefits suggested by Bennett and James (1997), the authors are not yet convinced of the extent of the use of cost information in pricing decisions by Sri Lankan organizations since product pricing is affected by many other factors.

Although organizations generate information through accounting for materials, it is not used for the application of advanced techniques such as Material Flow Cost Analysis (MFCA). MFCA is a technique with the objective of seeing an organization as a system that channels and transforms flows of materials and information from beginning to end (Strobel & Redmann 2002, IFAC 2005, United Nations Environment Program -UNEP- and United Nations Industrial Development Organization -UNIDO- 1991). In this way, MFCA systems allow an organization to properly track and control material and waste flows. Despite the potential of MFCA, Sri Lankan enterprises do not use information generated through accounting for material to obtain these benefits. Consequently, most of the waste and waste treatment costs are considered as overheads without linking them to the products which generate them. As Bartolomeo et al. (2000) explain, this may result in these costs being allocated to products which do not, in fact, generate them. Thus, the cleaner products effectively cross-subsidize the other un-clean products. This is where Sri Lankan enterprises can use Activity Based Costing (ABC) in order to trace the overhead costs for the specific activities (and products) which generate them.

For instance, in the apparel sector, manufacturing of certain garments needs special colour dyeing processes. Some of the residues of special colour dyes require careful disposal, resulting in additional costs to the organization. Yet, the authors observed that in many organizations the disposal costs of these dyes are not absorbed by the garment (or customer order) that demanded the use of the special dye. Consequently, the disposal cost is pooled under general overhead costs. Finally, the general overhead costs are charged to all the garments using a standard minute rate. Hence, the cost of the customer order that demanded special colour dyeing processes is cross subsidized by the cleaner garment orders. Similarly, accounting and management for material is mainly driven by the need for eco-efficiency.

Accounting for Water

Another widespread application of EMA is in the area of water management. Though the cost of water is very low in Sri Lanka, enterprises have started to pay increasing attention to water management and its associated water accounting. Many Sri Lankan enterprises focus on two main approaches to water management: a) behavioural and b) engineering (Gunaratne et al. 2015). Behavioural approaches mainly involve efforts to educate the stakeholders (such as employees, customers, suppliers, etc.) to bring about changes in water use. Engineering approaches involve changes in physical capital directed at preserving water. This may range from water faucets that prevent water waste at the source to water treatment plants.

For instance, a newspaper printing company, having analyzed water consumption in the toilets, introduced a new urinal system that releases only one litre of water per manual flush. It represents an engineering approach to water management. Owing to the separate metering system in the factory, the management had identified the previous urinals had a continuous water flow with 1,682 cubic meters of water consumption per year.

In order to carry out an investment appraisal for the new urinal system its water consumption estimate was required. The difference between this estimation and the actual water consumption of the existing urinal system is the relevant environmental impact of the investment. This is where both the physical and monetary environmental capital impacts accounting, as shown by Burritt et al. (2002).

Another EMA aspect associated with accounting for water is waste water treatment and accounting. Many organizations have introduced sewerage treatment plants or waste water treatment plants to treat the in-house waste water (and waste materials). For example, in the hotel sector, it was noted that some hoteliers make compost from sewerage, which is either sold or used in their gardens. Adjustment of the water properties (such as the pH value of the waste water) to be in line with the regulatory requirements before the discharge is a common practice among the Sri Lankan organizations.

In terms of accounting for water, the authors notice the tracking of total water consumption and waste water generation, evaluation of water saving projects, and calculation of water intensity ratio as common practices representing both PEMA and MEMA practices. Due to the absence of cost-saving potential the authors perceive that the waste water treatment is mainly driven by stakeholder pressure such as from consumers (in the hotel sector they are the green-conscious guests) and regulators (see Figure 3).

Figure 3: A Water Treatment Plant of a Soft Drink Manufacturer



The soft drink manufacturing plant in Sri Lanka has to treat its industrial waste water [i.e., to adjust the water properties such as Chemical Oxygen Demand (COD), Biochemical Oxygen Demand (BOD) and pH values to the specified tolerance limits] before being discharged. These limits are set by the Central Environmental Authority as per the National Environmental Act, No. 47 of 1980. Thus the waste water treatment practices are largely determined by the regulatory requirements in Sri Lanka.

Accounting for Carbon

Though less common, another emerging practice is carbon management and carbon footprint accounting. The authors noticed the increasing popularity of this practice in the hotel and garment sectors, in particular. Due to the absence of any regulatory pressure and non-realization of cost savings, the authors perceive that carbon footprint management is mainly driven by international stakeholder pressures, particularly the customers. One important observation the authors have made here is the reliance on external specialist organizations for carbon footprint management and accounting. This is owing to the technicalities associated with calculating carbon footprint⁵. These consulting firms issue globally accepted *Carbon Neutral Certificates* or other certifications such as *Carbon Conscious Certificates* for clients who comply with the requirements. In order to be carbon neutral, these companies generally buy carbon offsets from the carbon markets (see Figure 4).

⁵ Carbon footprint has to be calculated under three scopes as per Greenhouse Gas Protocol (2004). Scope 1 emissions arise directly from company activities which are owned or controlled by the company and Scope 2 emissions arise from the generation of purchased electricity consumed by the company. Scope 3, which is optional to measure, traces the indirect emissions that result as a consequence of the activities of the company, but from sources not owned or controlled by the company such as employee commuting.

Figure 4: A Carbon Neutral Apparel Factory



One of the factories, belonging to a large apparel maker in Sri Lanka, has become a carbon neutral factory mainly through a) being carbon efficient after making a Green House Gas (GHG) emission assessment and b) buying the carbon offsets from the world market in order to compensate for the remaining excess carbons. The apparel maker is using this facility to demonstrate its commitment to environmental preservation while achieving eco-efficiency.

Life Cycle Accounting

The authors noted the application of life cycle accounting considerations in the spheres of energy and water consumption, and material usage particularly in the design stage of buildings and plants among the Sri Lankan organizations. Some of the Sri Lankan enterprises under observation have attempted to optimize the use of sunlight, minimize the consumption of electricity, use environmentally friendly air-conditioning systems such as evaporator cooling systems, minimize the damage to trees and the environment (see Figure 5), and install water and waste management systems from the design stage itself. However, these Sri Lankan enterprises do not use life cycle environmental impact assessment⁶, as suggested by Bennett and James (1997). Though many companies identify the environmental impact of the organization's activities at the design or implementation stages, a systematic identification of them across the value chain and throughout the organizational operations was not observed.

⁶ Life cycle environmental impact assessment is a holistic approach to identifying the environmental consequences of a product or service through its entire lifecycle and identifying opportunities for achieving environmental improvements (Bennett & James, 1997).

Figure 5: Environmentally Friendly Design of a Hotel



A famous green hotel in the country has built its entire structure upon columns enabling the rain water to flow freely from the mountainside into the nearby lake. Furthermore, this eco-friendly design facilitates the free movement of animals underneath the hotel. This demonstrates the application of environmental factors at the design stage of the hotel building.

Accounting for Bio-diversity

The authors observed certain other EMA applications such as biodiversity accounting particularly in the plantation sector. Accounting for bio-diversity (Jones 1996, 2003) is an emerging EMA practice among organizations which largely depend on the natural environment for their day-to-day operations. In the plantations sector, bio-diversity accounting is practised mainly owing to the need to follow accreditation standards such as the Rainforest Alliance and Ethical Tea Partnership (see Figure 6). The plantation companies, particularly the tea producing companies, are compelled to observe these standards due to the high price paid by the international buyers if tea comes from estates that are duly accredited.

Figure 6: Bio-diversity Conservation Efforts in the Plantation Sector



A Rainforest Alliance certified plantation company records and maintains details on flora and fauna found in its estates. Known as the 'bio-diversity log book' maintained for this certification it provides mainly physical EMA information to carry out accounting and management for biodiversity.

The practices described above are becoming popular and common among the Sri Lankan enterprises. Though not at the same level of application, Sri Lankan organizations adopt them with a view to deriving compliance efficiency and eco-efficiency and strengthening the strategic positioning, which are the three broad benefits as suggested by IFAC, (2005), Doody (2010), Williamson et al. (2006) and Windolph et al. (2014).

The next section presents how and why these EMA practices have diffused in Sri Lanka.

Diffusion of EMA Practices in Sri Lanka

According to Bjørnenak (1997) and Malmi (1999), diffusion of managerial technologies (in this case EMA) could take place from demand-pull and supply-push perspectives. The demand-pull perspective of diffusion can be discussed in the light of the information value of the accounting technologies (Bjørnenak 1997). However, the adoption of managerial technologies could also take place due to the active and purposeful role played by the propagators in the diffusion process (Abrahamson 1996, Bjørnenak 1997). Hence, this paper first focuses on the EMA adopters to demonstrate the demand-pull diffusion and then shed some light on the role of the propagators such as education providers and PABs in the supply-push diffusion of EMA.

Diffusion of EMA among the Sri Lankan Enterprises

With years of industry engagement in the field of sustainability, the authors witnessed a rapid diffusion of EMA among Sri Lankan enterprises in many different industry sectors referred to in the previous section (refer Gunarathne et al. 2015 for more details on EMA in Sri Lankan enterprises). This has been evident through various indicators such as the growing number of companies that have become carbon certified (or neutral), increasing participation in green competitions such as the Presidential Green Awards, Cleaner Production Awards of the National Cleaner Production Centre (NCPC), increasing number of companies that apply for sustainability reporting awards, and day-to-day press releases on green practices. Echoing a similar trend, the fast diffusion of EMA practices has been identified elsewhere in the world (Bartolomeo et al. 2000, Kokubu & Kurasaka 2002, Jalaludin et al. 2011). While EMA is diffusing fast in Sri Lanka, its rapid adoption is clearly notable in some industries such as tourism, apparel, and banking and finance. This fast diffusion of EMA can be attributed to different reasons which are interrelated; they include environmental regulations, pressures stemming from different stakeholders, adoption of reporting standards such as Global Reporting Initiative (GRI), propagation of environmental management practices by various

parties, and motivation to achieve internal efficiency. These reasons have been previously suggested by Doody (2010), Medley (1997), and Windolph et al. (2014), among many others. It therefore demonstrates that the drivers of environmental management and accounting in Sri Lanka are similar to what have prevailed elsewhere in the world.

However, the authors do not suggest here that EMA adoption has been smooth in Sri Lanka. Though the Sri Lankan organizations seem to adopt many EMA practices, they are often confined to a few isolated practices rather than a systematic and comprehensive approach as witnessed by Bartolomeo et al. (2000) in Europe and Lee (2011) in Korea. These practices have been implemented in a fragmentary manner as a response to various reasons mentioned previously, without an integrated system to reap the full benefits that EMA could offer. Hence, there is room for Sri Lankan organizations to become more comprehensive and systematic in EMA adoption to support the achievement of competitive advantage, management of risk and efficient utilization of resources. This requires top management commitment, support of various stakeholders across the value chain and improved awareness of EMA techniques (Gunarathne 2015).

Role of the Propagators in EMA Diffusion in Sri Lanka

Although there are many propagators in the diffusion process of EMA in Sri Lanka, this paper focuses only on the post-secondary education sector, which can make a significant impact on the prevalent accounting practices in Sri Lanka. Another reason is that new accounting practices such as EMA are first included in the curricula of universities and PABs before they are introduced to secondary level education.

Role of the Universities

Various facets of environmental management and its associated concepts have been traditionally covered in the curricula of the physical sciences, engineering and agriculture science undergraduate and master's level degree programmes in Sri Lanka. But these programmes have scarcely covered EMA as a core subject. In addition to these study programmes, the authors noted that some national universities have taken innovative measures to popularize EMA or environmental management in general. A case in point is the Department of Accounting of the University of Sri Jayewardenepura (USJ), which incorporated EMA in its degree programme a few years ago. It has introduced sustainability reporting, sustainability management accounting and integrated reporting at different levels of its degree programme with a view to grooming future sustainable leaders in the field of accounting. With the expectation of instilling transdisciplinary thinking and praxis in the

minds of future accountants as advocated by Tingey-Holyoak and Burritt (2012), some of these course units have adopted a pragmatic approach with field visits, workshops, industry-based learning methods, etc. (see Figure 7) (Gunarathne & Alahakoon, forthcoming).

In addition, various academic departments have taken many innovative steps to popularize environmental management in Sri Lanka. For instance, the Department of Forestry and Environmental Sciences of the USJ has set up a Sustainability Centre and also conducts an annual research symposium on forestry and environment. Also, the Staff Development Centre of the University of Kelaniya and Department of Accounting of the USJ recently held conferences on green practices/sustainability management. Moreover, at university level, many Sri Lankan universities have shown an interest in promoting the 'green university' concept. For example, with the assistance of the United Nations Environmental Programme (UNEP) and United Nations Institute for Training and Research (UNITAR), two projects at the Universities of Sri Jayewardenepura and of Sabaragamuwa are underway to promote capacity building in Sustainable Consumption and Production (SCP). The ultimate objective of these projects is to inculcate environmentally-friendly attitudes, values and ethics in addition to promoting environmental awareness among the students (UNITAR 2016).

Figure 7: A Field Visit Made by Accounting Undergraduates



The students of the Department of Accounting, University of Sri Jayewardenepura, during a field visit to study the applicability of the concepts they learn in a course unit on Sustainability Management Accounting. This was a field visit to a plantation company to observe its environmental practices and impact of certification/accreditation standards such as the Rainforest Alliance on accounting practices.

It should also be noted that a semi-government degree awarding institution the National School of Business Management (NSBM), has shown keen interest in this regard by promoting itself as a green university (NSBM 2015). Its Green University Town is a state-of-the-art university set amidst the lush greenery of the countryside and showcases environmental management practices in its design, operations and study programmes (see Figure 8).

Figure 8: The Green University Town of NSBM



The Green University Town of NSBM is the first ever project of its nature in the whole of South Asia, with eco-friendly energy, water and waste management systems in its 26-acre land in Pitipana, Homagama.

Role of PABs and their Membership

As explained previously, the role played by PABs as propagators of EMA is worth looking at in order to get a holistic picture of the diffusion of the EMA practice in Sri Lanka.

An important feature with respect to environmental accounting education in Sri Lanka is the enthusiasm of the PABs to promote environmental accounting. In this respect they have taken several initiatives to popularize EMA (or sustainability accounting) such as organizing seminars, workshops and conferences on EMA and incorporating these aspects in their curricula. The four IFAC full member bodies⁷ have introduced environmental accounting

⁷ Currently in Sri Lanka there are five PABs, viz, Institute of Chartered Accountants of Sri Lanka (CASL), Institute of Certified Management Accountants of Sri Lanka (CMA), Association of Accounting Technicians of Sri Lanka (AAT), Chartered Institute of Management Accountants (CIMA) and Association of Chartered Certified Accountant (ACCA). CASL, CMA and AAT are indigenous bodies while CIMA and ACCA are of UK origin. Except AAT all other PABs are IFAC full member bodies (World Bank, 2015).

into their mainstream subjects at different levels. In addition, they host various sustainability reporting/integrated reporting award schemes in a bid to promote these practices. Moreover, all the PABs operating in Sri Lanka now prepare integrated annual reports⁸ themselves to provide guidance, motivation and models for companies to prepare their own integrated reports (Gunarathne & Senarathne, forthcoming).

It is also imperative to look at the role of the members of these PABs (i.e., accountants), who eventually apply EMA in various Sri Lankan enterprises. An important characteristic of the EMA practice in Sri Lanka, as noted by the authors, is its development by professional groups other than accountants. Some of the EMA practices adopted such as accounting for energy and materials, waste accounting, and quantification of certain environmental costs are carried out by the engineers in many organizations. This resembles the early days of cost accounting such as introducing standard costing systems which were mainly shaped by engineers (Mattessich 2003, Kranowski 1977). The role of the accountant in some organizations was, therefore, marginal in the sphere of EMA. This trend has been prevalent mainly in the developed countries (Hopwood et al. 2005, Johnson 2002, Schaltegger & Zvezdov 2015). The authors noted that even in the Sri Lankan context, accountants who should really play a key role in facilitating the enterprise's sustainable performance have only been on the sidelines of the operational process and have often allegedly performed only a gatekeeper role as noted by Schaltegger and Zvezdov (2015) in UK and Germany. Sri Lankan accountants will have to play a key role as suggested by Medley (1997) in achieving corporate sustainability. According to IFAC (2005), accountants have a special role in EMA since they have access to the important monetary data and information systems needed for EMA activities, the ability to improve or verify the quality of such information and the skills to use such information for decision making. The only way for the accounting profession to survive and to respond to the exigencies of sustainability is to make major revisions in accounting education (Gray & Collison 2002).

It is the authors' view that despite the previously mentioned active role played by the PABs and the universities, the limited role played by Sri Lankan accountants in practice can be attributed to two main reasons. One is associated with the accounting education system in Sri Lanka, where EMA has only been recently introduced to the curricula of the universities and the PABs. Hence, when most of the accountants were not exposed to EMA during their student lives it will take time for them to adopt these practices in their workplace. Moreover, environmental education requires a trans-disciplinary approach (Tingey-Holyoak & Burrill

⁸ Integrated reports by focusing on five different levels of capitals, incorporates environment as another type of capital in the value creation of an organization (IIRC, 2013).

2012) and the present accounting education system in the country still does advocate such an approach (Gunarathne & Alahakoon, forthcoming). The other reason that hinders active involvement of Sri Lankan accountants in EMA practice is the level of support they receive from the workplace. Poor coordination between accounting and other functional departments, inadequate information capturing systems, lack of awareness of the importance of the environment, and preoccupation with existing work are some of the contributory factors in this regard. Poor coordination between accounting and other functional departments can be attributed to the excessive disciplinary approach to education that results in functional silos. However, it is noted that with the sustainability teams of different functional backgrounds such as engineering, marketing and production getting together with finance professionals, the journey of EMA has become quite adventurous, as suggested by Bartolomeo et al. (2000). This is evident in some companies as they calculate some advanced EMA measures such as a sustainability index that captures the performance of several environmental domains as a single coherent measure.

For instance, a large apparel maker has several Key Performance Indicators (KPIs) for its four material environmental domains, viz. waste, water, energy and carbon footprint (CFP). Each of these aspects has its own KPIs and weightings. The organization calculates a sustainability index by incorporating these four areas through a weighting system to arrive at a single value as follows:

$$\text{Sustainability index} = \frac{(\text{water sub-index} + \text{energy sub-index} + \text{waste sub-index} + \text{CFP sub-index})}{4}$$

Year 2013 is considered as the base year for the index and since then, the organization has calculated the index on a monthly basis. It is used to provide a single figure that indicates how the company has performed in terms of resource efficiency and management by highlighting the trend compared with the base year. The results of the sustainability index as well as individual KPIs are brought up at monthly operation reviews if there are any deviations to be addressed. The KPI results also provide feedback for resource allocation and signal the budgetary allocation requirements for the next period. This is an exercise carried out by the finance team with the help and inputs from the sustainability team who come from marketing, production, engineering and maintenance departments. In recognition of these notable practices, the apparel maker has been awarded many local and international green awards and sustainability reporting awards recently. This exemplifies how accountants with the help of other professionals bring in significant value additions for environmental management strategies of an organization.

Conclusions

The paper presents an overview of Sri Lankan EMA practices and its diffusion based on the authors' experiences. Though it is not a comprehensive coverage of all the aspects, the authors attempted to cover salient aspects such as common EMA tools and techniques, the drivers of EMA adoption and diffusion aspects including the role of the higher education and PABs in disseminating and promoting EMA. With the current level of interest and of diffusion, the authors anticipate a further increase in the adoption of environmental and EMA practices. Owing to the adoption of these novel managerial technologies, the accounting profession of the country is playing a leading role in the SAARC region, which has been acknowledged even by the World Bank (World Bank 2015). However, the authors are still not convinced that Sri Lanka, as a country, will fully benefit from these initiatives owing to various constraints, some of which have been discussed in the paper.

Future areas for study

The authors are of the view that there should be systematic studies in the future on the adoption of EMA or sustainability accounting from a diffusion point of view, which can offer many learning points for other countries. Though the authors did not analyze it deeply, the influence of the national culture on the adoption of EMA can also be an interesting area for study. Moreover, while dealing with Sri Lankan organizations, the authors noted that these organizations are at different levels of adoption of environmental strategies and hence EMA. Some organizations have developed their environmental management systems to a high level while other organizations are still at the infancy stage of adoption. Understanding how the level of maturity/development of EMA alongside environmental management also offers potential for future research. Hence, the areas for study are widely open and largely unexplored, and the authors consider this as an area with great potential for researchers.

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Management of Municipal Solid Waste in Sri Lanka: A Comparative Appraisal of the Economics of Composting

T Lalithasiri Gunaruwan and W Neluka Gunasekara

Abstract

Sri Lanka, a developing nation, is facing a severe problem of Municipal Solid Waste (MSW) management, the currently adopted predominant method being open dumping due mainly to low cost and less processing involved. This practice is hazardous, and causes significant negative externalities to society and to the economy. In contrast, composting is considered to be one of the most technically appropriate methods of managing MSW in Sri Lanka, the composition of waste being predominantly organic. Though a few local authorities are engaged in composting but no comprehensive economic feasibility study has been carried out which is the knowledge gap that this paper attempts to address. The study examined the economics of MSW management through composting in Sri Lanka by examining various models proposed and implemented. Further, the *Pilisaru* prescription and what has been implemented by a few local authorities were analysed using benefit-cost appraisal methodology, with particular reference to the management model adopted by the Weligama Urban Council. The study reveals that composting as a MSW management method would be economically viable. It also signifies that based on comparative investment and operating cost levels in other composting experiments in Sri Lanka, even achieving financial viability would be possible, if a compost management model with improved investment productivity is developed.

Keywords: composting, economic viability, environmental safeguarding, municipal solid waste management.

JEL Classification Codes: D61, D62, H23, H43, O13, O18, Q53, Q56

T Lalithasiri Gunaruwan, PhD is a Senior Lecturer of the Department of Economics, University of Colombo. E-mail: tlgun@econ.cmb.ac.lk (Corresponding author)

W Neluka Gunasekara is a Research Assistant at the Institute of Policy Studies, Sri Lanka.

Introduction

With increasing urbanization, managing municipal solid waste has become a major problem in the developing world. Sri Lanka is no exception. Population growth and per capita income growth have raised the issue to a different scale (with disproportionately heavy generation of waste) and technological complexity (with changes in the composition of waste). Local authorities, statutorily responsible for the management of waste generated within their respective boundaries, are currently practising ‘open dumping’ as a means of waste disposal in spite of the health hazards and negative environmental impact of that methodology. Open dumping also implies very high opportunity cost as it deprives vast extents of valuable municipal land unavailable for more productive use.

In this light, it is widely accepted that an appropriate and affordable municipal waste management system should be adopted by the local authorities in Sri Lanka. Composting becomes an alternative solution in this milieu particularly because the technology involved is simple and suits the nature of Sri Lanka’s municipal waste, which is still largely organic¹. A significant share of the economy consisting of agricultural activity would imply availability of a ready market for compost as a soil conditioning input. However, except for a few local authorities, the majority of local bodies are yet to undertake composting on a large commercial scale.

The economics of composting, which is largely unknown, could well be the cause. It might be the missing link in the decision making chain that prevents local authorities from considering composting as an option for dealing with the problem of waste management. Filling this research gap is the focus of this study.

It was conceived with the objective of appraising the economics of managing Sri Lanka’s municipal solid waste using composting technology. This paper summarises the procedural approach, methodology adopted, results obtained and their management and policy relevance. The scale of the municipal solid waste problem and its environmental and socio-economic

¹ Almost all the scientific and technical literature refers to Sri Lanka’s municipal solid waste as being substantially organic and having a high moisture content as the following shows: “*MSW of Sri Lanka typically consists of a very high percentage of perishable organic material which is about 65 – 66% by weight with moderate amounts of plastic and paper and low contents of metal and glass. The moisture content of MSW is also very high in the range of 70 – 80% on a wet weight basis*” (Bandara, 2008); “*...Primary components on a weight basis are compostable organics; food and garden waste accounting for 89.2%*” (Wijerathna, et al., 2012); and “*...Sri Lankan MSW consists of 54.5% short-term bio-degradable waste and 5.9% Long term bio-degradable waste*” (Hikkaduwa, et al., 2015).

implications are discussed through literature based on both Sri Lankan and international experience. The appropriateness of composting as a municipal solid waste management methodology in Sri Lanka is examined through relevant case examples from cities in the regional countries. The methodology adopted, namely, the benefit-cost evaluation approach, the analytical process and results are discussed, and comparative decision criteria for economic and financial viability of municipal solid waste management through composting are developed. The practicality and economic feasibility of different management models developed for the purpose and practised by various local government authorities are also comparatively examined. Finally, the study aimed at proposing strategies to be considered by the authorities to make the Sri Lankan urban environment greener and healthier.

Solid Waste Problem, Management Practices and Implications: A Literature Survey

Waste Generation and Determinants

Municipal solid waste management is recognised as a problem not only in Sri Lanka but also in many other urbanising townships in the developing world. The problem is particularly significant where the urban population share and density are relatively high and increasing fast. For instance, in developing Asian countries, where the urban population share is around 35% (for example, China and Thailand²) and still growing at a rate of around 4% per year, and also in those less developed Asian economies, where population densities are high and increasing, the issue has become acute (Glawe, et al., 2005). The rapid economic growth in these countries has aggravated this problem as it has led to improved standards of living and to changed consumption patterns of people, resulting in increasing per capita waste generation levels, currently ranging from 0.2 to 1.7 kg per day (Visvanathan & Trankler, 2003). India's present waste generation, around 0.2-0.5 kg per day, for instance, is eight times higher than what it was in 1947, and continues to grow at an annual rate between 1 and 1.33 per cent (Sharholly, et al., 2008). Mumbai, the Indian city with the highest per capita waste generation of 0.5 kg, produces 6256 metric tons of garbage per day (Yedla & Kansal, 2003).

Sri Lankans generate approximately 0.62 kg of solid waste per day on average (Visvanathan & Trankler, 2003). This rate varies depending on the income levels of individuals and households as well as on the degree of urbanization of settlements. Low-income households, for instance, generate half a kilogramme of garbage per day while high-income groups

² China and Thailand, having over 38% and 23% respectively of urban population, face solid waste problems.

average nearly double that (Asian Institute of Technology, 2004). Having studied the solid waste management patterns in the Pinga Oya environs (Harispattuwa, Akurana, Pujapitiya and Patha Dumabara) in Kandy suburbs, Mahees et al. (2011) came out with a linear function to explain per capita solid waste generation (in grammes) in terms of weekly expenditure on food, where every rupee of additional expenditure would be associated with 0.142 grammes of additional solid waste generation. Colombo, the commercial capital and the most urbanized city, is the largest producer of solid waste in Sri Lanka (Bandara, 2008).

Waste Management: Current Practices, Costs and Environmental Implications

As at present, management of municipal solid waste in Sri Lanka, collection to treatment, is not at an accepted level. Only a fraction of the total municipal solid waste generated in Sri Lanka is collected by the local authorities³. For instance, according to the National Solid Waste Management Report for 2007 of the Japan International Cooperation Agency (JICA), the total amount of garbage collected in 311 local authorities was 2838 metric tons per day (NSWMS, 2008), which amounts to an annual garbage collection of 1.04 million metric tons per year. This is a mere 23% of the total garbage generation even though the rate of waste collection to generation in the three main Municipal Councils in the Colombo District, namely, Colombo, Dehiwala-Mount Lavinia and Sri Jayewardenepura Kotte, could be as high as 30% - 40% (Bandara, 2008). Out of the total daily waste collection in the country, nearly 59% is collected within the Western Province while Colombo District accounts for over 44% (NSWMS, 2008).

The current practice in managing municipal waste in Sri Lanka, as much as in other developing Asian countries, is 'open dumping' with little or no treatment by the local authorities (Glawe, et al., 2005); (Sharholly, et al., 2008); (Bandara, 2008). Sri Lanka has a number of large-scale open dumpsites around the capital city for Colombo's waste but has never had

³ As most research and surveys have gathered data on waste collection and not on total waste generation, no consensus could be found among various estimates with regard to the latter. For instance, the Western Provincial Council's Waste Management Authority estimates it to be between 6500 MT to 7000 MT per day (Mannapperuma, n.d.); their per-capita daily waste generation estimate between 0.4 kg and 1 kg, however, would prompt at a much higher amount of total waste generation in the country. Bandara (2008) speaks of a per-capita waste generation ranging from 0.4 kg per day (in Pradesheeya Sabhas) to 0.75 kg per day (in Municipal Council areas) while Colombo Municipality would be producing 0.85 kg per day. This implies that the total waste generation in Sri Lanka would be between 8000 MT and 15000 MT per day, and an average garbage production of 12400 MT per day or approximately 4.5 million MT per year at an average waste generation intensity of 0.62 kg/person/day. Nevertheless, there is no disagreement on the contention that the collection by the local authorities would only be a fraction of the generation, which would not be half of even the lowest possible generation estimate.

a full-scale sanitary landfill site⁴. This unscientific and unsanitary practice has resulted in a number of environmental and health hazards in both developing and least developed Asian countries, largely owing to the high organic composition of the waste (Glawe, et al., 2005); (Visvanathan & Trankler, 2003); (Sharholy, et al., 2008). In South India, for instance, a considerable proportion of municipal waste consists of organic matter such as banana leaves and stems (Sharholy, et al., 2008) while the organic content of municipal waste in highly urban cities such as Mumbai is of significant proportions (Yedla & Kansal, 2003). Local authorities in Sri Lanka are no exception; there is a very high percentage of organic matter in the waste even in highly urbanised areas (Bandara, 2008).⁵ High organic matter coupled with high moisture content in the waste, as observed in Sri Lanka, leads to highly polluting leachate causing surface and groundwater pollution (Pilapitiya, 2012).⁶

The Sustainable Solid Waste Landfill Management in Asia Project identified 199 cases of water-borne diseases and 22 cases of dengue in 2001, and also the possible effect on the quality of water in urban water supply intake zones (Asian Institute of Technology, 2004). Unacceptably high acidic levels have been found in ground water at a former solid-waste dumpsite in Sri Lanka; even the samples obtained from the vicinity of this locality had chemical oxygen demand levels far in excess of tolerance limits (Bandara & Hettiaratchi, 2010). The National Water Supply and Drainage Board has found that the ground water aquifers in the greater Colombo area is polluted, primarily because of open dumping of solid waste, and thus unsuitable for use as a source of drinking water supply (NSWMS, 2008). The opportunity cost of finding alternatives would indicate the measure of environmental damage caused by the unscientific dumping of solid waste in and around Colombo (Asian Institute of Technology, 2004).⁷ Open solid waste dumps also are a primary source of greenhouse gases such as methane and carbon dioxide, leading to air pollution and to climate

⁴ A pilot scale sanitary landfill site, funded by KOICA, is now in operation at Dompe, Sri Lanka.

⁵ According to Bandara (2008), MSW of Sri Lanka typically consists of a very high percentage of perishable organic material which is about 65 – 66% by weight. The highest share of plastics, Glass and Metal together of 18% was reported from Jaffna and Trincomalee cities while Colombo and Matara recording the lowest with 11% and 12%, respectively. While different surveys and research have come out with varying estimates, and in spite of the variability of organic share according to the type of local authority (whether they are Municipal Councils, Urban Councils or Prasesheeya Sabhas), the general consensus could be observed among solid waste technologists that Sri Lankan municipal solid waste contains relatively high share of organic and bio-degradable composition.

⁶ Information and technical guidance provided by Dr. Sumith Pilapitiya, Environmental specialist, The World Bank, are hereby thankfully acknowledged.

⁷ NWSDB had to augment Greater Colombo's water supply from the Kalu Ganga at a cost of Rs. 8.3 Billion.

change (Pilapitiya, 2012). In Sri Lanka, high levels of odour, dust and toxic fumes have been found emanating from uncontrolled burning of solid waste (Asian Institute of Technology, 2004). Haphazard dumping also results in the loss of wetland habitats, which impacts on fauna and flora (particularly in Attidiya and Muthurajawela areas), loss of aesthetic value and associated socio-economic effects, flooding, and exposure to clinical and industrial waste (NSWMSC, 2008).⁸ High degrees of rainfall and humidity aggravate the problem of environmental damage (Glawe, et al., 2005).

In spite of the highly unhygienic and unscientific nature of the present methodology of handling waste, the country spends a significant amount of resources daily on it. An estimation made in 2004 revealed that solid waste management expenditure ranges from a high Rs. 2000 per metric ton in a Municipal Council to a low Rs. 1,200 per metric ton in an Urban Council. Pradesheeya Sabhas, on average, spend an amount in between (Waste Management Authority, 2013). Thus, it could be estimated that the country spends substantially on the daily collection and disposal of garbage (an amount between 1.2 to 2 billion rupees) not to speak of the cost of the harm to the environment.

Alternative Methodologies: Technical Appropriateness of Composting

It is in this context that better and environmentally sound solid waste management methods are urgently needed. Many such methods such as sanitary land filling or incineration, for instance, are expensive or impracticable given the socio-economic parameters prevailing in the developing countries and also the composition of waste. Incineration would not work with municipal solid waste in developing countries such as Sri Lanka due to high moisture content and low calorific value caused by the predominantly organic nature of the waste (Glawe, et al., 2005); (Visvanathan & Trankler, 2003); (Sharholly, et al., 2008); (Yedla & Kansal, 2003); (Bandara, 2008). It also entails high capital, operational and management costs (Asian Institute of Technology, 2004). For these reasons, incineration is feasible only with special types of waste. The practice in India of incinerating hospital waste could be cited as an example (Sharholly, et al., 2008); (Yedla & Kansal, 2003). Sanitary land filling is a sophisticated method of waste disposal, and is more appropriate for developed countries. This is because of the high technology needed (Sharholly, et al., 2008) to prevent leachate seepage and to control gas emission when decomposing (Visvanathan & Trankler, 2003). Sanitary land filling is highly capital- and operational cost-intensive, calling for high tolls on citizens for the removal of their garbage (if commercially operated) or an increased burden

⁸ In Bangladesh, open dumpsites are commonly found in low lying areas, and cause flooding during rainy seasons (Glawe, et al., 2005)

on the public coffers (if the sites are publicly funded and freely provided). In addition, the amount of waste collected by the local authorities in most parts of Sri Lanka makes sanitary landfills economically unviable⁹ unless the collections by many local authorities are managed together to benefit from economies of scale. This implies that a sanitary landfill in Sri Lanka could become economically viable only in the Colombo metropolitan area. This was among the reasons why technology is unaffordable for Sri Lanka and other low-income developing countries with similar waste generation characteristics.

A three-pronged strategy, namely, recycling what is reusable with a resale value, composting the organic fraction of the waste and controlled land filling the residues, has therefore been proposed by technical experts as a potentially feasible strategy package to manage the solid waste problem in developing countries (IGES – Kitakyushu Urban Centre, 2011). Recycling and reusing help minimising the waste that has to be finally managed, and in that respect, is an appropriate and sustainable waste management technique with both environmental and direct financial benefits.¹⁰ And, a final waste treatment and disposal method is still necessary even though the scale of the problem could be reduced through recycling.

Composting is a ‘win-win’ strategy. It is technically one of the most suitable methods of waste treatment due to the high percentage of organic content in municipal waste collected in the less developed Asian countries (Glawe, et al., 2005); (Visvanathan & Trankler, 2003); (Sharholly, et al., 2008). In addition to stabilising the organic fraction of the waste, composting also produces a soil conditioner with agronomic benefits that is a commercially marketable and economically useful product. It also helps to reduce the amount of garbage that has to be disposed, significantly reducing the pollution potential and volume of the residual waste for land filling. This has prompted many developing countries in Asia to use composting in managing their municipal solid waste. In Dhaka, Bangladesh, for example, composting is done largely as a small-scale industry while it is a home-based industry in the Maldives. India offers examples of successful large-scale composting initiatives (NSWMSC, 2008), including the Indore City Centre for MSW Composting established in 1974 (Sharholly, et al., 2008), and the large-scale aerobic facility installed in 1994 at Mumbai to handle 500 metric tons of municipal solid waste by Excel Industries with the support of the Government of

⁹ 75 per cent (or 230) of the Local Authorities collect less than 5 MT per day, while another 17 per cent collect between 5 to 20 MT daily. Only 0.65 per cent of the Local Authorities collect over 150 MT per day.

¹⁰ It is mostly carried out by the informal sector (Glawe, et al., 2005), and is effectively practised in Thailand and India (Visvanathan & Trankler, 2003). In India 40%-80% of recycled waste is plastic material. In Cambodia and Bhutan, 12% and 20% respectively of waste is recycled (Sharholly, et al., 2008).

India. By 2008, 9% of the MSW in India was treated through composting (Sharholy, et al., 2008). The overall cost of production per metric ton was from US dollars 25 to 30 while the market value was from US dollars 33.5 to 42 per metric ton. India is planning to set up more plants in the near future (Visvanathan & Trankler, 2003).

Although there are no large-scale commercial composting plants in Sri Lanka, many local authorities (such as Weligama, Balangoda, and Bandarawela) have been successfully running their own mini composting plants for some time. Approximately, 115 local authorities (including Kuliypitiya, Tissamaharama, Chilaw, Tangalle, Wennappuwa, Buttala, Moneragala, Anamaduwa, Kalpitiya, Kinniya, etc.), have been recently provided with the infrastructure for composting through the Pilisaru Project of the Ministry of Environment, and are in various stages of construction and operation of their municipal waste composting facilities.

Data and Methodology

In this backdrop, the present study examined the comparative economics of municipal solid waste management models adopted in Sri Lanka. The Benefit-Cost Appraisal Methodology was adopted, where financial appraisal was conducted in order to discover the appeal of composting as an alternative waste management method for municipalities and an economic analysis was performed to understand the viability of the technology from the national economic viewpoint.

Technical and operational information and the cost data required for the analysis were gathered from secondary sources while interviews with municipal officials, officials of the United Nations Environment Programme, experts in the field of solid waste management, and officials of the Pilisaru Project (Project Officers, 2012)¹¹ of the Central Environment Authority of Sri Lanka were conducted to gather primary data.

The study examined the model adopted by the Weligama Urban Council¹² as against the 'Pilisaru' design proposed by the central authorities to accommodate approximately 18 metric tons of solid waste per day, to evolve comparative viability parameters. A few other technically successful experiments, particularly those conducted at Balangoda, Bandarawela and Kuliypitiya, also were examined in order to comparatively position the investment

¹¹ A special project intending to solve the solid waste problem in Sri Lanka within the next 5 years.

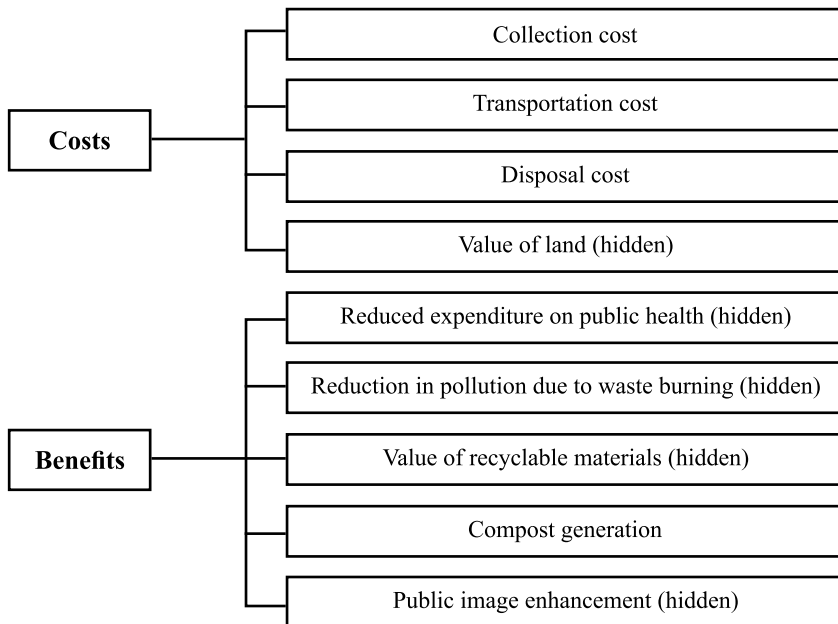
¹² Weligama Urban Council has practically adopted composting technology to treat their solid waste.

intensity and the compost productivity of the Weligama model and to understand the scope for further improvement. The study also shed light on possible economically viable strategies towards composting municipal waste in Sri Lanka.

Economics of Composting: A Comparative Assessment

Yedla and Kansal (2003) have done a critical benefit-cost analysis of composting. They used multivariate functional models based on theoretical considerations concerning all implicit and direct cost items. Figure 2 depicts their benefit-cost model, which details the various costs and benefits related to Municipal Solid Waste Management.

Figure 1: Costs and Benefits Involved in Solid Waste Management



Source: Yedla, S., Kansal, S. (2003). Economic insight into municipal solid waste management in Mumbai: A critical analysis

The perception of the present researchers is that the so-called ‘hidden’ cost pertaining to land value is a misnomer, at least in the Sri Lankan context. This is because larger extents of productive municipal or semi-urban land would have garbage dumps if no composting operation is in place. In fact, composting helps significantly reduce the extent of waste that

goes to open dumps, thus reducing the area of dumping grounds and increasing dumpsite life. Both have the effect of ‘releasing’ land that otherwise would be used for open dumps, and the land effect, if considered, is more likely to be a ‘hidden benefit’ than a ‘cost’, which, though not straightforward to estimate, could become critically decisive in economically justifying otherwise ‘financially unviable’ investments on solid waste management.

For the purpose of this research, direct cost and benefit items were addressed in terms of the Sri Lankan context while leaving the ‘hidden’ elements to be addressed, if necessary, in subsequent research. On the cost side, the total costs of solid waste management operation, including the cost of composting, were taken into account while the economic value of compost output and the salvage value of recyclable material were considered as ‘benefits’. The land value saving benefits, waste dumping cost reduction benefits and environmental benefits were thus excluded from the current analysis. The actual net benefits of composting operations therefore are likely to be much greater than what was estimated in this exercise.

The model used in the analysis could be presented in the following equation:

$$NPV = -1 + \sum_{t=1}^n \frac{\text{Benefits} - \text{Costs of Operation}}{(1+r)^t}$$

Where, ‘I’ stands for capital investment. ‘Costs of Operation’ include all expenses incurred upon reception of waste at the composting plant including those of compost production and disposal of residual garbage, r represents the discount rate, and ‘t’ stands for the year starting from the first year of operation (t=1) and running until the end of the life of the plant (t=n)

Analysis

Two models of composting, namely, the ‘Weligama Model’ (representing the actual experience of composting at the Weligama Urban Council, gathered through the present research) and the Pilisaru Model (representing the standard model stipulated by the Pilisaru Project of the Central Environmental Authority for the same waste handling capacity), were comparatively appraised. Both models were subjected to benefit-cost appraisal, separately from ‘financial’ and ‘economic’ perspectives, within the analytical framework depicted in the above model.

According to the Pilisaru Model (implemented since 2009), a composting facility to manage 18 metric tons of municipal waste per day would need Rs. 23 million as initial investment to procure machinery and to construct and develop the facility. The model developed by

the Weligama UC, on the other hand, was implemented with a capital outlay of Rs. 11 million, and the project was completed by 2011. Moreover, an efficient composting facility should produce at least one-sixth of waste input as compost (Pilapitiya, 2012);¹³ but it was observed that the composting project at Weligama produced only from 1 to 1.5 metric tons per day (approximately 43 metric tons per month) of compost out of a plant with a daily waste handling capacity of 18 metric tons. Therefore, it appears that the Weligama plant, though installed with a much lower capital investment compared to the technical proposal, is managed at much lower levels of output generating efficiency than what could be expected, due most likely to poor waste separation on site.¹⁴ This also could reflect, at the same time, the scope for further improvement of the Weligama model, initially by improved waste separation on site and subsequently by source segregation of organic matter.

The revenue earned by Weligama UC from the sales of compost amounts to approximately Rs. 370,000 per month, reflecting an average selling price of Rs. 8,500 per metric ton of compost. This UC also salvages nearly three-and-a-half metric tons of recyclable material through their waste separation exercise prior to composting, and earns an average revenue of around Rs. 425 per metric ton by selling such salvaged material, which otherwise would go to the waste dump site.

In appraising economic viability, the foreign exchange savings potential of compost by way of blending with chemical fertilizer was used as the basis as compost produced could significantly reduce chemical fertilizer requirements. Even if one ignores as “unsustainable” the recent scientific finding that boosts (paddy) yield from chemical fertilizer application, there is no debate among scientists that compost enriches the soil and enhances productivity, thereby reducing the use of chemical fertilizer to receive similar yields. For instance, it is estimated that one unit of chemical fertilizer could be mixed with four units of compost and substituted for two to three units of pure chemical fertilizer to obtain similar yields plus better soil conservation. Even if the lower side of the estimate (that is, two units of chemical fertilizer being able to be substituted with one unit of chemical fertilizer plus four units of

¹³ This estimate, however, could be higher or lower depending on technical parameters such as C:N ratio, temperature, waste segregation, mixing methods, etc., applicable to each given case; which is beyond the scope of this study.

¹⁴ Approximately 3 Metric Tons of compost output should be possible with 18 tons of unsorted waste input, assuming an organic content of approximately 70 per cent of which nearly half is compostable. However, this depends on the quality of unsorted garbage received, and the amount of compost actually produced could be lower if the site level separation does not yield high share of compostable organic content. This could be the cause behind less than expected compost yield observed at Weligama.

compost) were assumed, the need for chemical fertilizer would decrease by one unit for every four units of compost. The burden on the public coffers of the associated fertilizer subsidy that could be eased through this 'substitution effect' of chemical fertilizer by compost too was estimated.

Shadow values were used instead of market-based costs and benefits to screen off local market distortions. Shadow Price Conversion Factors of 1.1, 1.2 and 1 were used to convert the market values of investment, variable costs and fixed costs, respectively, in the absence of any formal estimates. The values being greater than or equal to 1 imply a 'net subsidy element' in the economy with regard to such expenses; thus, the resultant viability estimates are likely to be conservative. This is because any variability of shadow prices owing to transfer payments on these cost items on the taxation side would reflect lower economic costs. The entirety of the market value derived from recycled waste, on the other hand, was considered to have full economic value, corresponding to an implicit Shadow Price Conversion Factor of one.

The opportunity cost of funds of 15% per annum was used in discounting revenue and cost streams in the financial appraisal while a 10% rate was used in the economic analysis. This is for the purpose of being conservative in the financial and economic viability assessments: a commercial loan could be raised at an interest rate to the tune of 15%, and an environmentally favourable investment, even by a commercial entity, should be able to source the required capital at that rate.¹⁵ The economic discount factor of 10% used also is towards the 'high-side' for the same reasons, and a venture becoming economically viable at such a rate should be acceptable at any lower economic opportunity cost of capital.

Results and Discussion

The outcomes of the benefit-cost assessment revealed that both models subjected to appraisal are unlikely to be financially feasible for the investing agencies. This might explain why municipal solid waste management through composting is not developed as a commercial venture. However, both management models appear 'viable' from a national economic viewpoint, indicating the potential net benefits the nation could secure through waste composting. The Pilisaruru model, in spite of its high capital intensity, offers a higher economic net present value than the management model adopted by the Weligama Urban Council, apparently owing to the latter's poorer productivity in generating output.

¹⁵ The analysis was performed in 2013, and the opportunity costs have to be perceived based on the contemporary financial market conditions.

The results of the benefit-cost assessment are summarised in Table 1.

Table 1: Summary of Benefit-Cost Appraisal Results

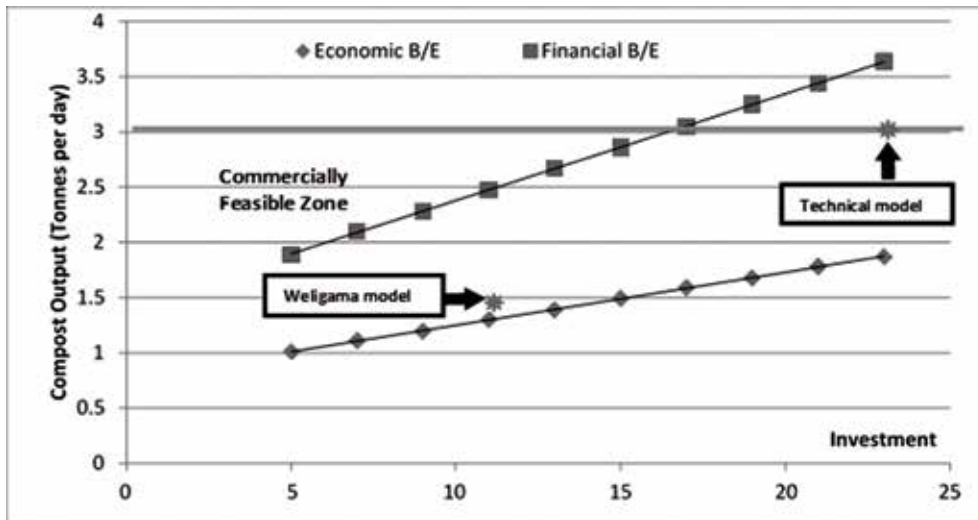
	Financial Appraisal		Economic Appraisal	
	Pilisaruru Model	Weligama Model	Pilisaruru Model	Weligama Model
Plant capacity of waste intake	18 MT/day	18 MT/day	18 MT/day	18 MT/day
Investment (Rs Mn)	23(Mkt value)	11(Mkt value)	25.3(Econ value)	12.1(Econ value)
Compost Output (MT/day)	3	1.44	3	1.44
Variable cost (Rs Mn/Yr)	3.02	1.45	3.63	1.74
Fixed Cost (Rs Mn/Yr)	3.42	3.42	3.42	3.42
Net Benefit Flow (Rs Mn/Yr)	3.29	0.086	8.35	2.52
Net Present Value (Rs. Mn)	(6.504)*	(10.57)*	26.02**	3.37**

Note: (a) *at 15% discount factor; **at 10% discount factor

Source: Authors' estimations

The study examined the viability break-even contours of municipal waste composting from financial and economic perspectives, and the relative viability positioning of the two models could thus be comparatively perceived, as depicted in Figure 2.

Figure 2: Break-even Contours Applicable to Municipal Waste Composting

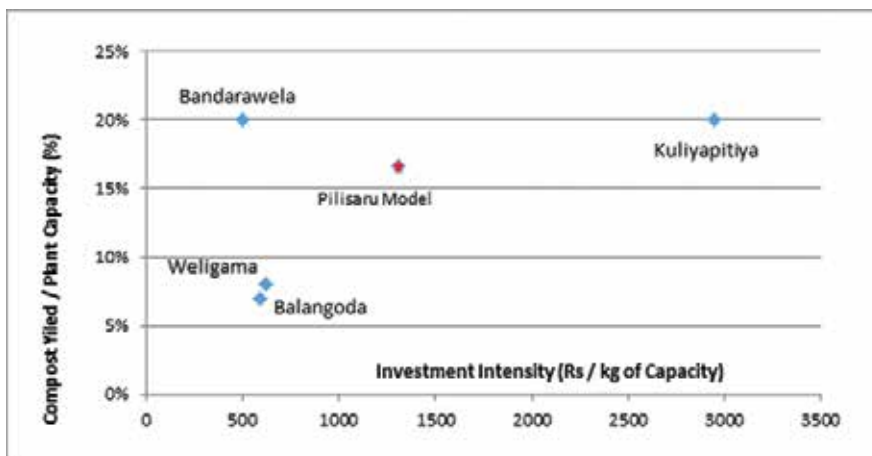


Source: Authors' estimations

This analysis enabled establishing the minimum compost output that would establish the viability of the composting operation at varying levels of initial capital outlays in financial terms. It is clear that both management models (the model adopted by Weligama UC and the Pilisaruru model) position themselves above the economic viability break-even contour, but below the financial viability break-even contour. Therefore, while both models are economically justifiable, they are financially unattractive to investors, giving rise to a typical case for state intervention.

The Weligama model, however, offers the possibility of achieving even financial viability as there is ample space in the ‘feasible zone’ below the maximum output threshold where it could be positioned if the plant’s productivity could be improved. For instance, an output level of approximately 2.5 metric tons of compost using 18 metric tons of waste (approximately 60% increase of productivity, but still 16% less than the maximum output capacity) would enable the Weligama model to reach the financial viability level. It might be interesting also to note that there is scope for the Weligama model to further increase its investment or variable costs (if it enables better technology or production practices, yielding incremental productivity that more than compensates for the incremental outlays) and still position itself above the financial viability zone. This possibility, however, is non-existent in the Pilisaruru model, where the required output level for financial viability lies above the maximum achievable productivity threshold. Local authorities adopting the Pilisaruru model will thus require state subsidies, unless they could find a way to reduce initial capital outlay to at least below Rs. 17 million.

Figure 3: Comparative Analysis of Capital Intensities and Yields of Composting Experiments



Source: Authors’ estimations based on the information gathered through interviews

Capital intensities and compost yields experienced by several other local authorities in implementing municipal waste composting projects, as comparatively presented in Figure 3, further substantiate the above inferences.¹⁶ The possibility of the Weligama UC being able to increase its compost yield (from the current level of 8% of plant capacity) might be indicated by the performance of the Bandarawela and Kuliypitiya compost plants where, according to the findings of the present research, the compost yield could be as high as 20% of the waste collected. Though this figure seems to be somewhat optimistic,¹⁷ and even higher than the estimates of the Pilisaru Model (17%), it reflects ample scope for further improvement of the Weligama plant. Further, the capital investment intensity of the Weligama plant (Rs. 622 per kg of waste handling capacity) is approximately 25% more than that of the Bandarawela plant (Rs. 500 per kg) and slightly higher than even the Balangoda plant (Rs. 590 per kg), indicating the possibility of capital savings in installing compost plants. Thus, the potential for developing a less capital-intensive and a more compost-productive model, leading to achieving 'financial viability' also, cannot be ruled out. In fact, it is highly likely that the facility at Bandarawela works at or above this financial viability threshold. This, however, has to be confirmed through an in-depth investigation of cost structures and benefit streams, to which the present research is not privy.

It is interesting also to note in the above comparative assessment that the plant constructed at Kuliypitiya is highly investment-intensive. Further investigation into this marked difference from other plants compared in this analysis revealed that it could be due to two possible causes: (a) an apparent over-designing of the Kuliypitiya plant which only has to provide for 9 metric tons of garbage collection per day, and (b) the development of the Kuliypitiya plant, according to the stipulations laid down by the Pilisaru design, which consists of a number of building construction activities requiring heavy capital outlays. This latter hypothesis is further supported by the fact that the composting facility at Tissamaharama, constructed with Pilisaru funding, is also highly capital-intensive.¹⁸ The justification for such a heavy capital outlay becomes questionable when it potentially puts the financial attractiveness of

¹⁶ The implementation of the projects compared in this study was completed between 2009 and 2011. Thus, the intervention of market price variations and inflation would not be substantial, even though their effect with regard to the financial analysis cannot be excluded. A much closer and detailed investment viability appraisal performed using more refined and updated cost estimates will therefore be necessary if these indicative results are to be used as guidance for planning and implementation of a municipal solid waste composting project.

¹⁷ It is therefore necessary that these estimates are re-validated through further and more intensive research.

¹⁸ As revealed by Dr. Sumith Pilapitiya, a solid-waste management expert and a Consultant to the composting operation at Tissamaharama.

these plants out of any reasonable reach, and also because many local authorities appear to have installed and successfully run composting facilities at much less capital intensities. The results of this research therefore tend to suggest that the authorities should revisit the management models and corresponding investment plans of the compost plants that are being considered for funding under the Pilisaru programme in the future.

The study therefore provides evidence to hypothesise that a municipal solid waste management system supported by composting could be viable, not only in terms of national economic and environmental sustainability viewpoints but also in terms of financial viability. In such a scenario, municipal waste management could become a financially self-sustaining activity, which could be undertaken with commercial benefits; the question of public coffers subsidising composting operations then would not arise.

The possibility of an organisation model with private sector investors coming into municipal solid-waste management cannot be disregarded in this context. Given the inherent management efficacy of a commercial venture operation for profit, such a private sector model might be able to achieve the desired investment intensity and compost productivity levels to make the operation financially self-sustaining. If economies of scale are a constraint, the opportunities present in such a “commercial model” to deal with a number of nearby local authorities to source the required waste intake are likely to be significant. Further, some commercial entities might even use their organic waste material to explore this possibility, where super market chains (which might be having significant amounts of vegetables and fruits going out as waste) could possibly be potential entrepreneurs. Such an initiative, on top of their internal financial economics, might even negotiate with the respective local authorities to absorb their garbage at a charge levied on the local authority based on the tonnage so absorbed, or even might offer treatment of such garbage free-of-charge on condition that the waste delivered is sorted and are exclusively non-hazardous organic matter.

On the other hand, the results of this study also could throw light on the feasibility of the Government subsidizing any local authority that is unable to achieve financial viability in composting for some situational or technical reason. Because the Government could save a subsidy of over Rs. 50 on each kg of reduced consumption of chemical fertilizer and that a kilogramme of chemical fertilizer could be saved through blending with compost at a ratio of 1:4, it should be “expenditure neutral” for the Government to spend up to Rs. 12.50 per kg in support of good quality compost produced for blending with chemical fertilizer. This is approximately 150% of the current average selling price of Rs. 8.50 per kg recorded by Weligama UC and over ten times the financial gap that has to be met by a subsidy if

Weligama's financial accounts on composting are to be balanced. Besides, when the compost production capacity of 0.15 million metric tons per year of the 311 local authorities out of their annual collection of nearly one million metric tons of solid waste (NSWMS, 2008) is considered, the potential chemical fertilizer reduction effect through blending would be approximately 40,000 metric tons and the saving to the public coffers in subsidies otherwise payable on fertilizer would amount to be Rs. 2 billion a year. This could be directed to a dedicated fund, enabling the Government to sustainably administer an effective compost production operation at these local authorities.

Conclusions

It is evident from the study that composting is a nationally attractive and practically implementable solution to the municipal waste management problem in Sri Lanka. It is technically feasible as successfully demonstrated by the Weligama Urban Council and by a number of other local authorities.¹⁹ It is also justifiable from the national economic viewpoint as evidenced from the appraisal results of both models subjected to analysis in this study, even without taking into account the environmental and other social benefits associated with it.

Having made an appraisal at different levels of investment and compost productivity, it could be concluded that developing a waste composting model having the potential of reaching even the commercial viability would not be an impossibility. The Weligama management model, for instance, could attain financial viability levels if the compost productivity of its facility could be improved further or if its capital intensity could be lowered, or both. In such a scenario, even a private sector-operated municipal waste management system might not be an impossibility. In that light, the necessity or desirability of state intervention to subsidise composting operations can be questioned as any such assistance might eliminate the incentive for productivity enhancement. Instead, encouragement could be offered for further research and development based on the experiments at the Weligama UC and at other successful local authorities, with a view to arriving at an optimum combination of plant productivity and the required capital outlay.

Regarding the Pilisaru compost management model, the situation is different. No further productivity enhancement could be envisaged as the present appraisal has already assumed

¹⁹ The plants discussed in this study are still operational with varying degrees of technical and financial efficacy.

compost production at the plant's maximum output capacity. Therefore, the Pilisaruru model would not be able to reach the financially viable threshold unless its initial investment requirement could be reduced, and thus, the necessity for State assistance would become unavoidable. It could therefore be recommended that the plant facility designs currently used for funding under the Pilisaruru programme be improved, particularly with a view to reducing its capital intensity.

On the other hand, the results also demonstrated that the net savings to public coffers would be potentially greater even if compost is manufactured under a calculated subsidy. This is because the savings to the Government by reduced fertilizer subsidy through blending chemical fertilizer with compost would be much higher than the subsidy required for balancing the financial accounts on composting at local authority level.

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Emerging Leadership at Operational Level: The Convergence of Self-and Social Construction of Leadership

Kumudinei Dissanayake

Abstract

Operational level workers constitute an active and energetic workforce from which leaders emerge in organizations. Existing theories support the view that leadership is constructed by self and others. However, the process through which leaders emerge at operational level exists as an unattended agenda in leadership research. Thus, the purpose of this study is to examine and theorize how leaders emerge in a convergent process of self and social construction of leadership among operational level workers. This study is based on a comprehensive literature review followed by a case study. With the support of theories on impression construction, leadership outcomes, self-fulfilling prophecy, implicit leadership, and leader prototypes, the study identifies the emerged leadership at operational level as a convergent process of self- and social-construction at the workplace. Deploying a case from a labor-intensive industry for empirical support, the study develops eight propositions for this theorization. It finds that leadership in a large group of operational level workers emerges in a process consisting of: impressive engagement and symbolized positive performance of emerging leaders, and follower narrations and collective embracing of emerged leadership by peer followers. This theorization offers a cluster of implications for human resource managers, leader trainers, organizational line managers, and theorists while providing insights into the processes of emerging leadership at operational level. It recognizes the social processes enacted among young workers who belong to new generations, and emphasizes the significance of theorizing leadership construction processes of emerging leaders, while identifying their implications for organizations in managing new generations.

Keywords: emerged leadership, follower narrations, impressive engagement, operational level workers, self-construction, social construction, symbolic performance.

Kumudinei Dissanayake, PhD is a Senior Lecturer of the Department of Management & Organization Studies, Faculty of Management & Finance, University of Colombo. E-mail: k_dis@hotmail.com.

Introduction

Researchers have accorded attention to leadership processes (Galvin, Balkundi & Waldman 2010, Hannah, Walumbwa & Fry 2011, Kark & van Dijk 2007) with the acknowledgement that it is a collaborative construction of both leaders and followers (DeRue & Ashford 2010). Further, these processes are seen as hierarchical, collective (Carson, Tesluk & Marrone 2007), mutually influential (Uhl-Bien, Marion & McKelvey 2007), social (DeRue & Ashford 2010), or integrative (Küpers 2007) processes. Apparently, most of the leadership studies draw heavily on such processes at organizational leader-follower interface at corporate, middle, or lower management level, leaving a void in the knowledge of how leadership emerges in a group of co-workers at operational level.

When a massive number of workers in groups or teams are at work, a few individuals who are embraced by other co-workers emerge as leaders. Traits, (House & Aditya 1997, Stogdill 1974), charisma (Conger & Kanungo 1998), style and behaviour (Kerr, Schereisheim, Murphy & Stogdill 1974, Judge, Colbert & Illies 2004), nature of relationship (Gerstner & Day 1997), and particular context (Fiedler 1967, House 1971) have been used to explain the grounds for such leader emergence. However, these appear to be partial explanations which are leader-centric, thus ignoring the role of followers (Carsten, Uhl-Bien, West, Patera & McGregor 2010, Dasborough, Ashkanasy, Tee & Tse 2009) that gives birth to leaders. Instead, recent developments in leadership research support the claim that leadership is a co-construction by both leaders and followers (Field 2007, Meindl 1995, DeRue & Ashford 2010).

Despite recent research directions drawn on leadership construction at group level (e.g., De Rue & Ashford 2010), leadership research lacks investigations into the processes in which leaders emerge through the constructions among co-workers at the operational level. Operational level workers are at the non-managerial level or operating core (Mintzberg 1979) in a typical organization. Particularly, organizations in labor-intensive industries claim a large proportion of operational level workers skilled or unskilled. For instance, nearly 90% of the workforce in the garment and textile industry is composed of operational level workers (who are termed 'associates'). They are commonly characterized as young, skill-seeking, opportunity-finding, and shifting from job-to-job until they anchor in satisfying work or work place. Thus, they belong to a workforce, which would be retained and motivated in the existing workplace by tapping their expectations, and further developed and promoted to undertake managerial and leadership obligations in future endeavors. Most of them are at the exploration stage (attempting to identify work that creates interest) or trying to reach the establishment stage (finding their place in the organization and strengthening

their contributions) in their career (Super 1957). They add value to organizations through their 'young-blood' (energy and creativity) while being a flexible and dynamic workforce for undertaking heavy work for long hours or on a shift basis. Moreover, they are growth-oriented and looking for self-development. Thus, it is at the entry level that organizations identify future leaders or managers through their work-related attitudes such as commitment, loyalty, and involvement, etc. (Luthans 2008).

With the support of the existing literature, in the present research, I base my conceptualization on the premise that leadership that emerges at operational level in work organizations is a construction of the prospective (emerging) leaders and their co-workers. In my theorization self-construction of leadership by emerging leaders and social construction of leadership by co-workers or followers converge.

The efforts of self-construction of image are well explained in the theory of impression management (Rosenfeld, Giacalone & Riordan 1995), while follower perceptions of leaders are theorized in implicit leadership theories and leader proto-typicality. These two major streams of knowledge may help us understand how leader's 'self' and follower perceptions together help leaders to emerge from among operational level workers.

Accordingly, my goal here is to draw from theories on image construction, leadership outcomes, self-fulfilling prophecy, and implicit leadership and leader prototypes to develop a conceptual framework in order to advance future studies on the process of self- and social construction of emerged leadership of operational level workers. I argue that leadership in a large group of operational level workers emerges in a process of: (1) impressive engagement, (2) symbolized positive performance, (3) follower narrations, and (4) collective embracing of emerged leadership.

Most of the operational level workers in contemporary organizations belong to the new generation of workers (Joshi, Dencker & Franz 2011, Mattis, Gerkovich, Gonzales & Johnsen 2004). In line with the new generations stepping into workplaces and proceeding to managerial positions, research interest has grown to examine leadership outcomes in such contexts (e.g. Carucci & Epperson 2011, Penny & Neilson 2010, Mhatre & Conger 2011). Developing insights into the processes of emerging leadership at operational level, I bring into focus the social processes enacted among the workers belonging to new generations. Thus, I emphasize the significance of theorizing leadership processes of emerging leaders, while identifying their implications for organizations in managing new generations.

Emergence of Leadership

Research studies that looked into the emergence of leadership are not new (Curtin 2004). They have theorized leadership emergence as either a lifelong process (Clinton 1989), at corporate level (Stadler 2009), in small groups (Curtin 2004), in virtual teams (Greer & Jehn 2009), in self-managing teams (Wolff, Pescosolido & Druskat 2002), in complex adaptive systems (Lichtenstein & Plowman 2009), or at times of ambiguity (Pescosolido 2002). Despite these, the attempts that explored leader emergence at operational level in a larger crowd of workers (as in labor-intensive industries) seem to be sparse. However, the outcomes of the existing research studies help us with two streams of knowledge, that is: (1) the process of leader emergence, and (2) the characteristics of emerging leaders.

Process of Leader Emergence

Referring to a sequential developmental model in small group behaviour, (Tuckman 1965, Stein, Hoffman, Cooley, & Pearse 1979) presented a valence model of emergent leadership, which was structured with three distinct stages of leadership emergence. At the ‘orientation stage’ (first stage), the potential leaders announce their candidacies; at the ‘conflict stage’ (second stage), two or more leaders pass the candidacy threshold causing a conflict; and at the ‘emergence stage’ (third stage), the group members willingly subordinate themselves to the leader who has passed the emergence threshold. This process incorporates the involvement of both the self and others in the emergence of leaders. The orientation stage shows the self-engagement of the emerging leader, while the emergent stage presents the involvement of others (group members) in embracing the leadership that emerges. The conflict stage shows competing behaviour among several emerging leaders who attempt to emerge from among themselves. Accordingly, this theorization focuses on the emergence of one individual for the leadership competitively by winning the hearts of fellow members. My theorization deviates from this in its consideration of the emergence of any number of possible leaders among a large number of operational level workers of the same work floor.

Curtin’s (2004) investigation of emergent leadership, which validated the three stages theorized by Stein et al. (1979), was confined to the test of the role of jury foreperson’s emergence and maintenance of leadership.

The leadership emergence theory (LET) developed by Clinton (1989) explicated three parallel processes in leadership development, which were termed: (1) internal psychological processes of the individual, (2) external sociological and contextual processes, and (3) divine processes. Even here, the involvement of both the self and others have been acknowledged.

Clinton's (1989) theory is based on the premise that leadership emergence is a process in which 'God interferes throughout a lifetime in crucial ways to shape the leader towards His will' (p. 7). It is entirely focused on the development of Christian leaders. However, Stadler (2009) tested and validated this theory in the corporate environment with a focus on corporate leadership development.

Characteristics of Emerging Leaders

Pescosolido's (2002) theorization focuses on leader emergence at times of ambiguity. Thus, the role of managing group emotions by interpreting emotional response and modeling that response was highlighted as a major characteristic of emerging leaders. Pescosolido posits that emerging leaders are empathetic and responsive to follower needs and they rely on influence process. According to him, leader emergence is subject to several conditions such as degree of empathy, group norms of emotional expression, and ambiguous feedback regarding the group's performance. Wolff, Pescosolido, and Druskat (2002) proved that empathy enables emerging leaders the cognitive skill of pattern recognition and perspective taking, which form the base of leadership behaviour displayed by emergent leaders. However, their research focus was limited to leader emergence in self-managing teams.

Greer and Jehn (2009) investigated the strategies used by individuals in virtual environments to emerge as leaders. They found that the members who emerge as leaders rely more on soft influence tactics than hard and rational influence behaviours.

My theorization deviates from the research that dealt with the emergence of spontaneous or temporal leadership in group settings. Further, it is different from informal leadership (Pescosolido 2002, Wolff, Pescosolido & Druskat 2002) but it will accommodate the view that emerging leadership can be initiated as informal leadership at the stage of self-construction, which is later embraced by followers, accepted by management, and empowered through appointments to formal leadership positions in the organization.

Self- and Social Construction of Leadership: Implications from Leadership Literature

In this section, I examine the implications given by leadership literature to identify the conceptual possibility of self- and social construction of leadership, in general. I first take up the self-construction part of leadership, and then proceed to the social construction part. A summary of implications as they lead to deriving the stages of the process of emerging leadership are given in Table 1, followed by the present discussion.

Self-construction of Leadership

The initial conceptualizations developed in leadership theory have been centered on ‘leader’ him/herself and thus have contributed immensely to understanding how individuals act towards constructing self as a leader. I here define the self-construction of leadership as ‘the intentional and attempted development of self as a leader’. It would be activated through an inner drive (Maslow 1954, Luthans 2008) and through persuasion of others. As such, it is an act performed by individuals who have the desire, ability, and confidence to become leaders in the future. Hence, it is a performance of emerging leaders.

Individuals who possess certain exemplary traits or personalities (House & Aditya 1977) would tend to emerge as leaders among a group of average people. Intelligence, knowledge, and experience above the average of the group (Judge, Colbert & Illies 2004) could motivate an individual to proceed towards leading others. Further, the ability to influence others through their voice, clear communication, and opinions suggest the energy behind possible leader emergence. Well initiated and managed interactions among people, such as relations and transactions (Gerstner & Day 1997), the ability to envision and initiate change in the form of transformation (Bass 1985, Burns 1978), and even charisma (Conger & Kanungo 1987) would strengthen the individuals’ emergence as leaders in work settings.

A rich requisite for the self-construction of leadership can be found in charismatic leaders. Behling and McFillen (1996) delineated some attributes of charismatic leader behaviour, which could be considered as a means of self-construction of leadership. They are: (1) showing concern for followers’ needs, wants and fears (empathy), (2) articulating purpose through language (dramatization of the mission), (3) acting confidently and with certainty (protecting self-assurance), and (4) creating an impression of personal competence (enhancing one’s own image).

Apart from those broad-based theories, recent literature focuses on more self-centric attributes of leaders. As such, authentic leadership which grasps the portrait of individuals “who are deeply aware of how they think and behave and are perceived by others as being aware of their own and others’ values/moral perspectives, knowledge and strengths” and are “confident, hopeful, optimistic, resilient and of high moral character” (Avolio & Gardner 2005, p. 321) implies ‘authenticity’ as an important aspect of self-construction of leadership. Thus, authenticity (or being true to self) and integrity (or being true to others) (Field 2007) can be seen as necessary grounds for self-construction of leadership. Sayles (1993) demonstrated how leaders make their role legitimized in the eyes of their followers.

Legitimizing leadership incorporates: (1) demonstrating superior ability, knowledge of the group norms, expectations and values, (2) acting as the group's spokesperson, protector and representative by helping solve problems of group members, (3) displaying self-confidence, successfully handling challenges, (4) showing persistence, etc. This notion can be adopted to see how prospective and emerging leaders attempt to construct their image to be reflected as qualifying to be leaders.

Social Construction of Leadership

Following the era of leader-centric theory development, the increasing interest in followership or the followers' role in developing leadership has led to leadership research. The followers' role in creating leaders is well demonstrated in the primary notion of leadership as it acknowledges that "leaders are those who have followers". As such, leaders cannot exist without followers, and it is the followers who create leaders. Thus, as suggested, the followers' constructive role in leadership cannot be underestimated. I here define the social construction of leadership as 'the intentional or unintentional embracing of individuals as leaders by others'.

Even though the notion of social construction of leadership is relatively new in leadership theory, such conceptualizations have appeared in recent literature (e.g., DeRue & Ashford 2010, Field 2007, Meindl 1995).

Implicit leadership theories (ILTs) have been successful in explaining how personal assumptions about the traits and abilities of leaders create cognitive structures or schemas that followers expect to be seen in their leaders (Epitropaki & Martin 2004, Lord & Maher 1993, Offerman, Kenney & Wirtz 1994, Phillips 1984). These cognitive structures or schemas are stored in human memory over time, which form individual perceptions and thus their interpretations of other people (Epitropaki & Martin 2004). Such a perceptual process clearly implies a process that establishes the underlying predispositions of group members towards their prospective leaders.

Social identity theory (Turner & Oakes 1986) helps us understand how leaders emerge through the 'matching' of such 'idealities' constructed by the group members with the norms, values, traits, and standards shown by the prospective leaders. Leader group prototypicality (van Knippenberg & van Knippenberg 2005, van Knippenberg, van Knippenberg & van Dijk 2000) explains this congruence and its mechanism that leads to the emergence of leaders. The 'prototypes' being the "abstract conception of the most representative members or

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most widely shared features of a given cognitive category” (Phillips 1984, p.126) facilitate the construction of leadership by means of interpersonal interactions, prior experiences of individuals held in mind, and exposure to various social events collectively (Epitropaki & Martin 2004). As suggested in leadership categorization theory (Lord, Foti & De Vader 1984), the people in groups are categorized as leaders on the basis of perceived prototypic attributes.

The view of the social construction of leadership has been further strengthened by the theory of romance of leadership (Meindl, Ehrlich & Dukerich 1985). Meindl et al. (1985) who argue that leadership is a perception “that plays a part in a way people attempt to make sense out of organizationally relevant phenomena” (p. 79). It has drawn attention to the follower perception of leader’s attributes especially in crises (Pillai 1996, Pillai & Meindl 1998). It is apparent that social construction of leadership necessarily works on perceived (effective) leader performance by the followers. Thus, (effective) leader performance plays a pivotal role in that endeavor. Table 1 below summarizes the above theoretical implications and depicts the derivation of stages in the process of emerged leadership.

Table 1: Derivation of Stages in the Process of Emerged Leadership

Constructive Dimension	Theoretical Implications of Leader Manifestation	Leader / Follower Functions in the Constructive Process	Stage in the Process of Emerged Leadership
Engagement of self	Traits Charisma Communication Authenticity	Making impressions	Impressive engagement
Leader performance	Achieving targets Successful influence Healthy relations	Symbolizing effectiveness	Symbolized effectiveness
Leader idealities	Implicit theories Leader prototypes	Narrating visual performance	Follower narration
Leader acceptance	Romancing leadership	Embracing emerged leadership	Collective embracing of emerged leadership

A Model of Self- and Social Construction of Leadership

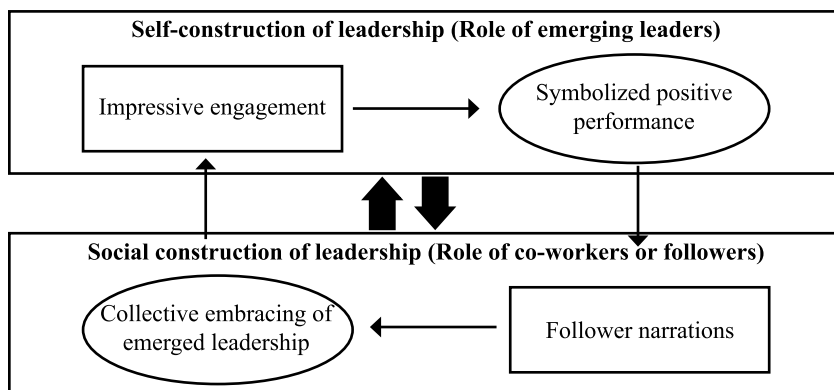
Recently there has been growing attention to the social processes that construct leadership in organizations (e.g., Bresnen 1995, Uhl-Bien 2006, Valcea, Hamdani, Buckley & Novicevic 2011). However, researchers have shown little interest in the social processes through which leadership emerges at the operational level of work organizations. In this paper, I propose that leadership among co-workers at operational level in work organizations emerges in a process of self-construction (of emerging leaders) and social construction (of co-workers or followers).

Leadership that Emerges Defined

The term ‘emerge’ is derived from the Latin term *ēmerge*, carrying the meaning ‘to rise from’, ‘to become known’, ‘to become evident’, ‘to become manifest’, ‘to come into existence’ or ‘to come forth from obscurity’ (*The American Heritage Dictionary 2013, Merriam-Webster Dictionary 2013*). Considering this connotation, I define ‘leadership that emerges’ as ‘the leadership that becomes manifest from among a constellation of co-workers through the impressive engagement of individuals followed by collective acceptance by others’.

As presented in Figure 1, I propose that impressive engagement of individuals and their symbolized positive performance (which form the self-construction of leadership), and follower narration and collective embracing of the leadership that emerges (which form the social construction of leadership) are the underlying processes of leadership that emerges among operational level workers in organizations.

Figure 1: The Process of Self- and Social Construction of Emerged Leadership



Methods

I employed the case study strategy (Yin 2009) to study the process of self-and social construction of leadership that emerges among operational level workers in a labor-intensive industry. This case study was conducted as part of a comprehensive study, which attempted to report the successful management practices used to manage young workers in a textile company in Sri Lanka. It found the evidence of emerging leadership at the lower level, which was subsequently accepted by peer workers. The findings of the study suggested that leadership of young workers at operational level emerges in a process of active self-construction performed by themselves and the social construction followed and evidenced by their co-workers or followers.

Research Setting

The textile and clothing industry is a highly labour-intensive and low-wage industry yet considered as a dynamic and innovative sector. It has been an important source of employment, offering entry-level jobs for non-skilled and semi-skilled labour, especially in developing countries (Nordas 2004). The easy adaptation of relatively modern technology at relatively low investment costs has encouraged developing countries to step into this industry and make a substantial contribution to GDP. The textile industry has become the major input provider to the clothing industry thus creating a vertical supply chain. Accordingly, the key success variables of the textile industry some of which are noted as cost effectiveness, high quality of products, meeting demand targets. While the factors enabling competitive advantage include access to quality inputs, uninterrupted production process, reliability of delivery and continuous improvements in the entire process.

The case organization is a (recently listed) public limited company in the textile industry operating from 2001 in Sri Lanka. It manufactures and supplies a variety of designs and specifications of weft knitted fabrics for garment manufacturers and apparel brand owners worldwide. The company is situated in an industrial zone located approximately two hours' drive from the capital city.

The total employment was 1,220, which comprised managers, assistant managers, executives, staff, and associates. Seventy percent of employees were 'associates' employed at operational level. Table 2 below depicts the employment categories in the organization.

Table 2: Composition of Total Workforce

Category	Number	Percentage
Managers	06	0.5
Assistant Managers	25	2.5
Executives	149	12
Staff	187	15
Associates	853	70

Source: Survey data (2011)

Ninety-three percent of the associates fall between 18 and 35 years of age. Ninety-five percent of associates were males, and 76.5 percent were unmarried. See Table 3 below for a simple demographic profile of the associates.

Table 3: Demographic Profile of Associates

Characteristic	Percentage
Gender: Male	95
Female	05
Civil status: Married	23.5
Single	76.5
Age category: 18-24	41
25-34	52
Above 35	07

Source: Survey data (2011)

Data Collection Protocol

Personal visits to the organization enabled the collection of primary and secondary data through a variety of sources: interviews and discussions held with operational level workers and managerial staff, and examination of archival data. Data collection ended at the point of saturation of evidence (Eisenhardt 1989) where the same evidence seemed to be repeated. The major sources of data are described below.

A series of semi-structured interviews employing a set of open-ended questions was held with operational level workers (associates) and a team of joint consulting committee (JCC) members. The focal point of the investigation was “How leaders emerged at operational level?”. The search effort was driven in two directions: (1) the actions taken by emerging

leaders, and (2) the rationale behind their emergence as leaders. Accordingly, the questions used for probing into the main theme emanated and revolved around the following areas: (1) taking up of formal and informal assignments at work, (2) achieving targets, (3) representing the work group, (4) motivation to lead the group, and (5) organizational facilitation for taking the lead in a group.

The interviews were continued until the marginal contribution to the database became smaller.

Further, a few interviews and discussions were held at the organization premises with a representative from senior management. Four personnel from middle management, representing human resource, quality control, production and operations and accounting were interviewed separately. The interviews used a semi-structured and open-ended questionnaire for probing broadly into the company arrangements for leadership development.

The internal documents covering organization structure, worker demography, performance indicators, achievements and awards, and the records of employee achievements were examined for cross verification. In addition to these, the magazine of events published by the organization, and the home page of the organization were used as secondary data sources. Using research questions for probing and interview guides and prior-designed instruments for gathering data confirmed the methodological rigour (Eisenhardt 1989). The present study used multiple sources of evidence and member checking (Yin 2009) for ensuring the rigour and reliability of collected data.

Analysis of Data

All narratives for unveiling “How leaders emerge at the operational level” were carefully documented and reviewed for identifying the underlying themes. Patterning and evaluating (Yin 2009), followed by several reading rounds helped categorizing three facets, which were connoted in the investigation as: (1) what do operational level workers do to emerge as leaders among their peers? (2) how do they emerge as leaders? and (3) why do they emerge as leaders from among their peers? Subsequently, a thematic analysis highlighted two underlying themes in the present study, which explained the construction of the leadership that emerged at operational level: (1) performing and achieving (by emerging leaders), and (2) narrating and accepting (by followers or peers).

Emerging Leadership among Operational Level Workers

The findings of the study suggest a demarcation of two stages in leadership emergence among operational level workers, the first stage being their own attempt to emerge as leaders and the second stage embracing of leaders by their co-workers or followers. Thus, it led to identifying the self-construction and social-construction of leadership among operational level workers as discussed below. Table 4 below depicts the empirical evidence supporting the process of emerged leadership as found in the study.

Table 4: Empirical Evidence Supporting the Process of Emerged Leadership

Constructing Phase	Leader/Follower Functions in the Constructive Process	Empirical Evidence of Leader/Follower Manifestation	Stage in the Process of Emerged Leadership
Self	Active engagement in extra-work arrangements	Event organizer	Impressive engagement
	Self-appointment for positions	Team leader	
	Role model behavior	Fluent communicator	
	Cooperation with management	JCC member	
Self	Achieving management-given targets	Award winner	Symbolized effectiveness
	Cooperating with colleagues in performing	Peer facilitator	
Follower	Narrating role model behavior	Lunch-time narrations	Follower narration
	Appraising cooperation	Praising publicly	
	Appraising empathy/help/emotional support	Showing gratitude	
Follower	Group support	Help in leadership endeavors	Collective embracing of emerged leadership
	Group acceptance	Appreciating leadership	
	Creation of followership	Gather under emerged leadership	

Self-construction of Leadership by Operational Level Workers

Findings from multiple sources provided evidence of the fact that young operational level workers of the case organization are encouraged by the organization to emerge as leaders by

themselves and that the individual workers who exploit these opportunities make further attempts to impress their co-workers and the management through certain actions throughout their early work life. Two major catalysts were visible in this process: (1) impressive engagement, and (2) symbolized positive performance of young workers.

Impressive engagement

Goffman (1959) theorized about the actions of people in their everyday life in different roles in constructing their social identities. The theory of impression management suggests that people seek to manage images others have of them, and such images create social identities, which influence the perceptions and behaviors of others by controlling the information they receive (Rosenfeld, Giacalone & Riordan 1995). Thus, people consciously control impression management behaviours. As such, managing impressions helps people achieve their intended goals and objectives in their daily life and work life.

Recent developments in leadership theory show new directions towards leader appointments, questioning the traditional superior centred power in contemporary and shared internal cultures. Thus, enabling leadership (Falk & Mulford 2001) and community leadership (Ehrich, Lisa & Creyton 2010) have appeared to theorize such developments. Highlighting the need for event level analyses of leader emergence, Dinh and Lord (2012) posit that people tend to emerge as leaders in different events. A top management representative revealed how associates get opportunities in usual work settings to show up their emergence in situations.

Whenever there are informal gatherings and CSR work proposed by the Company, we don't hand-pick people to lead the group. I just pass the message, they all do it. It is they who decide who takes the initiative and who does what... [DGM/HR & Admin]

The findings of the present study reveal the instances which opened up opportunities for operational level workers to create and manage impressions on others, and how they have successfully exploited such opportunities during their usual work life. It was revealed through several means such as discussions, interviews, wall notices, and news bulletins that not only day-to-day routine and formal work arrangements but also out-of-job and informal event arrangements are made available by the organizational management on many occasions. These occasions provided ample opportunities for young emerging leaders to take the lead and show up their command and competency in making others follow. The following is an example noted from the deliberation of an associate:

We love the way they give us the freedom to organize things at the Company. Once we were asked to get ready for a 'well-cleaning' in a faraway rural area. We two-three boys arranged everything at ground level. Sirs were very happy; they accompanied us to the place and provided all facilities. It was a nice experience. We followed the same way as we did for 'labor donations' for many such events. There are always a few in the group who take the initiative and give guidance for all...

The present case of young operational level workers, who were ambitious enough to emerge as leaders among a crowd of co-workers, suggested that impression management theory levels the ground to look into how they create and manage impressions of others through their 'impressive engagement' in the workplace. Two associates testified as follows:

I love to take the lead. I do my best every time in that. I have been into that from my village school time... [Associate]

Somebody should take the lead; otherwise we cannot work as a group. So, I like to impress my brothers when I get the time... [Associate]

Thus, the imperative behaviour shown by them in order to emerge as leaders could be seen as impressive engagement in such arrangements. Accordingly, the above knowledge leads to the following proposition:

Proposition 1: Impressive engagement in formal and informal activities in organizations is a distinguishable behaviour shown by emerging leaders at operational level.

Symbolized Positive Performance

Motivation theories explain how the inner drive of an individual would lead to higher performance and achievement of goals (e.g., Deci & Ryan 1985; Vroom 1965). Especially, the expectancy theory (Vroom 1965) posits the link between individual expectations and work outcomes. More precisely, the theory of self-fulfilling prophecy (Merton 1948) explicates the association between individual expectation and followed outcomes on positive grounds. Rosenfeld et al. (1995) indicated that individuals impress not only the external audience but also the internal audience; that is self. Thus, theoretically, managing impressions itself becomes a self-fulfilling prophecy, and in turn predicts higher work performance.

**Emerging Leadership at Operational Level:
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The findings at the case organization revealed that impressively engaged young workers were the recorded annual award winners of the organization. Further, the associates who had been promoted to executive and managerial grades in their career were those who exhibited outstanding performance at work and impressively engaged in organizing the informal events in the organization. It was further noted that the workers who were competent enough to impress the others were accepted as representatives of the JCC, and resultantly they were identified by the management and considered for formal leader positions in the work organization. As we probed into the individual sensations of the workers about the results of such impressive engagements, the following statement was heard:

If we are ourselves and do our best at our level, we always get the result for that. You will see who have won the ‘best worker award’, ‘half-sovereign’ and ‘one sovereign’ awards annually... [Associate]

Based on the logic in the existing knowledge and the evidence of the reality, I propose that impressive engagement of operational level workers would result in symbolized positive performance at work organization. Thus, I propose that

Proposition 2: Impressive engagement of emerging leaders at operational level will be positively related to their symbolized positive performance at work organization.

However, there can be certain instances when an emerging leader would be set back in showing splendid positive performance at work due to some reasons. It was observed in the field that the majority of workers are not passive followers. However, their active engagement was not as visible as that of those who were trying to be smart at certain formal and informal gatherings at the workplace. This was revealed by an associate who did not claim that he did well, but proclaimed his repeated attempts to perform better in team work that was arranged for a ‘labour donation’ (*shramadana*) at the three-wheeler park of the public transport area of the Company. In addition to this, another associate mentioned,

I was a team leader at our annual field trip last year. This time my friends are doing better. I too support them with my full capacity [Associate]

With this indication, and in line with expectancy theory, and with the support of the self-efficacy theory (Bandura1997) it would be reasonable to propose their re-attempted impressive engagement as emerging leaders even after previous failures. A repetitive failure

would suggest their withdrawal from emerging as leaders. Accordingly, I propose the following proposition:

Proposition 3: Any failure in symbolizing positive performance by emerging leaders at operational level will lead to either their impressive engagement re-attempt (positive self-perception) or disengagement (negative self-perception)

Social Construction of Leadership by Operational Level Workers

The process of constructing leaders by their followers shows its theoretical basis in several theories and concepts that appear in the existing literature.

Follower Narration

Field (2007) posits that the cognitive models of leaders created through information processing by followers could be influenced by prospective leaders themselves or by contextual factors. Based on the Weighted Average Model (WAM) of follower perceptions of a leader's authenticity and integrity, Field (2007) elaborates on six factors that affect the follower perception of a leader. These factors can be seen as the building blocks of the social construction of leadership by followers. They are: (1) the number of follower observations of leader actions and interactions to gauge leader motives, (2) multiple followers observe the same actions of the leader and gather similar information about motives, (3) the stability of the leader's behaviour and motives across instances, (4) similarity in follower interpretations of leader actions and underlying motives, (5) extraneous information about the leader available to followers, and (6) communication among followers concerning the leader, the situation, and leader motives (p.199).

The field survey data brought out evidence of public praise of certain vigilant behaviors of the emerging leaders by their peer followers. Most of such instances were related to important incidents such as achieving targets, sending messages to management, planning informal events, etc., where they had displayed exemplary performance. It was noted that many peer associates at the interviews repeated the same set of names of peers emerging as leaders for their outstanding performances. One informant stated,

Our own friends have become role models to us. They make our day easy at work. They are being appreciated by the management too. We are proud of them. We admire our peer leaders and love to praise them in all our formal and informal forums... [Associate]

Apparently, the followers' expressions of gratitude, viewing emerging leaders as role models, praising the empathy shown and the emotional support provided by emerging leaders signaled the contagion of positive attitude towards emerging leaders among peer followers. The natural flow of expressions about the superior performance of their peer workers itself endorsed the habit of follower narration about emerging leaders. This recognition leads to the following proposition:

Proposition 4: Symbolized positive performance of emerging leaders at operational level is positively related to follower narrations about emerging leaders

Collective Embracing of Emerging Leadership

Organizational members throughout their lives in organizations continuously make sense (Weick 1995) of the incidents, events, work processes, relationships and behaviours enacted in the work environment. This sense-making process is further enabled in organizational socialization (Epitropaki & Martin 2004) and enriched by the collective (past) experiences of organizational members. Thus, the opportunities for interaction, communication, and teamwork (Balkundi & Kilduff 2005) enhances members' making sense of the traits, values, behaviors, competencies, and expertise of their colleagues in the work teams or groups. Interactive communities in work organizations (Fairholm 1996) collectively construct the objectively perceived realities based on their subjectively held perceptions in their individual minds (Burger & Luckmann 1966). Thus, team work arrangements, collective engagement, collective assignments all provide ample opportunities for organizational members to collectively identify and agree upon the individuals who they want to be their leaders. Leadership is a negotiated process, and people tend to grant leadership to others at different events (Dinh & Lord 2012). Story-telling and narratives have been mechanisms through which people construct meanings collectively in organizations (Brown 1986).

Identifying emerging leaders as role models, heroes, or saviours on particular occasions at the case organization, proved the acceptance of the leader role by peer followers in the given scenario. Seemingly, stories and narratives shared at work about the exemplary behaviour of emerging leaders of the group had led to this social acceptance.

Proposition 5: Follower narrations are positively related to collective embracing of emerged leadership by followers at operational level

Leadership is a social exchange (Bass 2008). Velca et al. (2011), examining the leader-follower interactions and development of meaning-making systems by each of the other parties, posit that both leaders and followers help promote leader development. Sparrowe (2005) emphasized the role played by others through the narrative process in creating authenticity in leadership. As evidenced in the examined case too, followers' public narrations and acceptance of emerging leaders collectively suggest the strengthening of leaders' self-construction efforts. Similarly, on the other hand, the self-construction efforts of emerging leaders (such as impressive engagement and symbolized performance), perceived by followers, seem to open more avenues for follower narrations and acceptance. Thus, I propose the following:

Proposition 6: Collective embracing of emerging leadership leads to strengthening the impressive engagement of emerging leaders at operational level.

As evidenced in the theoretical basis of this study (e.g., Avolio & Gardner 2005, Behling and McFillen 1996, Field 2007, Sayles 1993) and the field data, the individual attempt of emerging leaders in impressive engagement and consequent symbolized positive performance together strengthen their self-construction of leadership. As indicated in the theorizations on cognitive structure of followers (e.g., Epitropaki & Martin 2004, Lord & Maher 1993), and leader group pro-typicality (e.g., van Knippenberg & van Knippenberg 2005, van Knippenberg, van Knippenberg & van Dijk 2000), it becomes evident that self-level leader actions enable social-level cognitive constructions of followers. This leads to thinking that individual self-constructions of leaders become sensible in the eye of the followers, which in turn helps to construct their narrations and subsequent behaviour of embracing emerging leadership. As these self and social processes take place on different platforms, it becomes clear that self-construction of leadership by emerging leaders at individual level leads to strengthening the social construction of leadership by followers. Accordingly, I add the following two propositions to my theorization.

Proposition 7: The self-construction of emerging leadership will lead to the social construction of emerging leadership.

Proposition 8: The social construction of emerging leadership will strengthen the self-construction of emerging leadership.

Conclusion and Implications

The present study examined how leadership emerges in a group of co-workers at the operational level. It proposed the convergence of self- and social construction of emerged leadership at the operational level through a process of impressive engagement, symbolized positive performance, follower narrations, and collective embracing of emerging leadership. This theorization offers a cluster of implications for HR managers, leader trainers, organizational line managers, and theorists.

Practical implications

Emerging leaders are identifiable through impressive engagement and symbolized positive performance at work. Accurate recognition of impressive engagement of operational level workers will ease the identification of effective opinion leaders and active representatives. This may strengthen worker-management co-operation thus leading to reducing worker unrest and industrial conflicts. Similarly, this would be an indication of a possible chance for worker dissatisfaction, in case of failure of such recognition. This study further indicates the line managers' responsibility for opening appropriate avenues for operational level workers to emerge as leaders and their peer workers or followers to freely narrate the prototypes of their prospective leaders.

The awareness of individual behaviours of operational level workers in line with this process facilitates selecting socialization agents for new recruits. Deployment of emerging leaders on appropriate occasions may help reduce any possible workplace deviant behavior that could come out among operational level workers.

As implied here, the sensitivity of organizational management (both line and HR) to the process of self- and social construction of leadership would result in many benefits in their HR-related processes and decisions and performance management processes and decisions.

Theoretical Implications

The present theorization can be extended to several areas. First, an empirical examination of specific activities performed by emerging leaders in managing the impressions others have of them would provide more insights into leader emergence at this level. Similarly, the empirical test and theorization of specific activities performed by peer workers or followers in embracing the emerging leadership may be extended to the social construction viewpoint in leadership as well as followership behaviour at work. Further, the intrapersonal or cognitive

processes of self-construction of leadership have to be investigated at deeper levels, thus unveiling any other possible construction at the self-level from a psychological viewpoint. Finally, the individual and organizational outcomes of the failures of the leader emergence process are noted as worthy of further investigation.

This study used a single case limited to a labour-intensive industry. Despite the critiques levelled against the use of single case studies for generalization purposes (Eisenhardt 1991), the present study typifies the organizational behaviour in a homogeneous group of young lower level workers in this particular industry. This homogeneity accumulates through the similarity of their age group (majority belonging to age between 18-24), area of origin and dwelling (rural), semi-skilled or unskilled character of labour at recruitment, and thus the level of exposure to the outside world of life and work. However, leader emergence at operational level in other industrial settings, where these characters differ in a workforce, may need investigation. Testing the suggested propositions in future studies would strengthen the current theorization while indicating further directions for theory development in emerging leadership.

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Diffusion of the Balanced Scorecard: The Experience of a Sri Lankan Financial Institution

Tharusha N. Gooneratne and Gayashi Wijesundara

Abstract

Over the past two decades various management accounting innovations, such as the balanced scorecard, activity-based costing, activity-based management and target costing have been diffused to organizations across the world. Although the merits of these tools and their application in various countries have been well researched, currently there is only limited understanding of how and why such tools get diffused in different organizational contexts. The purpose of this paper is to examine how and why the balanced scorecard has been diffused in a leading private sector financial institution in Sri Lanka. We adopt the qualitative methodology and the case study approach, and the data has been collected through in-depth interviews conducted with various managers and through documentary sources. The evidence gathered show that demand-side as well as supply-side forces have been significant in the diffusion of the balanced scorecard. This study makes an important contribution to the literature by offering a dynamic perspective on the diffusion of management accounting innovations, through a theoretical framework which brings together the supply-side as well as the demand-side forces into a single innovation diffusion model. The study also provides valuable insights for managers into the implementation and diffusion of management accounting tools such as the balanced scorecard.

Keywords: balanced scorecard; demand-side; diffusion; supply-side

Introduction

Over the past two decades a number of management accounting innovations, such as the balanced scorecard (BSC), activity-based costing (ABC), activity-based management

Tharusha N. Gooneratne, PhD is a Senior Lecturer in the Department of Accounting, Faculty of Management and Finance, University of Colombo. E-mail: tharushng@dac.cmb.ac.lk (Corresponding author)

Gayashi Wijesundara is a Graduate of the Faculty of Management and Finance, University of Colombo.

(ABM) and target costing have made their presence in the contemporary business environment. Although the merits of these tools and their application in various countries have been the subject of scholarly inquiry, currently little is known about how and why these tools get diffused in different organizational contexts. Different facets of the diffusion of management accounting innovations have however been on the agenda of accounting researchers. This ranges from the diffusion of management accounting innovations in the public sector (Jackson & Lapsley 2003, Lapsley & Wright 2004) to country-specific studies such as the questionnaire survey on the diffusion of new management accounting practices in manufacturing firms in India (Joshi 2001), diffusion of the transfer pricing innovation in a government trading enterprise in Australia (Perera, McKinnon & Harrison 2003), ABC diffusion in France (Alcouffe, Berland & Leyant 2008), a questionnaire survey based in Norway (Bjørnenak 1997), diffusion of BSC in Finnish organizations (Malmi 1997), Sweden (Ax & Bjørnenak 2005), and in New Zealand hospitals (Northcott & France 2005). Given such studies in the current body of literature, there is limited empirical evidence of how and why management accounting innovations get diffused in different organizational contexts.

Among the various management accounting innovations, BSC is a significant development that has altered the conventional wisdom about performance measurement and has generated interest among the academia and industry. Its core idea, the need to provide a balanced view of performance, is appealing, and subsequent to the ground-breaking article in 1992 by Kaplan and Norton, its advocates, the technique has been diffused across the world. BSC strives to remedy the inadequacies of current performance measurement systems by looking at a company's performance across four perspectives, namely, financial, customers, internal business processes, innovation and learning. It is premised on the view that no single measure can provide a clear performance target or focus attention on the critical areas of the business. What managers need is thus a balanced presentation of both financial and operational measures, as expressed through BSC (Kaplan & Norton 1992). Within this backdrop, this paper reports on a BSC diffusion story from a Sri Lankan financial institution, which we call Orient Bank for confidentiality reasons. We explore how and why BSC has been diffused in the particular context of this case study organization. The paper addresses the key research questions: (1) What are the various internal and external forces influencing the diffusion of BSC in Orient Bank? (2) How have such forces influenced diffusion? (3) Who were the key people connected with the diffusion and how did they play a role in the diffusion? The Sri Lankan financial services sector and our chosen site, Orient Bank, operate in a rather different context in terms of the competitive setting encountered and therefore differs from countries and contexts focused in prior research, making it particularly suitable for this empirical inquiry.

Our paper is expected to be a useful addition to the current body of management accounting knowledge in general and BSC specifically and to the diffusion of management accounting tools by providing an in-depth inquiry into diffusion of BSC in the context of a Sri Lankan financial institution. This is important as most prior diffusion studies have been in the form of surveys (Bjørnenak 1997, Joshi 2001, Lapsley & Wright 2004) and broadly cover a particular industry or a country setting (Ax & Bjørnenak 2005, Malmi 1997, Northcott & France 2005). This paper is also different from prior diffusion studies premised in Sri Lanka (see Fonseka 2001, 2002, Fonseka 2012, Wickramasinghe, Gooneratne & Jayakody 2008). Fonseka (2001, 2002) attempted to design and apply the BSC framework to 14 tea export firms, and six rubber goods manufacturing and exporting firms in Sri Lanka. These studies revealed certain imbalances. Despite these firms remaining financially profitable, they scored low on the other BSC perspectives, particularly the learning and growth perspective. Ironically, none of these companies had a BSC in place. In the recent study by Fonseka (2012) the focus was on the dissemination of management accounting in Sri Lanka since it became a British colony, while Wickramasinghe et al. (2008) inquired into the 'rise' and 'fall' of a BSC project in a Sri Lankan firm, where the 'rise' was linked to the broader knowledge diffusion programme in Sri Lanka. Our paper is also important from a theoretical point of view. It offers a dynamic perspective of the diffusion of management accounting innovations through a theoretical framework which brings together the supply-side as well as the demand-side forces into a single innovation diffusion model. Future researchers may thus be inspired to identify the relevance of this model beyond BSC and beyond Sri Lanka. The findings of this study also contribute to management accounting practice by providing learning points to practising managers in Sri Lankan firms as well as in other parts of the world on implementing management accounting tools such as BSC in organizations.

Literature Review: Innovation and Diffusion of Innovations

Innovation is the introduction of ideas, practices, or objects perceived as new by an individual or social system (Rogers 1995, Bjørnenak 1997). Accordingly, old ideas applied to new settings or reintroduced into the same setting at a later point in time may be treated as an innovation. This means that an innovation may have existed earlier, in a different form, or in a different area. From such a perspective, BSC can be seen as an innovation, despite the earlier French version '*Tableau de Bord*' (Epstein & Manzoni 1997). Diffusion is the process by which an innovation/idea spreads through a social system through certain channels (Rogers 1995, Webster 1971), and diffusion theory explains how and why (or why not) some agents adopt new ideas or phenomena (Bjørnenak 1997). What makes diffusion different

from spreading other types of messages is the 'newness' of the idea. Diffusion is said to occur when an innovative technique has been adopted by an organization (Lapsley & Wright 2004).

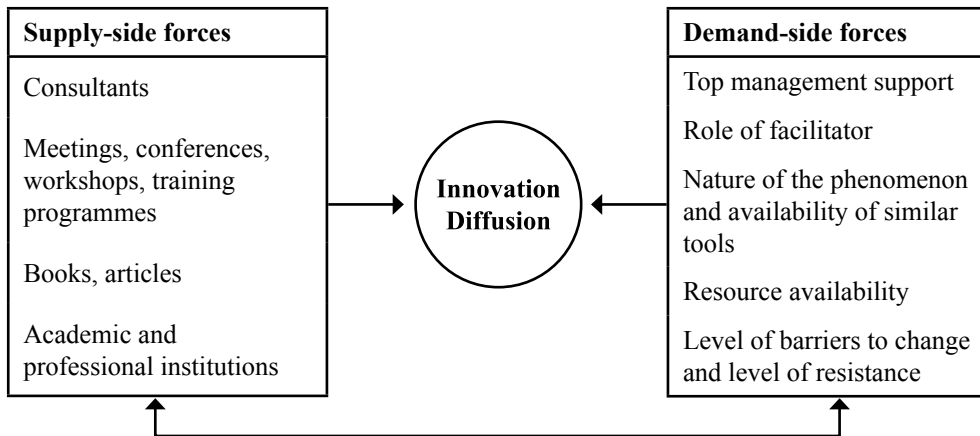
Traditionally, most diffusion literature has emphasized the demand-side of the process, i.e. an adopter perspective (Ax & Bjørnenak 2007), which is based on an efficient choice criterion. Seen in this light, a management tool is adopted to help an organization to attain its goals, and the most influential factor in the demand-side is the nature of the phenomenon being diffused. In the case of BSC diffusion, limitations of existing (traditional) performance measurement systems in evaluating business performance, given their partiality towards financial indicators, internal focus and backward looking nature (Johnson & Kaplan 1987, Kaplan & Norton 1992) are important. This is more so in the modern business environment amid advances in technology, changes in business practices, stiff global competition and rising customer demand which call for performance measurements beyond financial numbers (Kaplan & Norton 1992, Pandey 2005, Kennerly & Neely 2003). Many organizations are thus spending considerable time and resources on implementing improved management accounting systems such as the BSC, which strives to address the limitations of traditional management systems. The technical specifications of BSC such as the inclusion of financial and non-financial perspectives and strategy maps are vital from a demand-side perspective.

From a demand-side perspective of diffusion the interest and support of the top management (role of leaders) is also central. They have the controlling power in the organization, and this would create a demand for a particular practice or tool within the organization. Further, the role of facilitators (change agents) is vital in coordinating, educating and popularizing a practice, as well as in managing the resistance (Bjørnenak1997), which may stem from fear of the unknown or theoretical objections to the technique. In addition, availability of resources such as money, materials and human resources and the presence of other innovative tools would encourage an organization to implement such tools further (Ax & Bjørnenak 2005, Bjørnenak 1997, Bjørnenak & Olson 1999, Jones & Dugdale 2002). Barriers to change are also significant from the demand side perspective (Ax & Bjørnenak 2007). This includes physical barriers such as lack of resources as well as cultural / linguistic barriers such as language, profession and institutional factors.

Although from a demand-side perspective, the information field is viewed as a passive factor in the diffusion process, supply-side forces are also important, and have stimulated studies on the diffusion of management accounting techniques (Abrahamson 1991, Ax & Bjørnenak 2005, Bjørnenak1997, Bjørnenak & Olson1999, Jones & Dugdale 2002, Malmi1997, Major & Hopper 2005). According to the supply-side perspective, management tools do not get

diffused only by popular demand but instead by supply-side elements such as the role of consultants, academic and professional institutions, books, articles, meetings, conferences and workshops.

Figure 1: Innovation Diffusion Framework



Source: Review of Literature

Consultants as propagators of management tools package and market them capitalizing on their proficiency, and actively push their spread (Abrahamson 1991). In diffusing BSC too consultants have played a significant role by highlighting the failures of traditional management accounting systems, and portraying a one-sided (positive) view of BSC, making an invitation to buy this management theory showing how failures of traditional management accounting systems are addressed through it. Consultants present such persuasive ideas and engage in purposeful action such as write-ups, feature articles, public lectures and executive seminars. They convey their message using non-theoretical terminology and suggest ‘a cure for organizational despair’, which is however aligned with their personal interests. Business schools, professional bodies and universities also create awareness of such tools for reasons of increasing profitability, status, legitimacy and public image. Seen in this light, BSC has turned out to be a management tool that has gained the spotlight in an array of text books, academic and professional articles, conferences, research monographs, magazines and student handbooks. This reinforces the value of communication links as a means of conveying new management ideas to potential adopters (Ax & Bjørnenak 2005, Bjørnenak1997). BSC practices are also examined in relation to academic and professional qualifications. Using another management accounting tool, ABC as an example, researchers note that magazines like ‘Management Accounting’ include a number of advertisements for ABC software and

ABC courses (Bjørnenak 1997, Jones & Dugdale 2002) and that the supply-side of the diffusion is relatively easy to observe. In similar vein, Clarke, Hill and Stevens (1999) explain the low adoption rates of ABC in Ireland as being due to the absence of compulsory further professional education and lack of practitioner journals on management accounting, as well as the absence of executive MBA programme.

In keeping with the above literature review, the theoretical framework of this paper brings together the supply-side and the demand-side forces into a single innovation diffusion mode and shows how suppliers and users of innovations play an active role in the diffusion (see Figure 1). This is a more contemporary (dynamic) perspective of the diffusion of management accounting tools as traditionally, management accounting tools have been viewed as static objects, with fixed and definite components which remain unchanged as they diffuse. The traditional perspective can be challenged as overly simplistic, and it is more realistic to adopt this dynamic perspective into the process of diffusion, as done in this study. Accordingly, diffusion of management tools such as BSC is seen as a flexible, not a fixed, technical solution, and both suppliers and users become active groups in the diffusion (Ax & Bjørnenak 2007). Seen from such a dynamic perspective, management tools do not consist of clear-cut recipes but are characterized by a certain degree of conceptual ambiguity, which contributes to their interpretive viability opening up space for different interpretations and uses. This makes it possible for suppliers and users to recognize their own versions of the tools by selecting those elements that appeal to them and localizing as suitable to the circumstances. Bringing together various supply and demand forces in this manner enables a better understanding of the diffusion of a management tool.

Research Context and Method

This case study is based on Orient Bank, which is one of the largest private sector commercial banks among the licensed commercial banks in Sri Lanka. It was incorporated in the 1980s, and currently operates with over 200 branches and over 200 ATMs island wide (Orient Bank Annual Report 2011, 2012). It has a staff of more than 3,500 employees and an asset base of over Rs. 300 billion. The bank's core areas of operations include personal, corporate and development banking, trade services, treasury operations, credit and debit cards and e-banking activities. It focuses on five strategic goals in achieving its performance-related targets, namely, achieve the largest branch expansion driving the banking sector, sustain credit and portfolio quality, promote technology-driven banking, focus on key customer groups and facilitate business growth through innovative products and pioneering services (Orient Bank Annual Report 2011, 2012).

This research deploys the qualitative methodology (Silverman 2000) and case study approach (Yin 2009) in exploring the key demand and supply forces behind the diffusion of BSC in Orient Bank. A case study approach is appropriate when: (a) the focus of the study is to answer ‘how’ and ‘why’ questions; (b) the behavior of those involved in the study cannot be manipulated; (c) contextual conditions are believed to be relevant to the phenomenon under study; or (d) the boundaries are not clear between the phenomenon and context (Yin 2009). This study strives to explore ‘how’ and ‘why’ BSC has been diffused in a leading private sector financial institution in Sri Lanka, by unearthing the internal and external factors which influenced the diffusion of BSC and the role of key people connected to the diffusion. Such an inquiry warrants the need to deeply analyze the particular organizational context through building face-to-face interactions with key informants. Seen in this light, the qualitative case-study approach is the most suitable option for the current study.

In this study the data was collected through multiple methods such as interviews and analysis of internal and external documents. One-to-one in-depth interviews based on an interview guide were conducted with ten managers to understand how and why the diffusion of BSC took shape in the bank. Interviewees mainly represent the finance and planning area as they were the key informants relating to BSC in the bank. Interviews were also conducted with practice level managers representing marketing, credit and branch operations to understand how the BSC message reached the practice level (see Table 1 for the list of interviewees). Interviews were also carried out with two Sri Lankan personalities¹ (experts) in the ‘business of BSC’ to further understand the diffusion of the technique.

Table1: List of Interviewees at Orient Bank

Interviewee	Designation
1	Senior Manager Finance
2	Head of Planning (Strategic Planner)
3	Manager Planning
4	Planning Officer
5	Head of Credit Control
6	Senior Marketing Officer
7	Branch Manager
8	Branch Manager
9	Branch Manager
10	Branch Manager

¹ Respecting their preference to remain anonymous, their names are not disclosed.

To supplement interview data internal and external documents as well as the website of the bank were reviewed to ascertain whether they corroborated each other. Use of data triangulation in this manner (Yin 2009), strengthens the study and increase the credibility of findings.

The collected data was analyzed in light of the theoretical underpinning of innovation diffusion model present earlier, focusing on the demand-side and supply-side forces. Accordingly in the next section, findings of this study have been presented elaborating how and why the diffusion of the BSC took shape at Orient Bank.

Findings: Demand-side Forces in Diffusion of the BSC

As elaborated above, the demand-side of diffusion represents forces that lead to the spread and popularization of a management tool due to the nature of the phenomenon being diffused. In case of BSC diffusion in Bank Orient, limitations of existing performance measurement systems, is noteworthy, along with support extended towards it by the top management of the organization, supportive role of the facilitator, availability of similar tools and necessary resources as well as the low prevalence of barriers and resistance towards new practices. These are discussed in light of case study data next.

Nature of Top Management Support

Continuous top management support and positive mindset is essential to successfully promote and popularize new management tools among others. As one BSC expert interviewed added, “to achieve success with the BSC commitment from the top management of the organization is needed, they have to be convinced about the BSC, you should believe that the company as a whole is going to benefit, by implementing it”. While another expert noted, “full encouragement of the Chief Executive Officer (CEO) is needed to get this BSC going, it is largely a CEO tool”. Similarly, in the diffusion of BSC in Orient Bank support extended by the top management was noteworthy. The corporate management was attached to the BSC concept; they believed that it would bring about in significant benefits, as well as a different yet favorable management philosophy to the bank. The strategic planner explained:

BSC is a management philosophy, and it is a communication tool. Why I’m telling this is strategies may be just discussed & formulated at very high level. But if you want to convert it to more understandable, more operational goals you can do that through the BSC, you can convert the BSC to performance

management or whatever the criteria and our top management understood that, they realized the value of the BSC...

The top management of Orient Bank not only had a keen interest in the BSC, they communicated the management's expectation regarding the BSC from top to bottom, and ensured proper communication between different levels to enable a successful diffusion. This was expressed by one senior manager, "communication at that time was maintained very well with the intention of acquiring effective and productive results through the BSC..."

Many managers interviewed made positive remarks regarding the top management support, and appreciated their effort towards the BSC initiative. Branch managers explained that the assistance and guidance they received from the top management helped them to enhance their performance, as reflected through this quote by one manager:

It is a good thing to get feedback from the management to improve performance and solve problems. I think with the BSC we got a good opportunity to interact with the corporate management directly. Before implementing the BSC we had fewer chances to communicate with corporate management like that...

Interviewees particularly highlighted the Managing Director (MD's) positive attitudes and the support towards the project implementation. One senior manager noted, "MD at that time was a double accountant and he was like crazy about this BSC. His support and dedication was very high and he guided others..."

While commenting on the top management's (especially the MD's) interest in the BSC, interviewees explained that as a whole the management of the bank is receptive towards change. A senior manager commented:

We take change positively. Otherwise you can't survive and grow in this competitive industry. See our branch expansion. We are aggressively doing change. The top management is ready to accept change and they are willing to take risk. With the change we see whether it is realistic, whether the change can be implemented, whether it will work, how the bank will benefit from the change. If we as a bank will not be gaining anything from the change then there is no use. With BSC we saw what we can get from it. So we went for it.

Accordingly it is evident that the presence of a few (influential) people at the right places, who believe strongly in the value of new techniques (such as BSC), could make a crucial difference in terms of the implementation.

Role of Facilitator

The BSC of Bank Orient was facilitated by the strategic planning department, and the interviewees noted the valuable contribution of the strategic planner in this regard. One manager shared his view stating that "...the main role in strategic planning was done by Mr. X and he did some great work with his planning team to see that this BSC is in a way that suits our bank. They gave us a clear guidance on what to do on BSC...At any moment when we needed support Mr. X and his team was always there to provide clarification ...". Similarly, a member from the corporate management explained, "...the planning department took actions to make the BSC popular as wanted by the top management and as a way it was suitable to our bank. Planning team also told the corporate management what things they should do to spread the BSC well. Any time when any person including us needed support on the BSC, they warmly welcomed our problems and helped...".

Further reinforcing such comments, the strategic planner explained his role and that of the planning team towards the diffusion of BSC. He elaborated:

...I was the head of strategic planning at that time... I with my team spent on lot of time popularizing the BSC by conducting training programs for branches and departments and discussing with them... We have even visited almost every branch and explained what BSC is, its importance and all that. BSC is not only about measuring your performance, it's a total management philosophy, these are advantages... and we explained even the key performance indicators (KPIs) we have designed in the BSC... I was the one who conceptualized it, and then implemented it, we did not just do it, we did it in a way that is suitable to our bank, the indicators were really what was important to us, for our bank... Once it was implemented every quarter we conducted competitions like to select best branch...At that time we practiced mystery shopper concept... customer/employee satisfaction surveys were done... We did SWOT, industry and trend analysis. We used to conduct a strategic planning session with corporate management and the board of directors... We at strategic planning provided whatever the support... So I can tell you lot of things we did to smoothly run the BSC.

The above interview data shows how the strategic planner and his team were committed towards the BSC, playing an invaluable facilitative role in diffusing the BSC message in the bank as a whole, and reaching the practice level managers at branches and functional areas.

Availability of Similar Tools and Resources

Orient Bank had implemented a number of new management practices, such as six–sigma, five ‘S’, quality circles, continuous improvement in order to establish and maintain its operational success in the corporate world. BSC was another such new tool which the bank took on board. The strategic planner noted, “We are the first mover in technological advancements in the banking sector”.

In order to achieve success in any project, it is essential to have adequate resources. Financial and other resources have been allocated for the BSC in Bank Orient as required. The strategic planner said,

When we spend money for this kind of process it is an investment because we can enjoy the benefits in the future. Our management understood this and they were encouraged to invest in implementing such a valuable tool like the BSC ...Our expenses were basically the consultant fee...

Availability of human resources was also evident in this diffusion process, by the dedication of the staff of Orient Bank. From top to bottom the adopters got fullest support and commitment to popularize it. A manager who was attached to the planning team stated:

Actually we got very good support from the top management. Not only that all the staff were encouraged to perform their tasks. We had a number of trained staff with us who are loyal to the bank. Such an implementation process without contribution of our staff would not be a reality...

Another valuable resource is time. To implement a new tool successfully, it is required to have a sufficient time frame to complete the process. If not, the staff might get confused as to what to do with the new tool. In the case of Orient Bank, it has taken nearly two years for the planning and implementation process. It was a gradual process. The strategic planner stated in his words, “...for several years we were much focused on the BSC, we were actually continuously developing it...” Thus allocating sufficient resources in terms of money, manpower and time contributed towards the successful diffusion of the BSC in the bank.

Barriers to Change and Level of Resistance

Resistance to change with regard to a new idea is a common occurrence in the corporate world. The BSC was a new concept to everyone in Orient Bank, and there was a certain level of resistance from the branch level. One branch manager explained:

This BSC was a new thing to our bank. Sometimes people are reluctant to change, and they think that it is a way of comparing their work with others. So they got scared...

With the implementation of the BSC, branch level performance was assessed as per the BSC perspectives and measures, and branch managers were expected to make a presentation on their performance. This practice was open to criticism. One manager emphasized that the employees were reluctant as they had some fears of low performance which they thought will affect their career negatively. The following quote reflects this.

...Some branch managers resisted the BSC, they thought they cannot present well. Every branch manager is not capable of doing presentations well. Sometimes it might be the first presentation in their career. They had a fear of their weaknesses getting highlighted. Sometimes they were busy with their day-to-day functions and couldn't manage the time because they spent a lot of time getting ready for the BSC presentations...

Another branch manager expressed a similar idea. "... We had to do BSC presentations to the corporate management each month explaining our progress. But as I know most of the branch managers considered it as a burden and they disliked it because it was an extra work. They thought that it highlighted their weaknesses and that this will be a problem in getting promotions as well..."

As the above data suggests due to limitations in skills and time constraints there was resistance to the BSC at the branch level. However, more importantly and interestingly, according to the data gathered the resistance was controlled with the high support of the top management and the facilitation by the strategic planning team. One senior manager added, "...management wanted to implement and use the BSC, they made us understand and feel about the BSC concept. The whole process was directly monitored by the top management. No bluffing, no hanky-panky, they were very strict on this...whether we can or cannot we had to do it... But I have to say strategic planning people really helped us, if we had a problem they were there so that was big thing".

This shows that due to strict enforcement and high monitoring of the BSC by the top management and the facilitation by the strategic planning team, the bank was able to minimize and control the resistance which emerged at the branch level. A branch manager noted:

...Resistance to the BSC was not considered as a big problem by the management or the planning department. Even if people resisted or did not like it they had to do their part somehow. As I know the management was well aware of this resistance, and they knew that even if the people don't like they will do the things as it was coming from the top management. So resistance was not a big problem to implement and spread the BSC in the bank...

The evidence from Bank Orient shows that high top management support and facilitation by strategic planning enabled it to effectively manage any resistance, and that this resistance was therefore not powerful enough to prevent the functioning of the BSC. Most of all, this meant that the overall resistance to change was insignificant at the organizational level, and this contributed towards its diffusion.

Findings: Supply-side Forces in the Diffusion of BSC

To supplement demand-side forces, supply-side forces which assist in spreading and popularizing an innovation also need to be considered. According to field study evidence gathered from Orient Bank, the role played by consultants, books, articles, meetings, conferences, workshops, professional and academic institutions became active propagators and materials representing the supply-side of BSC diffusion in Orient Bank.

Consultants

In the diffusion of a management technique, consultants play an active role as propagators. In the case of the diffusion of BSC in Orient Bank, the management got the guidance from well-known foreign consultant. The strategic planner explained, "We got a BSC consultant who was also a person who had lot of experience in banking. He was not an academic. He was a British banker, who had his entire career in banking ... life-time of experience with him on banking..."

One branch manager described the exposure he got from the consultant,

A foreign consultant who had lot of experience on practicing this tool conducted few sessions for us. It was really interesting for us because we could know what is it, what advantages we can achieve, how we can improve our performance, how we set the targets, what are the fruitful ways of achieving those targets etc. We got a good chance to discuss our practical problems with him regarding

achieving profit targets etc. Actually it was a valuable opportunity for us to share our experience and gather knowledge from a well experienced expert like him. He was a banker so that also helped us because the language was similar...

As the above quotes suggest it is evident that the consultant played an important role in getting people's attraction to the new tool. Another branch manager shared his experience about the foreign consultant,

Actually we had very few sessions with him. As a facilitator he conducted few meetings..... We can't apply certain western tools directly to our culture. If we implemented the thing as it is, like the way the consultant explained we may get into difficulties. But, somehow our planning department did that according to a way that worked for our bank that was actually important...

Thus the above evidence show that the foreign consultant played an active role in initially diffusing the BSC in the bank, while the efforts of the strategic planner and his team helped in localizing the western knowledge prescribed by the consultant.

Meetings, Conferences, Workshops/Training, Books and Articles

Meetings and conferences are an assembly of people gathered for a particular purpose or formal discussion. Workshop also serves a similar purpose. Training is a process of acquiring knowledge, skills and competencies through teaching practices related to a profession or job (Abrahamson 1991, Ax & Bjørnenak 2005, Bjørnenak 1997, Bjørnenak & Olson 1999). On a rather general note, one BSC expert interviewed noted how workshops and seminars are important in diffusing innovative tools. He added: "The concept of BSC is very much spoken among the business community in Sri Lanka. We love buzz words. BSC is a nice terminology, and if you organize a workshop or a seminar on such modern techniques, many people may come and listen". Similarly, in the diffusion process of BSC in Orient Bank, there were many such meetings, workshops and training sessions. The strategic planner noted, "we had one to one discussions with department heads, we had training programs for different levels of managers at the branches and head office, and we even personally visited almost all branches to create awareness and address their problems..." A senior manager shared his experiences on workshops stating, "...there was a location for each team to work. On average six to seven members were in each BSC team. Each task was delegated to team members in a proper manner..."

Another manager explained about the discussions in those meeting sessions.

... We were told about the importance of BSC, how to understand the KPIs, how translate the strategy into the objectives, how performance indicators are being achieved, all these things ...

Other managers interviewed expressed similar views. A branch manager emphasized the importance of those training sessions and meetings, stating that “we got a good chance to discuss our practical issues regarding achieving profit targets, etc. by participating in those BSC sessions”.

Some of the interviewees got to know about this BSC concept for the very first time through those training sessions. Several managers made comments similar to the following, “I got to know about the BSC actually through our bank. Before it was implemented here I had no idea about this concept...”. However, the strategic planner and the MD, who were the main contributors to the diffusion of the project in the bank, had a thorough knowledge on BSC before it was implemented. As the strategic planner explained he was the person who encouraged the MD to implement the BSC.

Actually I was the one who participated in a workshop regarding BSC. Then I came and told CEO there is a thing called BSC, this is very important... The CEO had very good understanding on importance of BSC, he realized the value of it to our bank and he was so keen to implement it here....

The strategic planner further emphasized that he gathered knowledge through reading books and articles on BSC, which helped in successfully diffusing the BSC in Orient Bank. He went on,

I read lot of books and articles on BSC and its implementation. I actually read all the books written by Kaplan and Norton on BSC, not only that different views on BSC, strategy implementation etc. The knowledge I got by reading gave me a sound knowledge and I became confident to guide others to practice BSC here...

Accordingly, meetings, conferences, workshops training programs, awareness sessions along with books and articles became important means of diffusing the BSC in Orient Bank.

Academic and Professional Institutions

In popularizing new management accounting tools academic and professional bodies play a vital role. In the history of BSC in Sri Lanka, being part of the leading global management accounting body, The Chartered Institute of Management Accountants (CIMA) Sri Lanka division has shown a lot of enthusiasm in popularizing the technique as an active promoter. In the case of diffusion of BSC in Orient Bank, although there is no evidence of direct involvement of any academic or professional body, some of the managers of Orient Bank have initially learnt about the BSC through their academic and professional studies. Particularly in CIMA, as well as Institute of Chartered Accountants of Sri Lanka (ICASL), BSC forms part of their course curriculum. Moreover, in undergraduate and postgraduate business degree programs of local universities the BSC has become a popular topic of study. One interviewee from finance division explained:

We have several CIMA qualified and chartered qualified accountants in this department. Normally for the finance department we recruit degree holders specialized in accounting. These people are well aware of the BSC because they have studies about it.

Outside the accounting arena also several senior members of the bank possess the BSC knowledge through their academic and professional qualifications. Interviewees made comments such as the following:

I first heard about this BSC when I was studying for my undergraduate degree at university, at that time also I thought that this is a good tool, somehow the place I am working, this bank wanted to implement it...

At the time when the BSC was implemented here in the bank, I did my Master of Business Administration (MBA) and I learned about the BSC there and it made sense to me when our bank was going to implement it...

The main sponsor for the implementation in our bank was the CEO. He is a qualified guy in chartered as well as CIMA, so he had the technical knowledge on this BSC, he knew the concept, how it will benefit ...

Our Chief Operating Officer is a qualified engineer, he has a MBA, and he is also a CIMA qualified person, so he also had a good idea about the BSC and understood its value....

Such comments are indicative of how the academic and professional qualifications played a leading role in the diffusion of BSC in the bank. Additionally, the strategic planner explained how his academic and professional background gave him a sound platform to facilitate the BSC. He added: “I was a chartered marketer at that time. I had also completed my MBA. I did my first degree in business management. I’m a certified management accountant (CMA). So in all these courses I had learnt about the BSC and I had the basic knowledge which I was able to further develop by reading various BSC materials...”. The knowledge and insights gathered by different managers of Bank Orient through their academic and professional programs therefore facilitated the smooth functioning of the BSC in the bank.

Discussion and Conclusion

Drawing field study evidence from a financial institution located in Sri Lanka, Bank Orient, this paper explores how and why the BSC has been diffused in the particular context of our case study firm. This paper addresses the key research questions; (1) what are the various internal and external forces influencing the diffusion of BSC in Orient Bank? (2) How have such forces influenced diffusion? (3) Who were the key people connected to the diffusion and how did they play a role towards the diffusion?

Our findings from Orient Bank suggest that demand-side as well as supply-side forces play a prominent role in the diffusion of management accounting tools such as the BSC. Among the demand-side forces, top management support was noteworthy; the importance of the BSC was understood by the MD and other members of the top management, and their interest enabled counteracting whatever resistance that occurred at the branch level. This observation is supported by past studies which highlight how top management support and involvement facilitates the diffusion of management accounting tools such as BSC (Voelpel, Lei bold & Eckhoff 2006, Malmi 2001) and ABC (Major & Hopper 2005). Stemming from the top management interest adequate resources and facilitators were deployed for the project. The bank has a reputation for adopting new tools, and believes that new tools provide a remedy to solve problems faced by the organization. This too led the bank to apply various tools time to time, including the BSC. All these became vital from a demand-side perspective on diffusion of the BSC in the bank.

Supplementing the above, supply-side forces too played a key role in the diffusion of BSC in Bank Orient. Seen from such a perspective, academic institutions (Bjørnenak & Olson 1999, Clarke et al. 1999), consultants (Abrahamson 1991, Ax & Bjørnenak 2005, Bjørnenak 1997, Bjørnenak & Olson 1999, Hopper & Major 2007, Jones & Dugdale 2002) and communication

links, such as magazines, membership journals, meetings, training programmes and conferences (Bjornenak 1997) became significant. Parallel to such past research, in Bank Orient through training sessions and awareness programmes branch managers were able to comprehend the concept of BSC as well as the benefits of implementation, and were motivated to practise it. The knowledge gathered from books and articles was instrumental for the facilitator to pass on the BSC message down to the practice level managers and get their cooperation towards the project. In par with literature which notes that the influence of western consultants and popularizing programmes motivate local entities to adopt BSC (see Wickramasinghe et al. 2008), in Bank Orient not only was the role of the foreign consultant instrumental in the diffusion of the BSC, the facilitator (strategic planner) attended a workshop on this tool and realized its value to the bank. All in all, the diffusion of BSC in Bank Orient took place amid demand-side as well as supply-side forces.

More importantly, although traditionally, management accounting tools have been viewed as static objects, with fixed and definite components, a more contemporary (dynamic) perspective is that both suppliers and users are active groups in the diffusion who shape the management techniques suited to the purpose and circumstances (Ax & Bjørnenak 2007). Keeping with this dynamic perspective, our evidence shows how learning from the wisdom conveyed at BSC workshops and by the foreign consultant, the strategic planner played a significant role in localizing the BSC as suited the particular context of Orient Bank.

Although there is a small flood of research on the merits of new management accounting tools and their application in a particular industry or country setting (Alcouffe et al. 2008, Ax & Bjørnenak 2005, Bjørnenak 1997, Joshi 2001, Malmi 1997, Northcott & France 2005 to name a few), presently there is limited understanding on how and why such tools get diffused in different organizational contexts. Therefore our paper, through an in-depth inquiry on diffusion of the BSC in the context of a Sri Lankan financial institution, makes a useful contribution to management accounting knowledge more broadly, as well as to BSC, and diffusion of management accounting tools, more specifically. This paper is also important from a theoretical point of view. It offers a dynamic perspective on the diffusion of management accounting tools, through a theoretical framework which brings together the supply-side as well as the demand-side forces into a single innovation diffusion model. The study also provides valuable insights to practicing managers on the implementation and diffusion of management accounting techniques such as the BSC in organizations. This research also makes way for future research. Future researchers are encouraged to move beyond this study and assess the applicability of the innovation diffusion framework offered in this study for other organizations in different industries and countries for BSC, as well as

other management tools. Since this study has been carried out in one organization as a single case-study, future researchers can also explore the diffusion of new techniques using multiple case study approach. This would enable comparison of the findings.

Postscript

The BSC episode narrated in this paper shows how the diffusion of a BSC has taken place, amid the support of the top management and the facilitation of a foreign consultant and a strategic planner in an organization which is receptive towards change. Our research site, Orient Bank started off the BSC in 2004, which one could claim to be the golden era of the BSC in Sri Lanka, with broader diffusion of the tool intensely visible in the Sri Lankan corporate arena, and this was a time when the BSC was considered as a ‘popular’ management accounting innovation. Seeing in this light, one would claim that this firm has followed a ‘technically correct’ path in diffusing a contemporary management accounting tool (BSC), and would expect it to get sustained in the organization as a management practice. Although the bank continued with the BSC through gradual improvements for around five years, across time priorities, key decision makers and therefore the dedication towards the BSC changed, and BSC’s value diminished. As at now there is no ‘formal’ BSC in practice, although some non-financial indicators are measured and managed. Similarly, in an earlier study Wickramasinghe et al. (2008) depicted how the BSC although embraced by the management at one point, later was discarded in a medium sized family entity in Sri Lanka. Our BSC story thus shows that despite a ‘successful’ diffusion by following a ‘proper’ path, across time management tools such as BSC could end up in different fates, for in our case study firm, BSC had turned out to be a ‘short-term guest’ rather than a ‘long term resident’ (Brown & McDonnell 1995).

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An Inquiry into the Causes of Inflation in Sri Lanka: An Eclectic Approach

Danusha Jayawardana and Prabhath Jayasinghe

Abstract

The objective of this study is to identify the short and long-run determinants of inflation in Sri Lanka. It follows an eclectic approach to seeking possible determinants of inflation and employs an Autoregressive Distributed Lag (ARDL) bounds testing approach to test for co integration between inflation and its causes. The findings indicate that increased money supply, depreciation of the rupee and higher public wages are the major causes of inflation in both the short and long-run. Thus, it can be stated that inflation in Sri Lanka is affected by both demand and supply side factors, which highlights the importance of a prudent and effective implementation of the monetary and fiscal policies so as to ensure a stable macroeconomic environment in Sri Lanka.

Keywords: ARDL model, determinants, error correction model, inflation, Sri Lanka

Introduction

Inflation, which is commonly defined as a persistent increase in the general price level over a long period of time, is considered to be one of the most researched topics in economics. It is a key macroeconomic variable that has serious implications on growth and income distribution. High levels of inflation can have a series of adverse impacts on the standard of living of the people. It affects the consumption and savings patterns of households as well as investment decisions of business firms. It also affects the proper functioning of economic activities, leading to low levels of economic growth and development. High inflation can also bring about negative social and political consequences.

Danusha Jayawardana, is a Lecturer of School of Accounting and Business of the Institute of Chartered Accountants of Sri Lanka. E-mail: danushaj@yahoo.com

Prabhath Jayasinghe, PhD is a Professor in the Department of Business Economics, Faculty of Management & Finance, and University of Colombo. E-mail: prabhath@dbe.cmb.ac.lk (Corresponding author)

Controlling inflation or achieving price stability has been regarded as an important objective of Sri Lanka's overall economic policy since independence. When reviewing the past experience of inflation during the post-independence period of Sri Lanka, it is evident that the rate of inflation has been subjected to fluctuations due to changes in both domestic and international factors. Particularly, during the post-liberalisation era, the rate of inflation, as measured by the Colombo Consumers' Price Index (CCPI), has remained high and volatile and has thus emerged as a major problem within the economy (Karunaratne & Bandara 2000).

Controlling the rate of inflation is essential for a stable macroeconomic environment. Volatile inflation makes it difficult for individuals as well as business firms to correctly predict the future rate of inflation leading to short-term speculative activities. In addition, accurate predictions of inflation are also vital for efficient policy making and implementation.

Controlling inflation requires that its causes be correctly identified. However, according to the vast number of theories of inflation as well as empirical studies, inflation is caused by numerous determinants, thus making it difficult to ascertain which variable or determinant to control so as to maintain a desirable level of inflation.

As discussed below, the few studies carried out on inflation in Sri Lanka rely heavily on a single approach to inflation and thus only on a few explanatory variables. This study aims to inquire into the external and internal causes of inflation in Sri Lanka during the post-liberalization period through an eclectic approach that uses a combination of explanatory variables suggested by a number of different approaches such as demand-pull, cost-push and structuralist. It is believed that the findings of this study will contribute to a better understanding of existing inflation and provide useful insights into the effective control of inflation in Sri Lanka.

The rest of the study is organized as follows. Section two presents the theoretical framework and Section three a brief literature review on inflation in Sri Lanka. Section four outlines the proposed econometric model and the method used. Measures of the variables and the sources of data are described in Section five. Empirical findings are reported and then discussed in Section six. Finally, concluding remarks are included in Section seven.

Theoretical Framework

According to the relevant theoretical explanations and empirical studies, inflation is caused by variety of factors. On the demand-pull front, the money supply growth is a major determinant

of inflation. As per the Quantity Theory of Money, there is a one-for-one relationship between the growth of money supply and the rate of inflation. The increase in government expenditure may also lead to inflation in two ways: it has a direct impact on inflation through an increase in aggregate demand and may also lead to a budget deficit, which the government may have to close by borrowing from inflationary sources. As the Philips curve relationship reveals, an increase in real GDP can trigger inflation.

On the cost-push front, wage increases are inflationary whenever the increase in the nominal wage rate exceeds productivity growth. Such increases in wages lead to higher production costs thereby resulting in a decrease in aggregate supply, which would result in high prices. Wages can also be inflationary from a demand-push point of view as increased wages will enhance aggregate demand. A sharp increase in the price of basic resources such as crude oil and the occurrence of natural disasters that reduces aggregate supply in an economy - usually known as 'supply shocks' in the literature - can also be inflationary.

The Fisher hypothesis suggests that there is a one-for-one relationship between nominal interest rate and expected inflation, a causal arrow running from inflation to interest rates. However, the relationship can also be viewed from a cost-push perspective where the causation is in the reverse direction. If the interest rate is taken as a cost of borrowing, an increase in the interest rate may increase costs of production, thus leading to higher prices.

Inflation may occur together with the depreciation of the domestic currency as it results in an increase in the price of imports (which includes both consumption and capital goods). Inflation and currency depreciation may even reinforce each other creating a vicious cycle in some developing economies.

The structuralists/post Keynesians stress that, though the factors such as budget deficits and currency depreciation are seeming determinants of inflation, they are just propagatory factors. The root causes of inflation are the factors which give birth to these propagatory factors. For instance, the reason behind budget deficits in most of the less developed countries is the inelasticities associated with raising government revenue and inevitable government expenses on various socio-political factors (Nicholas 1993). Along the same lines, the depreciation of domestic currency in such economies occurs mostly due to trade and production constraints. The increase in the price of basic necessities, especially essential food items, is also another example. Particularly in the context of developing countries, such price increases are a result of various supply rigidities in the agricultural sector and resultant supply shortages. Sunkel (1960 as cited in Basu 2003) argues that the distributional conflicts between workers and

capitalists over income shares can lead to an increase in nominal wages as well as profits resulting in inflationary pressure.

Finally, expectations of inflation are a vital source of any ongoing inflation because people predict the future on the basis of current and past inflation, thus creating a self-fulfilling process. This study uses an eclectic approach by accommodating most of the above factors as determinants of inflation in Sri Lanka.

Review of Literature on Inflation in Sri Lanka

Quite a number of studies have been conducted with respect to the determinants of inflation in Sri Lanka. Examining the main determinants of inflation in Sri Lanka for the period of 1980 to 2005, Ratnasiri (2009) reports that Sri Lanka's inflation is influenced by both demand and supply side factors in the short-run as well as in the long-run. According to Ratnasiri (2009), money supply growth and the increase in the price of rice are the most important determinants. However, in the short run, exchange rate depreciation can also influence inflation whereas GDP growth does not exert any influence on inflation either in the short-run or in the long run. Based on these findings, Weerasekara (1992) posits that money supply growth and depreciation of the exchange rate are the main determinants of inflation in Sri Lanka. However, according to Nicholas (1993), inflation in Sri Lanka, particularly during the period of 1971 to 1987, had been caused by factors such as currency depreciation, budget deficits, world market prices and food prices while there is no strong relationship between money supply and inflation. Cooray (2008), in a study that estimates a price equation for Sri Lanka under both closed and open economy scenarios, suggests greater support for the open economy model and concludes that supply side factors are important in influencing the general price level in Sri Lanka. According to Duma (2008), external shocks explain only about 25 percent of the variation in consumer price inflation in Sri Lanka. In his study, only a combination of external variables, namely, exchange rate, oil prices and import price shocks, is used to identify the external impact on inflation. In an attempt to identify the impact of petroleum prices on inflation in Sri Lanka, Perera (2005) finds that there is an indirect impact of changes in diesel prices on inflation which is much larger than the direct impact.

Overall, according to most of the empirical studies on inflation in Sri Lanka, it is evident that both demand and supply side factors are among the important sources of inflation. However, based on the above literature on inflation pertaining to Sri Lanka it can be stated that there is no comprehensive study which explores the impact of all the important variables that are likely to cause inflation.

The Proposed Model and the Econometric Method

Given that chosen macroeconomic variables are more likely to have non-linear relationships, all the variables have been converted into linear form by taking their natural log values. Based on the discussion in Section 2, the model given by equation (1) is proposed to analyze the determinants of inflation in Sri Lanka.

$$\ln P_t = \alpha_0 + \alpha_1 \ln M_t + \alpha_2 \ln E_t + \alpha_3 \ln OP_t + \alpha_4 \ln BD_t + \alpha_5 \ln Y_t + \alpha_6 \ln W_t^S + \alpha_7 \ln W_t^P + \alpha_8 D_{01} + \alpha_9 D_{04} + U_t \quad (1)$$

where P_t is price level represented by the Colombo Consumers' Price Index; M_t is nominal broad money supply (i.e. M_2); E_t is nominal exchange rate between the Sri Lankan rupee and the US dollar; OP_t is average price of a barrel of crude oil in US dollar terms; BD_t is annual budget deficit of government fiscal operations; Y_t is real gross domestic product; W_t^S is nominal public wage index; W_t^P is nominal private wage index; D_{01} is a dummy to capture the impact of the power crisis in 2001; D_{04} is a dummy to capture the impact of the tsunami disaster in 2004.

The Autoregressive Distributed Lag (ARDL) Bounds Testing approach has been selected to find the co integration relationships between the variables in question. The main advantage of the ARDL approach is that, while other co integration techniques require all of the regressors to be integrated of the same order, ARDL can be applied irrespective of their order of integration. It thus avoids the pre-testing problems associated with standard co-integration tests (Pesaran, Shin & Smith 2001). Moreover, with ARDL, it is possible that different variables have differing optimal numbers of lags. In addition, ARDL is better suited for small samples.

The key argument of this approach is that the independent variables may influence the dependent variable with a lag as well as the dependent variable may be correlated with its own lags, thus requiring the inclusion of the lags of the independent variables as well as of the dependent variable in the regression.

The ARDL model used to check the co integration between the price level and other variables is given in equation (2).

$$\begin{aligned}
 \Delta \ln P_t = & \beta_0 + \theta_0 \ln P_{t-1} + \theta_1 \ln M_{t-1} + \theta_2 \ln E_{t-1} + \theta_3 \ln OP_{t-1} + \theta_4 \ln W_{t-1}^S \\
 & + \theta_5 \ln Y_{t-1} + \theta_6 \ln W_{t-1}^P + \sum_{i=1}^p \beta_{1i} \Delta \ln P_{t-i} + \sum_{i=0}^q \beta_{2i} \Delta \ln M_{t-i} \\
 & + \sum_{i=0}^q \beta_{3i} \Delta \ln E_{t-i} + \sum_{i=0}^q \beta_{4i} \Delta \ln OP_{t-i} + \sum_{i=0}^q \beta_{5i} \Delta \ln W_{t-i}^S \\
 & + \sum_{i=0}^q \beta_{6i} \Delta \ln Y_{t-i} + \sum_{i=0}^q \beta_{7i} \Delta \ln W_{t-i}^P + \mu_t
 \end{aligned} \tag{2}$$

In terms of the unrestricted ECM given by equation (2), the joint null hypothesis to be tested, which implies the absence of a long-term relationship between price level and the explanatory variables, is $\theta_0 = \theta_1 = \theta_2 = \theta_3 = \theta_4 = \theta_5 = \theta_6 = 0$. Testing the joint statistical significance of all thetas is performed with the help of a F test. However, in ARDL modeling, the standard critical values of the F statistic are not effective. Since the order of integration can be either $I(0)$ or $I(1)$, Pesaran et al. (2001) suggest two sets of alternative critical values at each level of significance. One set that represents the lower bound assumes that all regressors are $I(0)$ and the other set that represents the upper bound assumes that they are $I(1)$. If the computed F statistic is less than the lower bound for critical values (i.e. $F < F_L$), the null hypothesis of $\theta_0 = \theta_1 = \theta_2 = \theta_3 = \theta_4 = \theta_5 = \theta_6 = 0$ cannot be rejected. On the other hand, if the computed F value is greater than the upper bound for critical values (i.e. $F > F_U$), then the null hypothesis is rejected and this supports the view that there exists a long-term relationship between the price level and the explanatory variables. However, if the computed F value lies between the lower and upper bound critical values (i.e. $F_L < F < F_U$), the inference is said to be inconclusive and the order of integration of the variables in question has to be investigated further.

Data and Measures

In Sri Lanka, changes in price levels are captured by three price indices, namely, the Colombo Consumers' Price Index (CCPI), Wholesale Price Index (WPI) and the Gross Domestic Product (GDP) deflator. However, when it comes to measuring inflation, the CCPI (Base 1952 = 100) which is computed by the Department of Census and Statistics (DCS) has been used as the official price index since 1953. CCPI was revised in 2007 as well as in 2011 when the base years were changed to 2002 and 2006/07 respectively. However, in this study the dependent variable of inflation will be measured by CCPI with 1952 as the base year and the required data for the period of 2008 – 2014 were obtained through the splicing method¹ in order to ensure the consistency of the data series.

¹ Splicing is a statistical method of combining two or more index numbers covering different bases into a single series.

As for the money supply, different studies have used different monetary aggregates in order to assess their impact on inflation. According to the quantity theory of money, there is a direct influence from the nominal stock of money on the changes of price levels. Therefore, the nominal money supply is chosen over the real money supply which is assumed to be represented by the nominal broad money supply (M_2). Both Ratnasiri (2009) and Weerasekara (1992) indicate that broad money supply is better at predicting inflation than the narrow definitions of money supply.

The annual overall deficit of government fiscal operations is taken to represent the budget deficit. This represents the difference between total government revenue including grants and total government expenditure for a given year. The absolute values of the deficit figures are considered for estimation purposes.

The GDP at constant prices with the base year of 1982 is used to represent the real national income. Though it is possible to find a number of series of real GDP calculated using different base years, the base year selected in this study is 1982. Real GDP figures with 1982 as the base year were available only for the period from 1982 to 1996. Therefore, the corresponding GDP figures for 1977 – 1981 and 1996 - 2014 are obtained through the splicing method.

Rather than taking one wage index, wages are assumed to be represented by two wage indices: public sector and private sector nominal wage indices. This division makes sense as public wage increases are not usually matched by productivity increases whereas it may not be so in the case in wages in the private sector, suggesting that increases in public sector wages are more likely to be inflationary. The nominal wage rate index (NWRI), base year of which is 1978, of all central government employees is selected to represent the public wages while the private wages are proxied by the nominal wage rate index of workers in wage board trades. This will make it possible to identify the importance of the type of wage in explaining inflation.

In order to capture the pass through of exchange rate movements to inflation, it is necessary to determine the exchange rate that matters the most in inflation in Sri Lanka. Even though the nominal effective exchange rate (NEER) would have been a better representation, the nominal bilateral exchange rate between the Sri Lankan rupee and the US dollar is used instead due to the non-availability of a long-term series of NEER. However, this selection is also consistent with the previous studies of Cooray (2008), Duma (2008), Ratnasiri (2009) and Weerasekara (1992).

According to Duma (2008), oil prices can also be considered an important source of inflation in Sri Lankan context. Thus, in this study, oil prices are represented by the average price of a barrel of crude oil in US dollar terms.

In addition to the above determinants, dummy variables have also been used to capture the unusual behavior of inflation through supply shocks. Two dummy variables are employed to capture the effect of the power crisis during the year 2001 and the impact of the tsunami in 2004. In 2001 Sri Lanka faced an energy crisis resulting in power outages and rationing from July to November 2001. Daily power cuts started with a one-and-a-half hour blackout in the evening and increased to eight hours a day. It is argued that this energy crisis influenced most of the macroeconomic variables including the general price level. This was also reflected in a negative growth of GDP in 2001. In order to identify whether this had a significant effect on inflation, a dummy variable has been employed. Furthermore, it is a known fact that the tsunami disaster which occurred in December 2004 brought in many social and economic consequences. Thus, to capture its effect on inflation, a dummy variable, the value of which is equal to 1 for the observation in 2005 and zero otherwise, has been employed. The study has been limited to only these two dummy variables in order to ensure the principle of parsimony.

This study uses annual data for the period from 1977 to 2014 and all the required data are obtained from the annual reports, monthly bulletins and economic and social statistics published by the Central Bank and from the publications of the Department of Census and Statistics. The reason for selecting an annual data series instead of quarterly and monthly frequencies is the non-availability of monthly and quarterly data for certain variables such as budget deficit and real GDP.

Empirical Analysis and Discussion of Findings

All the series were obtained in natural log form. The ADF test under Schwartz information criteria was conducted to test the stationarity of the series. The unit root test results of the series given in Table 1 suggest that all series are not integrated of the same order. Money supply, exchange rate and budget deficit are $I(0)$ while all the other series are $I(1)$.

Table 1: Unit Root Test Results of the Series (1977 – 2014)

Variable on level	Level form		Variable on first difference	First difference form		Results
	ADF stats			ADF stats		
	Without trend	With trend		Without trend	With trend	
$\ln P_t$	-2.62	-1.65	$\Delta \ln P_t$	-4.27***	-4.88***	I(1)
$\ln M_t$	-1.02	-3.40*	$\Delta \ln M_t$	-2.75*	-2.83*	I(0)
$\ln E_t$	-3.48**	-4.47***	$\Delta \ln E_t$	-12.60***	-13.80***	I(0)
$\ln OP_t$	-0.82	-1.55	$\Delta \ln OP_t$	-5.97***	-5.90***	I(1)
$\ln BD_t$	-0.72	-7.64***	$\Delta \ln BD_t$	-5.14***	-5.03***	I(0)
$\ln Y_t$	1.39	-0.07	$\Delta \ln Y_t$	-4.38***	-4.71***	I(1)
$\ln W_t^S$	-1.09	-1.93	$\Delta \ln W_t^S$	-4.89***	-4.91***	I(1)
$\ln W_t^P$	-2.27	-1.94	$\Delta \ln W_t^P$	-5.86***	-3.63***	I(1)

Note: ***, ** and * denote the statistical significance at 1%, 5% and 10% levels respectively

Given that the variables within the selected sample period are a mix of $I(0)$ and $I(1)$ processes, the ARDL bounds testing approach has been employed to test for the long-term relationships among the variables. Accordingly, the unrestricted version of the model represented by Equation 2 against the restricted version given by the assumption that all thetas and level terms are absent in the same equation has been used to obtain the relevant F statistic for the annual data. The optimal lag lengths for the variables are selected on the basis of minimum Akaike's Information Criterion (AIC). The selected model contains contemporaneous terms and an intercept². The computed F -statistic is then compared with the asymptotic critical value bounds provided by Pesaran et al. (2001).

According to the critical values tabulated in Table 02, it is evident that the computed F statistic of the annual series 4.51 is greater than the upper bound for critical values 4.26 even at a 99 percent confidence level. These results suggest that the price level and the relevant variables are co integrated.

² The AIC criterion was checked only up to one lag as the inclusion of two or more lags would affect the principle of parsimony.

Table 2: ARDL Bounds Testing Approach Results

Computed <i>F</i> -statistic	Asymptotic critical value bounds for <i>F</i> -statistic			
	95%		99%	
	<i>I</i> (0)	<i>I</i> (1)	<i>I</i> (0)	<i>I</i> (1)
4.51	2.32	3.50	2.96	4.26

An Error Correction Model (ECM) was estimated to identify the long-run and short-run impact of each variable on inflation under the selected data frequency. The long-run determinants of the model and their respective elasticities are reported in Table 3.

Table 3: Long Run Determinants

Variable	Coefficient
$\ln M_t$	0.38***
$\ln E_t$	0.26**
$\ln OP_t$	-0.04
$\ln BD_t$	-0.04
$\ln Y_t$	0.02
$\ln W_t^S$	0.27***
$\ln W_t^P$	0.02

Notes: ***, ** and * denote the statistical significance at 1%, 5% and 10% levels respectively. The results are based on the following regression model $\ln P_t = \alpha_0 + \alpha_1 \ln M_t + \alpha_2 \ln E_t + \alpha_3 \ln OP_t + \alpha_4 \ln BD_t + \alpha_5 \ln Y_t + \alpha_6 \ln W_t^S + \alpha_7 \ln W_t^P + \text{error}_t^3$

It is evident that the money supply which is represented by the broad money supply is an important long-run determinant of inflation. In line with the monetarist view of inflation, the coefficient of the money supply is positive though it does not represent a one-for-one relationship between money supply and inflation. Increases in exchange rate (depreciation of local currency) lead to increases in inflation in the long run. Given the nature of relatively inelastic demand for imports in Sri Lanka, the depreciation of local currency can be thought to apply pressure on domestic prices. Increases in public sector wages are also inflationary in the sense that such increases are highly unlikely to be matched by productivity increases

³ In order to improve the validity of both models, the intercept and the dummy variables were excluded as they were found to be insignificant.

in the public sector. In summary, the findings of this study imply that the increase in broad money supply, depreciation of the rupee and increases in public wages are the causes of inflation in Sri Lanka in the long-run. These findings corroborate the findings of Cooray (2008) and Ratnasiri (2009).

Table 4: Short Run Determinants of Inflation

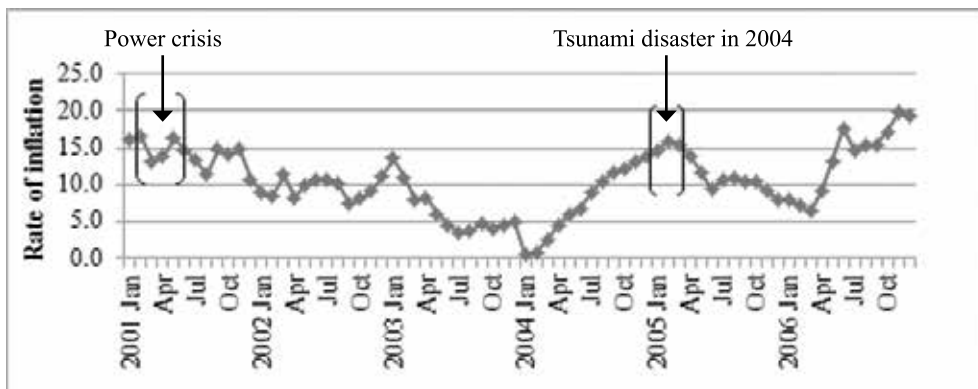
Variable	Coefficient
$\Delta \ln M_t$	0.34**
$\Delta \ln E_t$	0.16*
$\Delta \ln OP_t$	-0.0004
$\Delta \ln BD_t$	-0.03
$\Delta \ln Y_t$	-0.04
$\Delta \ln W_t^S$	0.18*
$\Delta \ln W_t^P$	0.16
Error Correction Term	-0.47***

*Notes:****, ** and * denote the statistical significance at 1%, 5% and 10% levels respectively. The results are based on the following ECM: $\Delta \ln P_t = \theta_1 + \theta_2 \text{error}_{t-1} + \alpha_1 \Delta \ln M_t + \alpha_2 \ln E_t + \alpha_3 \Delta \ln OP_t + \alpha_4 \Delta \ln BD_t + \alpha_5 \Delta \ln Y_t + \alpha_6 \ln \Delta W_t^S + \alpha_7 \ln \Delta W_t^P + u_t$

Short-run determinants and their respective elasticities are tabulated in Table 4. The results are consistent and increase in money supply, depreciation of the rupee and increase in public wages are the causes of inflation in the short-run too. Then error correction term is negative and significant. More specifically, 47% of any deviation from the long-run equilibrium following a short-run disturbance that occurred during the last time period is corrected in the current time period. In the view of Bannerjee, Dolado and Mestre (1998) [as cited in Pahlavani and Rahimi 2009], a highly significant error correction term is further proof of the existence of a stable long-term relationship.

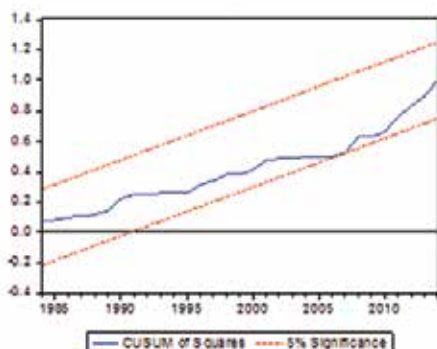
The findings of this study also indicate that oil prices, budget deficits, economic growth and private sector wage increases are not significant determinants of inflation either in the short-run or long-run. Contrary to popular belief, supply shocks also do not play a key role in determining inflation in Sri Lanka in both the short- and long-run. Coefficients of both dummies in Equation (1) are insignificant. As Figure 1 also makes it clear, it is apparent that the power crisis in 2001 and the tsunami disaster in 2004 have not had a significant impact on inflation.

Figure 1: Inflation During Period of 2001:1 - 2006:12

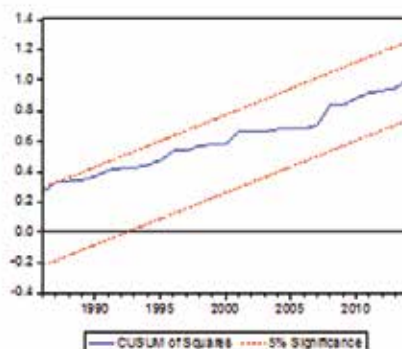


Source: Central Bank of Sri Lanka Annual Report: Various Issues

Figure 2: The Plots of CUSUMQ of the Long- and Short-Run Models



CUSUMQ test of the long-run model



CUSUMQ test of the short-run model

In order to check the stability of the estimated long- and short-run models, a cumulative sum of squared residuals (CUSUMQ) test was performed and the resultant diagrams are shown in Figure 2. It is evident that the plots of CUSUMQ of both the long- and short-run models are within the five percent significance level boundaries. This gives credence to the fact that the regression coefficients of the estimated models remained stable over the selected time period.

Conclusion

This study inquired into the short-run and long-run determinants of inflation in Sri Lanka, using annual data for the period from 1977 to 2014. It contributes to the existing literature on

inflation by using an eclectic approach in selecting the possible determinants of inflation in Sri Lanka. Considering the existing theoretical and empirical developments, an econometric model was specified containing a wide range of determinants of inflation, including money supply, exchange rate, prices of crude oil, budget deficit, real gross domestic product, public wage index, private wage index and dummy variables representing supply shocks.

In view of the autoregressive distributed lag (ARDL) approach to co integration, it was found that there exists a significant long-run relationship among the variables under study. The empirical findings of ECM indicates that the increase in broad money supply, depreciation of the rupee and increase in public wages influence the rate of inflation in both the long- and short-run. Thus, it can be stated that inflation in Sri Lanka is affected by both the demand and supply side factors⁴. Furthermore, the results of ECM of the selected frequency indicate that the coefficient of the error correction term is significant with the expected sign. It suggests a high speed of convergence towards equilibrium if there is a disequilibrium shock in the previous period.

The findings of this study highlight the importance of the effective implementation of monetary policy as money supply has a significant effect on inflation. In addition, proper management of exchange rate is also vital as depreciation of the exchange rate can cause inflation in both the long-and short-run. Besides, it is evident that increases in public wages are inflationary; therefore, proper supply side policies must be implemented to minimize its adverse impact on inflation. In conclusion, it is vital for policy makers to control the above determinants of inflation so as to achieve price stability and thereby to ensure a stable macroeconomic environment in Sri Lanka.

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⁴ One of the limitations of this study is the non-availability of sufficiently lengthy time series data for certain important variables.

**An Inquiry into the Causes of Inflation in Sri Lanka:
An Eclectic Approach**

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Determinants of Young Sri Lankan Individuals' Intention to Engage in Viral Marketing

Irosha Perera and Pradeep Dharmadasa

Abstract

Despite the prolific growth of viral marketing, factors that determine successful viral marketing campaigns remain largely unknown. Since the extant literature postulates that individual who pass along messages play a vital role in viral marketing, this paper examines the factors that determine the individuals' message pass along intention in light of the behavioural theory proposed by Ajzen, namely, the Theory of Planned Behavior (TPB), and the interpersonal relations theory proposed by Schutz, namely, Fundamental Interpersonal Relations Orientation (FIRO). The data collected from 391 young undergraduates in Sri Lanka were analyzed using the Structural Equation Modeling method. The results revealed that perceived behavioural control, attitude towards viral marketing, subjective norms, and need for affection and need for control are influential in determining the intention among young individuals to engage in viral marketing. Thus, the findings reveal that firms may need to develop different strategies to manipulate those critical factors that affect one's intention to engage in viral marketing so as to enhance the effectiveness of viral marketing campaigns.

Keywords: electronic word of mouth (eWOM), Fundamental Interpersonal Relations Orientation (FIRO), intention, Theory of Planned Behaviour (TPB), viral marketing.

Introduction

The proliferation of information and communication technology (ICT) opened many opportunities as well as challenges for businesses around the globe. Marketing

Irosha Perera is a Lecturer of School of Business, National School of Business Management. E-mail : irosha@nsbm.lk (Corresponding author).

Pradeep Dharmadasa, PhD is a Senior Lecturer and presently Head of the Department of International Business, Faculty of Management and Finance, University of Colombo.

communication has expanded widely with the support of ICT, whereby it is no longer restricted to the conventional one-way firm-to-consumer or to the more recent two-way or bidirectional communication. Communication flows in diverse directions, exploring the links or relations that individuals have with others through information and communication technology (Camarero & San Jose 2011). Since customers face great exposure to the world it is imperative that organizations work on tapping them by using every possible method by which they gather exposure. Among the many new marketing communication tools that have evolved, viral marketing has become a very important tool (De Bruyn & Lilien as cited in José-Cabezudo & Camarero-Izquierdo 2013) because of its inherent characteristics that strongly support marketing innovations.

Viral marketing can be defined as electronic word of mouth whereby some form of marketing message related to a company, brand or product is transmitted in an exponentially growing way, often through the use of social media applications (Kaplan & Haenlein 2011). The terms “viral marketing” and “eWOM” are often used interchangeably (Camarero & San Jose 2011; Ho & Dempsey 2010; Vilpponen, Winter & Sundqvist 2006) and this study also uses does likewise. Previous studies have shown that eWOM is more influential than traditional marketer-created information because it is perceived to be more impactful, convenient and credible (Cheung & Thadani 2012, Henning-Thurau, Gwinner, Walsh & Gremler 2004, Bickart & Schindler 2001). Moreover, industry research reports have also substantiated the fact that when making purchase decisions, internet users trust online reviews posted by unknown consumers more than they trust the traditional media (eMarketer, Inc 2013).

Despite the propagation of eWOM over the years, it is only very recently that eWOM received serious managerial and academic attention (Cheung & Lee 2012). The extensive studies done on viral marketing have been mainly about the effectiveness of eWOM communication where the focus was on purchase intention, purchasing decision and repurchase intention (Cheung & Thadani 2012; Chan & Ngai 2011) with only limited academic attention given to the critical factors affecting successful viral marketing campaigns (Cheung & Lee 2012, Chan & Ngai 2011, Henning-Thurau, Gwinner, Walsh & Gremler 2004). According to Chan and Ngai (2011), among the studies conducted with regard to eWOM, only 20% focused on the factors critical to efficacious viral marketing campaigns. They point out that the success of eWOM campaigns is largely determined by two factors, namely, the message and the sender. Moreover, even with the rapid growth of Social Networking Sites (SNS), much of viral marketing research has been more focused on website interactions (Chan & Ngai 2011) and less on the intention to engage in viral marketing through SNS.

Further, most of the research on eWOM has been done in developed countries in the western world but little in the Asian context and that also confined to developed countries like Korea and Hong Kong (Chan & Ngai 2011). Therefore, the findings of such research may not be applicable to developing countries because of the socio-cultural and economic differences between developed and developing nations. In viral marketing in Sri Lanka, many of the Sri Lankan brands have still not begun to reap the maximum benefits of using eWOM through SNS (Thajudeen 2012). An exception to this has been recorded in the Sri Lankan political arena where eWOM was used effectively as a promotional tool. According to Abbas & Singh (2014), Prime Ministerial candidate Narendra Modi realized the potential of social media and used it as a key tool in his campaign. In the Sri Lankan political arena there was an unprecedented use of the social media by both presidential candidates as well as by the politically charged but yet unaffiliated youth (Gunawardena 2015). With this in mind, this paper aims to investigate the factors affecting Sri Lankan youths' intention to engage in viral marketing, particularly in political events via social networking sites (SNS).

The remainder of the paper is organized as follows: section two presents the theoretical background of the study; section three outlines the research method; section four presents the results and findings of the study; and section five provides the discussion and conclusions of the study followed by research implications, limitations and directions for future research.

Theoretical Background

Scholars widely perceive online content forwarding as a unique behaviour (Lee, Ham & Kim 2013, Camarero & San Jose 2011, Yang 2013, Yang, Liu & Zhou 2012, Hsu & Lin 2008) and behavioural intention as a more influential predictor of behaviour (Pavlou & Fygenson 2006). Intentions are presumed to capture the motivational factors which influence behaviour and they are indications of how hard people are willing to try or how much of an effort they plan to exert to perform a particular behaviour (Ajzen 1991). In this regard, the Theory of Planned Behaviour (TPB), an extension of the Theory of Reasoned Action (TRA), provides a useful framework for dealing with the complexities of human social behaviour (Ajzen 1991, Ajzen & Madden 1986).

TPB is considered to be a well-accepted model that has been used to predict behaviours ranging from classroom participation to dishonest behaviours such as cheating in tests, shoplifting, lying and avoiding assignments. It permitted more accurate predictions of intentions (Ajzen & Madden 1986). According to TPB, the individual's intention to engage in a particular behaviour depends on his attitude to such behaviour *-the degree to which*

a person makes a favourable or unfavourable evaluation or appraisal of the behaviour in question, subjective norms - perceived social pressure to perform or not to perform the behaviour and perceived behavioral control (PBC) -*the perceived ease or difficulty of performing the behaviour* (Ajzen 1991, Ajzen & Madden 1986). PBC is a construct which differentiates TPB from TRA where PBC was incorporated owing to the limitations of the original TRA model in dealing with behaviour over which people have incomplete volitional control (Ajzen 1991).

Since intention is presumed to capture the motivational factors which influence behavior, in a study of viral marketing it is pivotal to look at interpersonal communication motives which drive individuals to engage in viral marketing. Related to this, the theory of Fundamental Interpersonal Relations Orientation (FIRO) (Schutz 1966) emphasizes that people engage in interpersonal relations as they are motivated to express one or more of three interpersonal needs, namely, inclusion, affection and control. As engaging in viral marketing is a form of maintaining interpersonal relations, motives that drive the individual's intention to engage in viral marketing can be explained in light of the FIRO theory (Schutz 1966). According to FIRO, the need for inclusion refers to the *individual's desire to be a part of a group*; need for affection refers to an *individual's desire to love or to be loved by others*; and need for control refers to the *need to exert power over others or give power over the self to others*. When analyzing the need for inclusion in depth it is seen that while belonging to a group, the individual desires to be identifiable or different from other people (Schutz 1966). This has led to claiming that the need for inclusion is an integration of need to belong and need to be different or individuation. While an individual wants to be a part of a group, he wants to obtain recognition or unique identification among the group members. It has been hypothesized that the individual's intention to engage in viral marketing depends on three factors proposed by Ajzen (1991) and four factors proposed by Schutz (1966), as explained below.

Attitude

Much of the prior studies related to technology adoption and knowledge sharing supported the individual's intention to engage in a particular behaviour being positively related to his/her attitudes (Mishra, Akman & Mishra 2014, Taylor & Todd 1995, Pavlou & Fygenson 2006, Bock, Zmud, Kim & Lee 2005, Ranasinghe & Dharmadasa 2013). This has been further substantiated in the context of viral marketing, where Lee, Ham and Kim (2013) came up with the finding that attitudes positively affect an individual's intention to pass along online video advertisements. Further, in an effort to determine mobile viral marketing behaviour among young Chinese customers, it was revealed that intention to forward useful electronic

messages and entertaining messages was determined by the attitudes to viral messages of senders (Yang, Liu & Zhou 2012). Yang (2013) asserted that young Chinese consumers' frequency of product recommendations on social networking websites is influenced by their viral marketing attitudes. Based on the above, it can be assumed that the more favourable the attitude towards a particular behaviour, the stronger the intention to engage in it. Thus, we hypothesise that

H₁: Attitude towards viral marketing positively influences intention to engage in viral marketing of political events through SNS.

Subjective Norms

Subjective norms reflect consumer perceptions of whether particular behaviours are accepted, encouraged and adopted by the consumer's circle of influence (Pavlou & Fygenson 2006, Hsu & Lin 2008, Palka, Pousttchi & Wiedemann 2009). The impact of subjective norms on the intention to engage in a given behaviour has been studied along diverse lines of research, the findings of which reveal positive relationships. Substantiating the findings of TPB (Ajzen 1991), empirical studies have shown that subjective norms influence intention to adopt technology (Taylor & Todd 1995, Pavlou & Fygenson 2006, Hsu & Lu 2004 and Mishra, Akman & Mishra 2014). Moreover, prior research underlines that subjective norms of knowledge-sharing positively affect the intention to share knowledge (Bock, Zmud, Kim & Lee 2005, Ranasinghe & Dharmadasa 2013). In addition, a significant positive impact of subjective norms on intention to engage in viral marketing has been shown in different contexts (Yang 2013, Yang, Liu & Zhou 2012, Lee, Ham & Kim 2013). Since the extant literature supports the thesis that subjective norms positively impact on intention to engage in behavior, the following hypothesis is proposed:

H₂: Subjective norms in respect of viral marketing positively influence intention to engage in viral marketing of political events through SNS.

Perceived Behavioural Control

Perceived behavioural control (PBC) is the person's belief as to how easy or difficult his/her behaviour is likely to determine his/her intention (Ajzen 1991). An individual's intention to engage in a particular behaviour will be shaped by how he/she perceives his/her ability to perform. The positive impact of PBC on the individual's intention has been recognized in

the existing literature on technology adoption (Han, Hsu & Sheu 2010, Taylor & Todd 1995, Grunert & Ramus 2005, Askew, et al., 2014, Ross, et al., 2009, Cheung & Vogel 2013). In regard to knowledge-sharing behaviour, Lin and Lee (2004) found that perceived ease of sharing knowledge with others positively impacts on the individual's intention to engage in knowledge-sharing. Since PBC is shown to generate a significant positive effect on intention to engage in technology adoption as well as in knowledge-sharing, this study hypothesises that:

H₃: PBC positively influences intention to engage in viral marketing of political events through SNS.

Need to Belong

Every individual has a strong desire to be a part of a particular community and to maintain interpersonal relationships. Schutz (1966) recognizes that the need to belong involves including significant others in a circle of acquaintances and remaining "in the loop". By nature, people are in need of love and social acceptance, which is referred to as the "need to belong" (Leary, Kelly, Cottrell & Schreindorfer 2013). In their study exploring the determinants of word of mouth in online consumer platforms, it was found that the feeling of being emotionally involved with the group had a significant impact on consumers' eWOM intentions (Cheung & Lee 2012). Further, Phelps, Lewis, Mobilio, Perry and Raman (2004) asserted that consumers' motivations to pass along emails are backed by the desire to connect and share with others. Thus, the need to belong could be considered to have a positive influence on the intention to engage in viral marketing of political events in Sri Lanka. Thus, it is hypothesized that

H₄: The need to belong positively influences intention to engage in viral marketing of political events through SNS.

Need for Individuation

While belonging to a particular group, individuals seek to stand out in their group and to make themselves different from others. It has been accepted that social behaviour often occurs with reference to other people and is also evaluated in those terms. Some behavioural options are chosen for the purpose of creating a particular social image whereas others are selected for the function of self-expression (Maslach, Stapp & Santee 1985). Anything that enhances

an individual's self-image, self-expression and self-determination drives the individual to engage in that behaviour. For example, if an individual perceives that spreading eWOM will enhance his/her self- image, he/she will engage in eWOM. In an effort to reveal the underlying motives for consumers engaging in WoM communication, it has been revealed that the need for self-enhancement is a key motivator that drives individuals to engage in positive WOM (Sundaram, Mitra & Webster 1998, Henning-Thurau, Gwinner, Walsh & Gremler 2004). Individuals expect to show their expertise, to enhance their status and seek appreciation for their enhanced self-image through passing along messages. Chung and Darke (2006) found that individuals were more likely to engage in WOM for products that tell others about who you are and which make you unique and which are closely aligned to one's self-image. In their work, Ho and Dempsey (2010) found that individuation or the need to stand out in a crowd was a key motive for an individual to engage in eWOM. Thus, the need for individuation could be considered to have a positive influence on the intention to engage in viral marketing related to political events. Thus, it is hypothesized that:

H₅: The need for individuation positively influences intention to engage in viral marketing of political events through SNS.

Need for Affection

Love and care are among the foremost needs of an individual. Affection has been defined as the need to establish and maintain a relationship of mutual warmth, care and love with others (Schutz 1966). Individuals desire to express and receive love and care in any relationship they maintain in a physical or virtual context. To have such mutual warmth, the individual should be willing to help others in a selfless manner. The act of doing something for others without anticipating any reward in return is altruism (Sundaram, Mitra & Webster 1998). Many scholars have identified that altruism, willingness to help others whole heartedly without expecting anything in return, has a positive effect on eWOM intention (Henning-Thurau, Gwinner, Walsh & Gremler 2004 and Hsu & Lin 2008)). Further, that affection positively affects eWOM intentions has been substantiated by Ho & Dempsey (2010), Phelps, Lewis, Mobilio, Perry & Raman, (2004), Huang, Lin, & Lin 2008 and Cheung & Lee (2012). It is presumed that during an election period politically uncharged individuals spread online content to enlighten others without expecting any benefit in return. Thus, it is hypothesized that:

H₆: The need for affection positively influences intention to engage in viral marketing of political events through SNS.

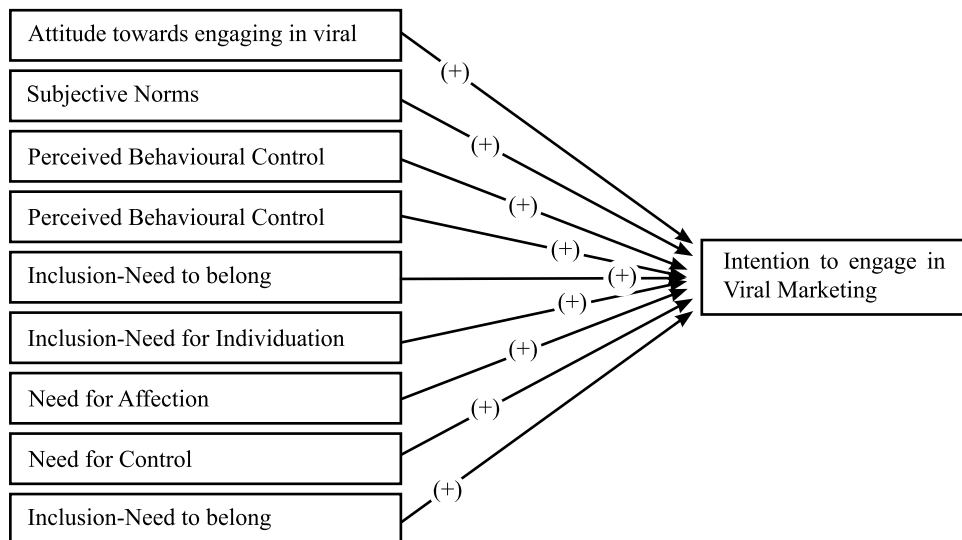
Need for Control

The need for control is the desire to exert power over others or to give power over one's self to others (Rubin, Perse & Barbato 1988). Schutz (1966) emphasized that the need for control is an imperative motivation for individual interpersonal relationships including interpersonal communication. Substantiating the finding that the need for control is an interpersonal need (Schutz 1966), the Interpersonal Communication Motives (ICM) scale developed by Rubin, Perse, & Barbato (1988) has also identified the need for control as a motive for individuals to engage in interpersonal communication. Smith (2012) suggested that achieving superiority and influencing power is a main motivation for passing eWOM communication in websites and blogs. In addition, Sun, Youn, Wu, and Kuntaraporn (2006) found that online opinion leadership is positively related to online forwarding in the context of music-related communication. Opinion leaders are presumed to be influential members of their social network with a desire to control others (Chaney 2001). Hence, the need for control could be considered to have a positive impact on the intention to engage in viral marketing relating to political events in Sri Lanka. Thus, it is hypothesized that:

H₇: The need for control positively influences intention to engage in viral marketing of political events through SNS.

The conceptual framework of the study based on the above discussion is given in Figure 1.

Figure 1: Conceptual Framework



Source: Author

Research Method

Data Collection and Sample

Data for the study was collected from 400 undergraduates registered for different degree programmes at four higher educational institutions in Colombo district, aged between 18 and 24 and active in at least one social media network. Convenience sampling was used and data collected through a questionnaire. Much of the previous research has proposed that young adults are the most appropriate segment for conducting studies on viral marketing as they form the demographic group with the highest rates of technology adaptation and viral marketing penetration (Lee, Ham & Kim 2013, Camarero & San Jose 2011, Ho & Dempsey 2010). The age group 18-24 years was considered because, according to the UN, youth is defined as those persons between the ages of 15 and 24 years (UNESCO 2014) and to qualify as a voter, an individual must have attained the age of 18 years by the date of the relevant register -June 1st. In order to increase the response rate, anonymity was assured and as an incentive a summary of the research findings was offered to the participants. Further, several follow-up procedures were used such as reminder notices to the participants and reminder messages to SNS accounts.

The questionnaire used in this study consisted of three sections: screening questions to ensure respondents were within the age group and have an SNS account; predictor constructs and intention measures; demographic information. To measure the constructs, already established measurement scales were adapted to the Sri Lankan setting. Altogether, there were forty two (42) questions, all of the Likert style rating scales which enable respondents to indicate how strongly they agree or disagree with the statements (Saunders, Lewis & Thornhill 2011). A five-point Likert scale was used from 1 = strongly disagree and 5 = strongly agree (Refer Appendix 01).

Method of Analysis

Prior to hypotheses testing, the data was examined, and with the support of SPSS, outliers were identified, missing values were treated and multivariate assumptions for the data set tested. The hypotheses of the study were then tested using Structural Equation Modelling (SEM) through AMOS. Following Anderson and Gerbing's (1988) two-step approach, SEM was conducted to analyze the data. The measurement model was first constructed and tested with confirmatory factor analysis (CFA). Secondly, the structural model was specified in order to examine the causal relationships among variables or predictors and criteria.

Results and Findings

With the support of SPSS, the data was purified and multivariate assumptions tested. It has been proven that all multivariate assumptions been met. In addition before proceeding into inferential statistics researcher assessed the unidimensionality, validity and the reliability of data. validity and the reliability of the data. Hence, the study was conducted with scaled items and Cronbach's Alpha was used to measure internal consistency (i.e., reliability). Hair, Black, Babin, & Anderson (2009) recommended that Cronbach's alpha values ranging from 0.6 to 0.7 can be treated as the lower limit of acceptability. Accordingly, Cronbach's alpha for each item was calculated and several items had to be removed from the scales in order to exceed the cut off value of Cronbach's alpha. The NTB construct was identified as a significantly poor variable in terms of internal consistency as the alpha value was 0.484. With the removal of two items, namely, NTB3_R and NTB7_R, the Cronbach's alpha value was indicated as 0.642 after the purification. All the other variables were considered to be internally consistent as the corresponding alpha values were greater than 0.7.

The measurement model fit was evaluated through the goodness of fit indices using the absolute, parsimony and incremental measures. Absolute fit indices provide the most fundamental indication of how well the proposed theory fits the data collected in the specific context. Incremental fit indices are a group of indices that do not use the chi-square in its raw form but compare the chi-square value with a baseline model. Parsimony determines which model among a set of competing models is best suited (Hooper, Coughlan & Mullen 2008). According to the values of the goodness of fit indices, a mediocre model fit was established ($\chi^2 = 1497.618$, $df = 712$, $p < 0.001$, $CIMIN/DF = 2.103$, $GFI = .830$, $RMSEA = .055$, $IFI = .873$, $CFI = .871$, $PRATIO = .913$). Eliminating non-significant items and items with factor loadings below 0.5 was considered to improve the model fit (Hair, Black, Babin & Anderson 2009). In addition, as suggested by Hair et al. (2009), modification indices were used to improve the model. The modified measurement model's fit was evaluated with the goodness of fit indices and the results showed a satisfactory fit to the data ($\chi^2 = 892.159$, $df = 523$, $p < 0.001$, $CIMIN/DF = 1.706$, $GFI = .884$, $RMSEA = .044$, $IFI = .936$, $CFI = .935$, $PRATIO = .879$). All items loaded above 0.50 and were significantly associated with their specified constructs ($p < 0.001$). These results provided evidence for the unidimensionality of each scale.

Convergent validity measures the extent to which a scale has a positive correlation with other measures of the same latent construct (Sekaran & Bougie 2014). Assessing factor loadings is a commonly used method to determine convergent validity where higher factor loadings

represent higher convergent validity while all factor loadings should be statistically significant. Hair, Black, Babin, & Anderson (2009) determined that the threshold value for higher factor loading is the standardized loading estimates which should be 0.5 or higher, and ideally 0.7. The Average Variance Extracted (AVE) which calculates the mean variance extracted for the items loading on a construct is another indicator of convergence. It is accepted that AVE of .5 or higher is a good rule of thumb to ensure adequate convergence (Bagozzi & Yi 1988). Further, Construct Reliability (CR) was also introduced as an indicator of convergent validity and the values greater than .6 were desirable for CR (Bagozzi & Yi 1988).

Discriminant validity emphasizes the extent to which a construct is truly distinct from other constructs in a model (Hair, Black, Babin & Anderson 2009). This indicates that the measured variables have more in common with the construct they are associated with than they do with the other constructs. A more rigorous way to determine discriminant validity can be the comparison of the square root of the AVE and the correlation coefficients. If the square root of AVE is larger than the correlation coefficients, discriminant validity is established (Malhotra & Dash 2011).

Accordingly, a measurement model was used to assess convergent and discriminant validity. Table 1 shows AVE, CR, Correlations, Square Roots of AVE values for each variable.

Table 1: CR, AVE, Correlation Coefficients

	CR	AVE	ATT	NTI	NTB	NFA	SN	NFC	PBC	INT
ATT	0.799	0.578	0.760							
NTI	0.829	0.352	0.203	0.593						
NTB	0.742	0.326	0.007	0.064	0.571					
NFA	0.932	0.732	0.734	0.086	-0.045	0.856				
SN	0.867	0.697	0.064	0.158	0.134	0.077	0.835			
NFC	0.826	0.614	0.588	0.061	-0.014	0.636	0.123	0.784		
PBC	0.747	0.498	0.115	0.273	0.064	0.171	0.465	0.216	0.705	
INT	0.789	0.558	0.302	0.174	0.074	0.307	0.411	0.366	0.770	0.747

Source: Author compiled based on Survey Data

In respect of the measures, all factor loadings were statistically significant and the standardized loading estimates met the minimum threshold of 0.5, which provided a reasonable estimation of convergent validity among item measures. Table 1 shows that following Bagozzi and Yi's (1988) proposition, the CR of the constructs was confirmed with all constructs demonstrating

a value which exceeds 0.6, which is another indicator of convergent validity. However, AVE for all constructs exceeded the threshold of 0.5 except for the constructs NTB and NTI. According to Malhotra and Dash (2011), AVE is considered to be a more conservative measure than CR. Thus, on the basis of CR alone, the researcher has the discretion to conclude that the convergent validity of the construct is adequate. Therefore despite the low AVE values for constructs NTB and NTI, convergent validity was confirmed with sufficient backing from factor loadings and CR. Discriminant validity for all the constructs except PBC and INT was established with the square root of AVEs being larger than the corresponding correlation coefficients.

Structural Model

The causal relationships among the latent constructs in the model and hypotheses were tested using the structural model. Before examining the structural model, the model fit was determined. The proposed model displayed an adequate fit to the data ($\chi^2 = 1577.899$, $df = 548$, $p < 0.001$, $CIMIN/DF = 2.879$, $GFI = .829$, $RMSEA = .072$, $IFI = .829$, $CFI = .819$, $PRATIO = .921$). The statistical results given in Table 2 indicate the path coefficients and level of significance for each construct.

Table 2. Summary of SEM Results

Construct	Path Coefficient (β)	Significance
ATT→INT	.191*	Significant
SN→INT	.220**	Significant
PBC→INT	.924**	Significant
ATT→INT	.191*	Significant
SN→INT	.220**	Significant
NTB→INT	.035	Not Significant
NTI→INT	-.024	Not Significant
NFA→INT	.132*	Significant
NFC→INT	.204*	Significant

Source: Compiled by authors based on survey data

The statistical results given in Table 3 show that out of the seven hypotheses proposed, five were supported while two were unsupported. Among the interpersonal communication motives, only two hypotheses were supported, suggesting that the need for belongingness

and need for individuation may not be possible motives of a young individual's intention to engage in viral marketing of political events through SNS.

Table 3: Results of Hypotheses Testing

Hypothesis	Results
H1: Attitudes toward viral marketing positively influence intention to engage in viral marketing of political events through SNS.	Supported
H2: Subjective norms toward viral marketing positively influence intention to engage in viral marketing of political events through SNS.	Supported
H3: PBC positively influences intention to engage in viral marketing of political events through SNS.	Supported
H4: The need to belong positively influences intention to engage in viral marketing of political events through SNS.	Not Supported
H5: The need for individuation positively influences intention to engage in viral marketing of political events through SNS.	Not Supported
H6: The need for affection positively influences intention to engage in viral marketing of political events through SNS.	Supported
H7: The need for control positively influences intention to engage in viral marketing of political events through SNS.	Supported

Discussion

The findings of the study confirmed that perceived behavioural control is the most pivotal motivation that governs a young individual's intention to engage in viral marketing of political events in Sri Lanka. This finding was consistent with several prior researches related to the use of information technology and studies related to antecedents of specific behaviors (Han, Hsu & Sheu 2010, Taylor & Todd 1995, Grunert & Ramus 2005, Askew, et al., 2014, Ross, et al., 2009, Lin & Lee 2004).

However, it was interesting to note that the path coefficient (β) established in the study was relatively high compared to the findings of the aforementioned studies. The difference in the degree of the relationship could be mainly due to the differences in the context of the research. In this study, the concern was with intention to engage in viral marketing specifically of political events. This is different from the use of internet for buying purposes or the use of computer resource centres. Unlike other generations' youth are investigative, freely expressive, and the need to authenticate (Smith 2011) thus they perceive lesser obstacles from the political system to express their independent political viewpoints. Further, nowadays young individuals with a wired life style may be technologically capable of navigating and

expressing themselves in SNS very effectively. Thus, young individuals believe they possess more resources and opportunities and face fewer obstacles or obstructions, resulting in greater perceived behavioural control (Ajzen 1991), which, in turn, form their intentions resulting in a high path coefficient.

With a positive and significant standardized beta coefficient the study confirms that subjective norms have a positive impact on intention to engage in viral marketing related to political events in Sri Lanka. This finding is also in line with many of the previous research findings related to viral marketing and technology adaptation intention (Yang, Liu & Zhou 2012, Lee, Ham & Kim 2013, Yang 2013, Taylor & Todd 1995, Mishra, Akman & Mishra 2014, Hsu & Lin 2008). The study established a path coefficient (β) of 0.22, which is much similar to the relationship established in the studies of Yang, Liu & Zhou (2012) and Taylor & Todd (1995). Thus, it signifies that when young individuals feel that their friends and relatives accept and engage in viral marketing of political events, they are more likely to spread eWOM or pass along electronic messages about political events in the social media.

The findings of the study indicate that young persons' attitudes have a positive impact on their intention to engage in viral marketing of political events in Sri Lanka. The relationship between attitude and intention has been substantiated through a wide array of previous studies on technology adoption and knowledge sharing (Yang, Liu & Zhou 2012, Gangadharbatla 2008, Han, Hsu & Sheu 2010, Hsu & Lin 2008, Mishra, Akman & Mishra 2014, Taylor & Todd 1995, Pavlou & Fygenon 2006, Bock, Zmud, Kim & Lee 2005, Ranasinghe & Dharmadasa 2013). The path coefficient (β) of 0.19 established in the study is relatively similar to that of studies conducted by Yang (2013) and Yang, Liu & Zhou (2012). However, the established path coefficient is smaller compared to that shown by Hsu & Lin (2008), Pavlou & Fygenon (2006) and Lee, Ham & Kim (2013). The difference in the degree of relationship could be due to differences in the contexts of the research. The majority of prior studies on viral marketing intentions were conducted either in Western countries or in south east Asian countries.

The findings of the study are in line with the original TPB model which postulates that the individual's intention to engage in a particular behaviour depends on the attitude towards such behaviour, subjective norms and perceived behavioural control (Ajzen 1991, Ajzen & Madden 1986, Ajzen 2002). Another interesting finding is that perceived behavioural control, which is a major determinant that differentiates TPB from TRA, is recognized as the most vital factor affecting one's intention to engage in viral marketing in a given context. Thus, the research is in line with the same conclusion reached by Taylor & Todd (1995) and

determines TPB as a viable model that provides a broader explanation of technology adoption and engagement in viral marketing.

Among the four interpersonal communication motives which affect intention to engage in viral marketing based on Schutz (1966), only two, the need for affection and the need for control, were proved to have a significant impact on intention to engage in viral marketing in the given context. The findings substantiate that the individual's need for affection positively affects his/her intention to engage in viral marketing of political events through SNS. This finding is in line with the previous studies conducted in relation to interpersonal communication motives and eWoM (Henning-Thurau, Gwinner, Walsh & Gremler 2004, Ho & Dempsey 2010, Phelps, Lewis, Mobilio, Perry & Raman 2004, Price, Feick & Guskey 1995, Huang, Lin & Lin 2008, Cheung & Lee 2012). In the present study, the path coefficient (β) was established as 0.132, which is much in line with the findings of the aforementioned study conducted by Henning-Thurau, Gwinner, Walsh & Gremler (2004), which identified concern for other consumers as a key determinant in engaging in viral marketing. Considering the participants of the study, the significance of affiliation orientation can be related to Sri Lankan culture as well.

The study found support for the hypothesized relationship between need for control and intention to engage in viral marketing of political events with a positive and significant path coefficient. This was also confirmed in the study done by Sundaram, Mitra and Webster (1998) as achievement obtained by using a product and by being an intelligent shopper motivates them to share information with each other with the need to change and influence the behaviour of others in the network. Further Sun, Youn, Wu & Kuntaraporn (2006) found that online opinion leadership with a desire to control others is positively related to online forwarding in the context of music-related communication. In addition, the study established a path coefficient of 0.23, which is somewhat similar to the relationship established in the study of Sun, Youn, Wu & Kuntaraporn (2006).

The significant relationship between need for control and intention to engage in viral marketing may be due to the target group of the research. Asch, as cited in Smith (2011), attributes millennial to the need to control their environment. Meanwhile, the Internet had a part in fostering this sense of control (Smith 2011). Since the communication taking place through the Internet allows millennial to exert control over the free market by expressing their opinions through a multitude of websites that potentially influence consumers, such communication may be preferred by them. Especially when it comes to political events, it is possible that individuals will post things which are aligned with their political viewpoints

with the objective of changing or influencing others' voting behaviours. Thus it can be concluded that the need for control positively impacts on the individual's intention to engage in viral marketing of political events in Sri Lanka.

Even though the extant literature has established a positive relationship between need to belong and intention to engage in viral marketing (Leary, Kelly, Cottrell & Schreindorfer 2013, Cheung & Lee 2012, Phelps, Lewis, Mobilio, Perry & Raman 2004, Metzger & Flanagan 2013), the findings in the Sri Lankan context did not support such a relationship. There are other similar researches that did not establish such a relationship (Ho & Dempsey 2010, Sun, Youn, Wu & Kuntaraporn 2006). The insignificant relationship can be attributed to the purpose served by SNS. According to studies conducted by Ross, et al (2009) and Sheldon (2008), most 'Facebook Friends' were individuals known from the offline world; in other words, the Facebook was not used as a tool to meet new people online or to belong to new groups and it was just used as a tool to maintain contact with the groups to which they already belong.

Further, based on substantial amounts of literature, researchers have hypothesized a relationship between one's need for individuation and intention to engage in viral marketing (Sundaram, Mitra & Webster 1998, Ho & Dempsey 2010, Daugherty, Eastin & Bright 2008; Henning-Thurau, Gwinner, Walsh & Gremler 2004). However, the present study did not establish such a relationship as hypothesized. The findings of the study are much aligned with a study conducted by Yap, Soetarto & Sweeney (2013) and Ghane, Shokrizadeh, Omidvar & Kamyab (2014). It is not suggested that viral marketing is used as a means of showcasing one's uniqueness because the results of this study may have been influenced by the special personality traits of Sri Lankans. As Lee (1994) says, by nature Asians have compliant and obedient personalities and thus may not be willing to stand out from the crowd.

Conclusion

This study addressed a gap in the extant literature on viral marketing by determining factors affecting towards individuals intention to engage in viral marketing through SNS. Researcher examined motives which drives an individual to engage in viral marketing of political events through SNS in light of well established theories TPB (Ajzen 1991) and FIRO (Schutz 1966). The findings of the study have implications for both marketing practice and theory, and it enlighten about possible further research that can be undertaken on intention to engage in viral marketing.

Theoretical and Practical Implications

This study sheds light on several theoretical as well as managerial implications. The study makes a major theoretical contribution by examining factors affecting individual's intention to engage in viral marketing via SNS in light of the behavioural theory as well as the interpersonal relations theory. Further, many researchers have explored viral marketing in the Western or South East Asian context (Chan and Ngai 2011), which would not fit in with the Sri Lankan context. Thus, the study makes a contribution by examining factors affecting intention to engage in viral marketing in the Sri Lankan context. Actually, there are no corresponding studies done in Sri Lankan or South Asian contexts. The discussion and findings highlight the possible impact of some unique cultural and psychological behaviours among Sri Lankans which may be different from those of western ideologies. Hence, the findings of this study provide an insight into the viral marketing behaviours that are distinctive Sri Lankan youth behaviours. The findings can be generalized to other South Asian countries which have similar attributes in terms of culture and economic development.

Since viral marketing can be highly beneficial to a company, marketers should determine what drives consumers to write and pass along reviews about products on SNS. Hence, the findings of this study generate some useful insights for business organizations which are looking forward to embracing viral marketing in their marketing campaigns. According to the findings, viral marketing campaigns have a greater chance of success if the marketer is able to develop marketing communication strategies that appeal to the key interpersonal communication motives -need for affection and need for control. For example, in order to satisfy the need for affection among young individuals, online opinion platform moderators should provide a mechanism whereby members who have provided useful suggestions to other members are recognized and informed that they have helped others. Further, if a particular platform operator can link senders and readers via person-to-person messaging, it will enable readers to show their appreciation for the reviews received. This may satisfy the contributors' need for control by presuming that they were able to influence the decisions of others.

Further, the findings substantiated that individuals tend to engage in writing and spreading messages when they feel that their friends and relatives accept and engage in viral marketing on SNS. Platform operators can work on sending personalized updates to individuals about those friends who engage in diffusing messages. Also, posting a public note of appreciation to contributors for spreading the message will enable the individuals in his friends' list to know that he engages in viral marketing. This may give a boost to individuals to get involved in diffusing messages as a norm among their friends.

The findings also reveal the pivotal impact of perceived behavioural control on the individual's intention to engage in viral marketing. To enhance the viral nature of the message, marketers should always work on enhancing the customers' level of confidence in the ease of performing the task with few obstacles and resource constraints. For example, most young Sri Lankans find it difficult to diffuse highly sophisticated rich content due to Internet bandwidth issues in the country. Thus, they may avoid diffusing messages of such calibre which may freeze the buzz. In order for practitioners to foster eWOM engagement activities on SNS, user-friendliness needs to be considered when providing service features such as searching, listening, and viewing, purchasing and sharing. Perceived behavioural control can be enhanced by platform operators through usability evaluation, service process reengineering, or user-centered design. Digital marketing practitioners can improve the system by designing a more controllable user interface, eliminating unnecessary plug-ins, enabling easier communication among peers and organizing the information architecture to enable users to more easily navigate its services in their fan pages and applications.

Limitations and Further Research

While this study's findings have considerable potential implications, there are several limitations. Firstly, the researcher has drawn her sample from undergraduates as they are considered appropriate participants because of their tech savvy and substantial use of SNS. However, to get a broader picture of viral marketing behaviour among young individuals future research needs to pay attention to wider groups from diverse settings. This will enhance the generalizability of findings which is a foremost objective of conducting a quantitative study.

Secondly, the study relates to the context of viral marketing of political events in Sri Lanka. The use of viral marketing for political events is considered viable since many of the Sri Lankan brands are still not able to reach maximum benefits by utilizing eWoM through SNS (Thajudeen 2012) and the exception for this is an unprecedented use of social media in political campaigns (Gunawardena 2015). However, in general people do not have much of a good perception about politics in Sri Lanka and it may have impacted the responses. Thus, it is necessary to project the derived model to other settings such as viral marketing of fast moving consumer goods, fashion, etc. in order to get a broader view.

Thirdly, though the study was limited to the determinants of intention derived from FIRO theory and TPB model, there are many interpersonal psychological and behavioural theories that can be used to explain the determinants of eWOM intention. Examples of such theories

are social exchange theory, equity theory, balance theory and theory of reasoned action (Chan and Ngai 2011). Hence, further research can be enriched by using more motivational and behavioural theories and exploring interactive behaviour, which has not been sufficiently explored (Liu 2007). Further, the need for belongingness and individuation might not have a direct impact on intention to engage in eWOM. Instead, it might have an indirect effect through mediation, which can be tested in future research. Finally, it is also possible that consumers' pass-along intentions may also depend on the type of content of the message (Lee, Ham, & Kim 2013) where people perceive some messages more viral than others. Therefore, future research needs to test how eWOM motives impact through different types of online messages.

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Appendix 1

Measures		
Attitude (ATT)	Yang, Liu, & Zhou (2012)	ATT 01 My attitude toward passing along electronic messages about political events is positive ATT 02 Generally, I think it is good to pass along electronic messages about political events to friends or relatives ATT 03 I honestly don't like passing along electronic messages about political events to friends or relatives (R)
Subjective Norms (SN)	Han, Hsu, & Sheu (2010)	SN 01 Most people who are important to me think I should pass along posts about political events SN 02 Most people who are important to me would want me to pass along posts about political events SN 03 People whose opinions I value would prefer to see that I pass along messages about political events.
PBC	Taylor & Todd (1995)	PBC 01 I would be able to passing along electronic messages about political events PBC 02 Passing along electronic messages about political events to my friends & relatives are entirely within my control PBC 03 I have the resources and the knowledge and the ability to pass along electronic messages about political events
Need to belong (NTB)	Leary, Kelly, Cottrell, & Schreindorfer (2013)	NTB 01 If other people don't seem to accept me, I don't let it bother me. (R) NTB 02 I try hard not to do things that will make other people avoid or reject me. NTB 03 I seldom worry about whether other people care about me. (R) NTB 04 I need to feel that there are people I can turn to in times of need. NTB 05 I want other people to accept me. NTB 06 I do not like being alone. NTB 07 Being apart from my friends for long periods of time does not bother me. (R) NTB 08 I have a strong "need to belong." NTB 09 It bothers me a great deal when I am not included in other people's plans. NTB 10 My feelings are easily hurt when I feel that others do not accept me.
Need to Individuation (NTI)	Maslach, Stapp, & Santee (1985)	NTI 01 Give a lecture to a large audience. NTI 02 Raise your hand to ask a question in meeting or lecture. NTI 03 Volunteer to head a committee for a group of people you do not know very well. NTI 04 Tell a person that you like him/her.

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NTI 05 Publicly challenge a speaker whose position clashes with your own.

NTI 06 Accept a nomination to be a leader of a group.

NTI 07 Present a personal opinion, on a controversial issue, to a group of strangers.

NTI 08 When asked to introduce yourself, say something more personal about yourself than just your name and occupation.

NTI 09 Give an informal talk in front of a small group of classmates or colleagues.

NTI 10 Speak up about your ideas even though you are uncertain of whether you are correct.

NTI 11 Perform on a stage before a large audience.

NTI 12 Give your opinion on a controversial issue, even though no one has asked for it.

Need for Affection (NFA)	Rubin, Perse , & Barbato (1988)	<p>NFA 01 I will pass along electronic messages about political events to help others</p> <p>NFA 02 I will pass along electronic messages about political events let others know I care about their feelings</p> <p>NFA 03 I will pass along electronic messages about political events to thank people</p> <p>NFA 04 I will pass along electronic messages about political events to show others encouragement</p> <p>NFA 05 I will pass along electronic messages about political events because I'm concern about others</p>
<hr/>		
Need for Control (NFC)	Rubin, Perse , & Barbato (1988)	<p>NFC 01 Passing along electronic messages about political events will help me to have someone to do something for me</p> <p>NFC 02 Passing along electronic messages about political events will help me to tell others what to do</p> <p>NFC 03 Passing along electronic messages about political events will help me to get something I don't have</p>
<hr/>		
Intention (INT)	Bock , Zmud , Kim , & Lee (2005)	<p>INT 01 I intend to share electronic messages about political events with others more frequently in future</p> <p>INT 02 I will always provide my views about political events at the request of other members in SNS</p> <p>INT 03 I will try to share posts about political events with other members in SNS in a more effective way</p>

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No 309, High Level Road, Colombo 05, Sri Lanka.
(+94)11 544 5000, www.nsbm.lk

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