

DOES BOARD INDEPENDENCE MODERATE THE ASSOCIATION BETWEEN SUSTAINABILITY REPORTING AND PERFORMANCE? EMPIRICAL EVIDENCE FROM SRI LANKAN NON-FINANCIAL LISTED FIRMS

A.Dilini Dissanayake, T.D.S.H Dissanayake, Roshan Ajward

POLITICAL COMMUNICATION THROUGH NON-POLITICAL SOCIAL MEDIA: TESTING AN EXPRESSIVE CITIZENSHIP MODEL

D.M.S Gayanika

THE IMPACT OF INDUSTRIALIZATION ON ENVIRONMENTAL SUSTAINABILITY: A CASE STUDY IN GAMPAHA DISTRICT

M.A.P.S Hemakumara, D.M.K.T Dissanayake

SHORT TERM NOMINAL INTEREST RATE AS A PREDICTOR OF EXPECTED INFLATION: EVIDENCE FROM SOUTH ASIAN COUNTRIES

VPR Kannaragara, S.G.U.S Chandrarathne , J.M.D.P Jayasundara

THE SOCIAL SUPPORT IMPACT ON PROFESSIONAL EMPOWERMENT OF THE FEMALE NURSING PROFESSIONALS IN SRI LANKA

H.P. Sashini R. Caldera, Ganga Karunathilaka

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	PAGE
DOES BOARD INDEPENDENCE MODERATE THE ASSOCIATION BETWEEN SUSTAINABILITY REPORTING AND PERFORMANCE? EMPIRICAL EVIDENCE FROM SRI LANKAN NON-FINANCIAL LISTED FIRMS A.Dilini Dissanayake, T.D.S.H Dissanayake, Roshan Ajward	01 - 17
POLITICAL COMMUNICATION THROUGH NON-POLITICAL SOCIAL MEDIA: TESTING AN EXPRESSIVE CITIZENSHIP MODEL D.M.S Gayanika	18 -26
THE IMPACT OF INDUSTRIALIZATION ON ENVIRONMENTAL SUSTAINABILITY: A CASE STUDY IN GAMPAHA DISTRICT M.A.P.S Hemakumara, D.M.K.T Dissanayake	26 - 55
SHORT TERM NOMINAL INTEREST RATE AS A PREDICTOR OF EXPECTED INFLATION: EVIDENCE FROM SOUTH ASIAN COUNTRIES VPR Kannaragara, S.G.U.S Chandrarathne , J.M.D.P Jayasundara	56 - 76
THE SOCIAL SUPPORT IMPACT ON PROFESSIONAL EMPOWERMENT OF THE FEMALE NURSING PROFESSIONALS IN SRI LANKA H.P. Sashini R. Caldera, Ganga Karunathilaka	77 - 92

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Objectives

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Editorial

Researching into real-world issues has time and again proven to be useful to the issue at hand and subsequently the community at large. Thus, encouraging new age research to focus more fervently on its contribution towards the society, in addition to disciplinary significance and relevance. The constant aim as well as challenge upheld by our researchers now, is how their research implications could positively serve the betterment of the communities they engage with. At NSBM too, the academia as well as the management strive to investigate into areas that have proven to be both a challenge as well as a contributing aspect towards its surrounding environment and society at large.

This issue, which is the first issue of the year 2020 of the NSBM Journal of Management, focuses on finding inventive and efficient solutions to challenges faced in various industries. Consisting of 5 papers from diverse areas, the topics covered range from sustainability both in terms of reporting and the environment, the impact of inflation, social support, professional empowerment and political communication.

The first study conducted by authors, A.Dilini Dissanayake, T.D.S.H Dissanayake, Roshan Ajward questions if board independence moderates the association between sustainability reporting and performance, and goes on to indicate via their study that sustainability disclosures have a significant positive association on firm financial performance. And furthermore, proves that greater availability of independent directors positively moderated the relationship between sustainability disclosures and financial performance of firms. Thereby, offering productive insight for policymakers to make well informed decisions on enhancing their monitoring role of corporate boards.

The second paper in this issue, authored by D M S Gayanika, examines the association between young Facebook users' social and entertainment expressive Facebook use and their interactive political expression as an alternative model to traditional citizenship models. The findings posed to be contrary to prior work suggesting that the use of digital media for social or recreational purposes may distract citizens from public engagement, and further goes on to prove that the young generations' political communication is through non-political social media.

The third paper, co-authored by M.A.P.S Hemakumara and D.M.K.T Dissanayake discusses the impact of industrialization on environment sustainability in Sri Lanka, and proceeds to probe into the actions which can be taken to mitigate the impact on environment due to industrialization. The study concludes that although industries have proven to be one of the major factors which helps economic development in the country, it is equally important that industries adapt sustainable processes in order to mitigate the damages to the environment.

The fourth paper written by VPR Kannaragara, SGUS Chandrarathne, and JMDP Jayasundara investigates the relationship between inflation and short-term interest rates across South Asian countries and individual country context over the period of

past 30 years. This study reveals that treasury bill rate which represents the nominal interest rate is significant at 1% level of significance in South Asia with a negative relationship, and further substantiates that there are country wise differences in predicting inflation for South Asian countries.

The final study featured in this issue, is co-authored by H.P. Sashini R. Caldera and Prof. Ganga Karunathilaka. The paper examines the relationships among the social support towards the professional empowerment of the registered female nurses in Sri Lanka who are currently following their undergraduate studies. The results indicated that all three factors- family support, workplace support and community support - have moderate association to professional empowerment.

The earnest hope of this issue is that emerging scholars, both local and international benefit from the valuable research experiences and initiatives of the featured authors. Further, the Editorial Board takes this opportunity to place on record their appreciation and sincere acknowledgement for the various contributions and support by all those involved in this endeavour, including the Board of Management of NSBM.

Executive Editors

June 2020

The Influence of Sustainability Reporting on Firms' Financial Performance with the Moderating Role of Board Independence: Empirical Evidence form Sri Lankan Listed Firms

A.Dilini Dissanayake¹, T.D.S.H Dissanayake², Roshan Ajward³

Abstract

Sustainability Reporting has gained prominence from the industrial developments in 1980s. One of the outcomes of industrial developments has been emergence of the link between economy, ethics and politics as well as an interaction between economic issues and moral and social issues. Consequently, managers of the business entities no longer purely focus on higher productivity, but also pay their attention on numerous environmental, ethical, social and cultural issues. Therefore, board governance practices (particularly independence of the board) have been highlighted for its paramount importance. This study aimed to investigate the link between sustainability reporting on the firms' performance with the moderating role of board independence. Accordingly, the first objective of the study was to examine the direct impact of the sustainability reporting on firms' financial performance and secondly, to examine the moderating impact of board independence towards this association between sustainability reporting on firms' financial performance. All the non-financial companies in the Colombo Stock Exchange were selected amounting to 174 for a four years period (2014 to 2017) and thereby six hundred ninety-six (696) firm-year observations have been used in the study. Using the Global Reporting Initiative (GRI) based index for measuring sustainability disclosures, it was found via the pooled OLS regression and panel regression analyses that such sustainability disclosures have a significant ($p < 0.01$) positive association on firm financial performance. Furthermore, the results of panel regression analysis also indicated that greater availability of independent directors positively ($p < 0.05$) moderated the relationship between sustainability disclosures and financial performance of firms, and this finding is consistent with the agency theory, which posits that a more independent board of directors can better monitor the firms due to their independency.

Key Words: Sustainability Reporting, Global Reporting Initiative, Board Independence, Corporate Performance

1. Introduction and Literature Review

Sustainability reporting can be regarded as a new trend incorporate reporting which integrates financial, environmental and social performance of the company into one report (Zwetsloot & Marrewijk, 2004). Sustainability reporting refers to the

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practice of measuring, disclosing and being accountable to internal and external stakeholders for organizational performance towards the goal of sustainable development (Global Reporting Initiative, 2006). It is a voluntary reporting practice which demonstrates the inclusion of social and environmental concerns in business operations as well as in the interaction with stakeholders (Marrewijk & Were, 2003). This idea of sustainability that has three dimensions stems from the triple bottom line concept which was coined by John Elkington in 1994. It is demanded and expected by investors, customers, employees, government and other stakeholders (Keeble et al., 2003). Sustainability reporting generates many benefits, for example, enhances transparency (Oliveira et al., 2010), improves stakeholders' relations (Morsing & Schultz, 2006), attracts long-term capital (KPMG, 2008), generates a favorable investment climate and manages corporate reputation (Glass, 2012). Sustainable reporting is an extensively debated subject in the extant literature, with studies focusing on two primary research directions. On one hand, the analysis focuses on the determinant factors of sustainable reporting, such as corporate governance (Ong & Djajadikerta, 2018), profitability, ownership structure, company size (Dienes, Sassen & Fischer, 2016), debt and liquidity (Kuzey & Uyar, 2017), or even board gender (Al-Shaer & Zaman, 2016). On the other hand, research focuses on the effect of reporting sustainable actions on the indicators of economic results, namely company value (Radhouane et al., 2018), cost of capital (El Ghoul et al., 2011) and operating performances (Bhatia & Tuli, 2017). Previous empirical studies reveal that publishing sustainability information can be seen as positive news and can therefore improve the firm's reputation (with positive effects of performance) and can help to avoid a decrease in share price (Bhatia & Tuli, 2017). Thus, certain studies as Bodhanwala and Bodhanwala (2018) identifies a positive relationship between sustainability and financial performance of the firm. Aras and Crowther (2008) identified that the conducting a sustainable activity allows companies to reduce their costs of capital by inducing investors to believe that the risk associated with their investment is lower. Moreover, Dhaliwal et al. (2011) provided evidence that the information published by firms with superior CSR performances generate a subsequent reduction in their costs of capital. However, Barth et al. (2017) analyzed annual reports of listed companies from South Africa, where integrated reporting is mandatory, and they identified a positive association between sustainability reporting and the companies' liquidity and cash flows. Thus, literature suggest that CSR is used to build a win-win relationship between corporations and shareholders by enhancing firms' performances (Brown & Fraser, 2006). However, contrary to aforesaid literature, Mathuva and Kiweu (2016) found a significant negative relationship between CSR and performance. While there are other studies that have found no significant relationship between these variables (Chen et al., 2015; Liu & Anbumozhi, 2009 and Stanny & Ely, 2008) as well.

Collapse of high-profile companies and financial crisis, upsurged the need of corporate governance to the world to mainly reduce the agency cost and thereby investors demand for corporate governance mechanism to be executed in a transparent manner (Beiner et al. 2004). Due to corporate scandals and financial crisis, corporate governance becomes more crucial for organizations which

emphasize the investors' protection (Beiner et al., 2004). Corporate governance can be considered as an atmosphere where it promotes trust, moral values and judgement and faith in organization practices and decision making. Specifically, this acts as a valuable guide for organizations to maintain a long lasting positive and unbroken relationship with their stakeholders of the society including shareholders, government, professionals and all the stakeholder groups (Aras & Crowther, 2008). Mechanisms of corporate governance are implemented by the "agents" appointed by its owners. Hence the responsibility of planning and execution of effective corporate governance practices within the organization lies on the shoulders of these agents (Aras & Crowther, 2008). These agents are non-other than board of directors, who are considered as the engine of the organization (Jensen & Meckling, 1976). Brennan and Solomon (2008) mentioned that board of directors are the controlling party who decide upon the disclosures and this might be highly influenced by the characteristics of board of directors (Sheila et al., 2012) Jensen and Meckling (1976) stated that agency theory provides the platform to link board governance and voluntary disclosures. It is agency theory which suggests that monitoring role of board influence the firms to disclose information to reduce the agency cost and information asymmetry (Brennan & Solomon, 2008). Moreover, the theory suggests that corporate governance strengthen internal control system of the company and provide "intensive monitoring package" to reduce opportunistic behavior of managers and thereby enhance the level of voluntary disclosures (Jensen & Meckling, 1976). Legitimacy theory also finetunes the activities of board of directors since it extends the agency theory to other stakeholders who represent the societal interests. This theory paves the path to broaden the corporate governance activities and align firms' activities to kindle interest of wider stakeholders (Shamil et al., 2014).

Among many corporate board governance characteristics, board independence receives an importance role in sustainability reporting. It is argued that non-executive directors on board restrict the opportunistic behaviour of CEO and control the board (Jensen & Meckling, 1976). Moreover, these directors support to enhance monitoring of quality of information disclosing and minimising benefits gained from some information withheld. This may lead to transparency of information and enhance the public confidence of organizations (Jensen & Meckling, 1976). It is argued by Rashid et al. (2010) that independent directors might provide skills and knowledge for the betterment of the corporation and on the other hand those directors create platforms to reduce opportunistic behavior of managers. Many researchers have found out that appointment of outside directors significantly influence the better performances of corporation (Kaplan & Reishus, 1990; Byrd & Hickman, 1992). Moreover, Rosenstein and Wyatt (1990) argued that appointment of independent directors caused to escalation of share prices of corporations. Some results stated by Daily and Dalton (1992) and Tian and Lau (2001) who mentioned that independent director's impact positively on economic performances. However, literature on this area is mixed since few researchers could not find any systematic association between economic performances and independent directors (Baysinger & Butler, 1985; Chaganti et al., 1985; Rechner & Dalton, 1986). Apart from that it is

said that board independence has significant impact on sustainability reporting. Ionel-Alina, Emil and Maria (2012) found that impact of independent directors on sustainability disclosure is considerable and their role enhances the transparency of environmental information and the objectivity. Lattemann et al. (2009) who have done a research using sample of 68 large firms from China and India found that there is significant and positive impact on sustainability and CSR disclosure. Similarly, Herda, Taylor and Winterbotham (2012) found significant positive relationship between non-executive directors and sustainability reporting among the largest 500 companies in USA. The authors mentioned that their findings support the suggestion of monitoring function of independent directors improves the transparency of organisation through voluntary disclosures. Ramadhan (2014) also supported the same finding of existence of significant relationship between independent directors on board and voluntary disclosure level. Since extant literature provides enough evidence on the impact of board independence on both financial performances and sustainability reporting, it can be argued that higher number of independent directors leads to higher level of sustainability reporting and thereby enhances firms' performances.

Gray et al. (2010), bear the idea that sustainable companies are likely to show better financial results in their performances. This is due to sustainability reports that pave path to identify whether company is sustainable or not and it will help to reduce costs associated with waste, liability and clean up (Gray et al., 2010). With reference to the extant literature, although the importance of sustainability reporting is immense which is benefited in different ways for an organization, still Sri Lankan firms have not shown much stimulation in this area (Liyanagedara & Senaratne, 2009). Thus, voluntary disclosure level is not at a satisfactory level in Sri Lanka compared to developed markets. Especially, the sustainability reporting is rather new chapter to Sri Lankan corporate sector (Shamil et al., 2014). Since sustainability reporting is not a mandatory requirement for listed companies in Sri Lanka, board of directors may not give a considerable weight to it (Dharmadasa, Gamage & Herath, 2014). Due to non-mandatory requirement, there are considerable variation in sustainability reporting in the corporate sector such as high to low (Dissanayake, Tilt & Xydias-Lobo, 2016). Since the primary task of any company is to oversee and exercise its control over the management in ensuring the stakeholders interests (Zhang, 2012), absence of sustainability disclosure is one of the necessities of stakeholders and may damage the image of the company in the society and loose its public faith. Lack of disclosure on sustainability creates an information asymmetry for stakeholders and this ultimately results in an inefficient resource allocation which has unfavorable impact on economy at the end (Mapparessa et al., 2017). In this situation, this paper investigates the role of sustainability in enhancing economic performances of corporations. Further, taking the paramount importance of board independence into consideration, this study aims to identify the behaviour of board independence as a moderating role to the relationship between sustainability reporting and firm performances. As there is dearth of studies which tested the effect of board independence over the relationship between sustainability and firm performances, findings of this study might contribute to extant literature with fruitful insights. Accordingly, based on the contemporary importance, availability of contradictory

evidence and dearth of studies observed in the study area, the main issue addressed in this study is “Does board independence moderate the association between sustainability reporting on performance?”. Based on this problem statement, as the first objective, the study attempts to measure the level of sustainability reporting and firms’ performances among non-financial listed companies in Sri Lanka. Secondly, this study aims to investigate the association between sustainability reporting and firms’ performances. Finally, it examines the moderating role of board independence over the aforesaid relationship.

2. Significance of the Study

According to extant research, there are concerns on sustainability reporting in terms of social and environmental indicators in Sri Lanka and considerable variation in the levels of reporting could be seen among large to medium scale corporations as well (Dissanayake, Tilt & Lobo, 2016). Moreover, most of the studies have used one-dimensional measure to capture the level of sustainability or consider the merely the availability of sustainability reports only. In contrast, this study uses a comprehensive sustainability index to measure its level using the Global Reporting Initiative (GRI) G3 framework for all the listed companies in Sri Lanka except financial firms. Apart from that, to the best of our knowledge, there is no study that has taken place in Sri Lanka to test the moderating role of board independence on the relationship between sustainability reporting and firm’s performances. Thus, it is expected that this study will contribute to the extant local and international literature by filling these gaps observed. Moreover, findings of this study might provide fruitful insights to the policymakers and relevant decision makers.

3. Methodology

This section discusses the research approach, population, study sample, hypotheses, operationalization of variables and analytical strategies proposed.

2.1 Conceptual Framework

The conceptual framework based on the extant literature is shown in Figure 1 as follows.

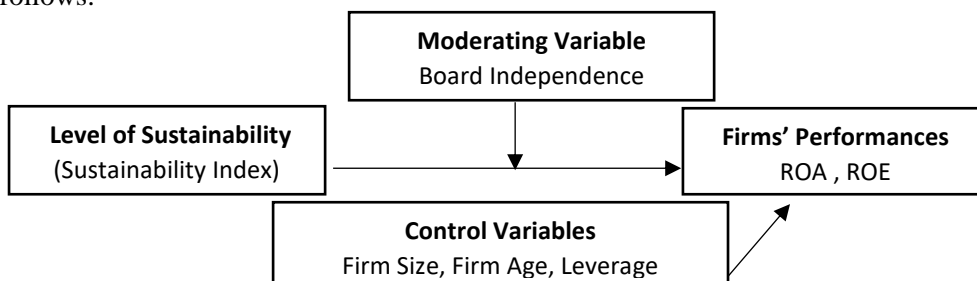


Figure 1: Conceptual Framework

Source: Author Constructed

This study used the quantitative research approach because it examines the current level of sustainability reporting and firms' performances as well as investigates the relationship between these two constructs, which is therefore deemed appropriate. Other studies too have used a quantitative approach in achieving similar objectives as of the current study (Cho & Patten, 2017; Hahn & Lulfs, 2014). As of 31st March 2017, there were 222 listed non-finance companies, which forms the population of this study. From those, 31 companies removed which have different financial period (31st December) and 17 companies were not taken due to unavailability of information. Thus, 174 companies have been selected as the final sample of the study for the period of 2014 to 2017 and thereby 696 observations were made.

3.2 Development of Hypotheses

Publishing sustainability information can be seen as positive news and can therefore improve the firm's reputation (Bhatia & Tuli, 2017). To this end, certain studies have identified that significant association between sustainable reporting and operational performance (Bodhanwala & Bodhanwala, 2018; Barth et al., 2017). Thus, in determining the impact of sustainable reporting on firms' performance, the following hypothesis is developed and tested in this study

H1: There is a significant association between sustainable reporting and economic performances of firms.

It is said that independent directors on board restrict the opportunistic behaviour of CEO and control the board (Jensen & Meckling 1976). Further, they are dedicated to monitoring of voluntary disclosures and thereby supports to increase public confidence as well. On the other hand, many researchers found that independent directors' impact positively on economic performances (Daily & Dalton, 1992; Tian & Lau, 2001). Thus, this research was designed to investigate the moderating role of independent directors to the relationship between sustainability reporting and performances and to achieve this, following hypothesis have been developed:

H2: The Board independence positively moderates the association between sustainability reporting and financial performance of firms.

3.3. Operationalization

Level of sustainability reporting ($SR_{i,t}$) was measured based on Global Reporting Initiative (GRI) G3 framework which is one of most comprehensive frameworks prevailing among other similar indexes which covers considerable area of sustainability via its indicators (Ortiz & Martin, 2014) and it is currently the most widely accepted model in terms of Sustainability Reporting (Fuente et al., 2017). 79 indicators that consist of Economic, Environment and Social dimensions are considered for data collection on sustainability. The scale adopted from Al Tuwajri, Christensen and Hughes (2004) was used to collect data where a maximum of 3 points

was given for detailed *quantitative* disclosures related to indicators were made, while a score of 2 was assigned for non-quantitative but specific information related to indicators were disclosed, and lowest value of 1 was given for general qualitative disclosures, and finally a score of 0 was assigned for firms which has not disclosed any information related to the relevant indicators. Under dependent variables, the study used Return of Assets (ROA) to represent firm financial performance. $ROA_{i,t}$ was calculated as: $(\text{Net Income} + \text{Interest expenses}) / \text{Total Assets}$ (Senanayake & Ajward, 2017) The board independence ($BI_{i,t}$), the moderating variable in the study was operationalized as the proportion of independent non-executive directors on the board to the total board of directors (Al-Shammari & Al-Sultan, 2010). In terms of control variables, the study used Firm size ($FS_{i,t}$) which was measured as the Natural logarithm of total assets for the firm i at the end of the period t (Kuzey & Uyar, 2017), Firm age ($FA_{i,t}$) which was operationalized as Number of years from incorporation for the firm i and until the end of the period t (Bhatia & Tuli, 2017) and Leverage ($LEV_{i,t}$) measured through Ratio of total debt at the end of the period to the total assets at the end of the period t of firm i . (Bozzolan et al., 2015)

3.4 Data Analysis Strategies

This section discusses the analytical strategies used in the study to achieve its objectives. Data cleaning and screening strategies were used before performing both the descriptive and regression analyses. Variables were winzorized in order to address the issue of outliers. Measures of central tendency and dispersion such as mean, median and standard deviation were estimated to assess the level of sustainability reporting and firms' performances to achieve the first objective of this study. Next, for the second and third objective of this study, which was to find out the impact of sustainability reporting on firms' performances, and the moderating role of board independence, correlation and multivariate regression analyses were performed.⁴

4. Data Analysis

Table 1 shows the measurements describing the distribution of values associated with the main variables included in the study. The variable of sustainability reporting ($SR_{i,t}$) shows a median and mean value of 7.1% and 35.2% respectively, which indicates a quite low value and high variation among the listed non-financial companies. Next, the average value of firm performance ($ROA_{i,t}$) is 0.064 and median value is 0.061. Further, it ranges between -0.01 to 0.147. Board independence ($BI_{i,t}$) is 66.8% on average signifying that the boards consist of 66.8% of independent directors. In terms of the control variables, mean value for firm size ($FS_{i,t}$) is 21.697 (natural logarithm). Average for the firm leverage ($LEV_{i,t}$) is 0.32, while Firm Age ($FA_{i,t}$) is 45.618 years on average among listed non-financial firms in Sri Lanka.

⁴ In performing these analyses, several assumptions were tested for normality, multicollinearity, homoscedasticity and no anomalies were found.

Table 1: Descriptive Statistics

Variable*	Obs.	Mean	Median	Std. Dev.	Min	Max
$SR_{i,t}$	696	.352	0.071	.0443	.011	.256
$ROA_{i,t}$	696	.064	0.061	.05	-.01	.147
$ROE_{i,t}$	696	.072	.069	.083	-.067	.205
$BI_{i,t}$	696	.668	0.666	.196	0	1
$FS_{i,t}$	696	21.697	21.79	1.162	19.66	23.39
$LEV_{i,t}$	696	.32	0.31	.207	.03	.65
$FA_{i,t}$	696	45.618	35	29.365	16	106

*Definitions of these variables are presented in Section 3.3.

Table 2 presents the results of the correlation analysis on the relationships between the selected variables of the study. Accordingly, there is a significant ($p < 0.05$) positive association between level of sustainability reporting ($SR_{i,t}$) and firm performance ($ROA_{i,t}$). Further, there is a significant ($p < 0.05$) positive association between board independence ($BI_{i,t}$) and firm performance ($ROA_{i,t}$). Moreover, there is a significant ($p < 0.05$) positive association between firm size ($FS_{i,t}$) and firm performance ($ROA_{i,t}$). However, there is a significant ($p < 0.05$) negative association between leverage ($LEV_{i,t}$) and firm performance ($ROA_{i,t}$). Further, there is a significant ($p < 0.05$) positive association between firm age ($FA_{i,t}$) and firm performance ($ROA_{i,t}$).

Table 2: Correlation Analysis

	$ROA_{i,t}$	$ROE_{i,t}$	$SR_{i,t}$	$BI_{i,t}$	$SR_{i,t} \times BI_{i,t}$	$FS_{i,t}$	$LEV_{i,t}$	$FA_{i,t}$
$ROA_{i,t}$	1							
$ROE_{i,t}$	0.917*	1						
$SR_{i,t}$	0.202*	0.194*	1					
$BI_{i,t}$	0.111*	0.045	0.054	1				
$SR_{i,t} \times BI_{i,t}$	0.232*	0.217	0.977*	0.197*	1			
$FS_{i,t}$	0.127*	0.093	0.424*	-0.076	0.414*	1		
$LEV_{i,t}$	-0.103*	-0.059	0.088	0.007	0.098*	0.099*	1	
$FA_{i,t}$	0.027*	0.021	-0.037	-0.031	-0.031	0.174*	-0.172*	1

The definitions of these variables are presented in Section 3.3.

* $p < 0.05$; ** $p < 0.01$

Table 3 and 4 presents the ordinary regression analysis and panel regression analysis respectively. There is a systematic ($p < 0.01$) positive association between sustainability reporting ($SR_{i,t}$) and ROA ($ROA_{i,t}$) under both OLS regression and panel regression analysis. Furthermore, the results also indicated that greater availability of independent directors positively ($p < 0.05$) moderates the relationship (under the panel regression analysis) between sustainability disclosures and financial performance of firms. Moreover, the firm leverage ($LEV_{i,t}$) shows a systematic ($p < 0.01$) negative association between firm performance ($FP_{i,t}$) under both OLS and panel regression

analysis. Thereby, it can be state that both hypothesis of the study are supported by the obtained results.

Table 3: OLS Regression Analysis

Models	ROA (Model 1)			ROE (Model 2)		
	Coeff.	Std. Error	VIF	Coeff.	Std. Error	VIF
$SR_{i,t}$	0.037**	0.002	1.17	-0.069	0.033	1.69
$BI_{i,t}$	0.007	0.501	1.08	-0.021	0.019	1.78
$SR_{i,t} \times BI_{i,t}$	0.099	0.303	1.36	0.182	0.055	1.35
$FS_{i,t}$	0.002	0.141	1.32	0.001	0.003	1.56
$LEV_{i,t}$	-0.032**	0.000	1.07	-0.033	0.015	2.26
$FA_{i,t}$	0.001	0.974	1.08	0.000	0.000	1.06
F Value	3.587***			2.633***		
Adjusted R ²	24.2%			11.2%		

The definitions of these variables are indicated under section 3.3

* $p < 0.05$; ** $p < 0.01$

Table 4: Panel Regression Analysis

Models	ROA (Model 1)		ROE (Model 2)	
	Coeff.	Std. Error	Coeff.	Std. Error
$SR_{i,t}$	0.299**	0.008	0.078	0.097
$BI_{i,t}$	0.001*	0.031	-0.0175	0.056
$SR_{i,t} \times BI_{i,t}$	0.053*	0.041	-0.126	0.142
$FS_{i,t}$	0.011	0.289	0.039	0.018
$LEV_{i,t}$	-0.114**	0.000	-0.185**	0.034
$FA_{i,t}$	0.001	0.451	0.004	0.002
F Value	5.59***		5.58***	
Adjusted R ²	11.8%		0.09%	
Prob>chi2	0.000		0.000	

The definitions of these variables are indicated under section 3.3

* $p < 0.05$; ** $p < 0.01$

3. Discussion

The level of sustainability (mean: 35.2%; median: 7.1%) is still not at a satisfactory level among listed non-financial firms in Sri Lanka. However, this level is slightly higher than Pakistan and Bangladesh whose sustainability reporting levels are 32.71% and 22.3%, respectively (Muttakin, Khan & Subramaniam, 2015). Liyanagedara and Senaratne (2009) who have examined compliance to GRI guidelines among listed companies in Sri Lanka, presented in their research findings that level of compliance to GRI in disclosing sustainability is low among public listed companies and it varies largely among companies. This is true for the study since there is high standard deviation (0.443) recorded for level of sustainability disclosures in summary statistics. One of the main reasons for low level of sustainability reporting

is the nature of the regulation over sustainability reporting in Sri Lanka. Since sustainability reporting is still non mandatory, companies might not pay considerable attention on this (Shamil et al., 2014).

Both OLS and panel regression showcase that sustainability reporting influences for better economic performances in a firm and this finding supported the first hypothesis of this study. This result is consistent with the Bhatia and Tuli (2017) as they identified that the publishing sustainability information can be seen as positive signal and can therefore improve the firm's reputation (with positive effects of performance) and further helps to avoid a decrease in share price. Further, Bodhanwala and Bodhanwala (2018) and Clarkson et al. (2013) found similar positive relationships between sustainability and financial performance. The main reason for this situation could be the fact that higher level of sustainability reporting uplifts the reputation of the entity and make a favorable impression on stakeholders which in turns improves the performances (Alipour et al., 2019). Besides that, Gray et al. (2010), bear the idea that sustainable companies are likely to show better financial results in their performances. This is due to sustainability reports that pave path to identify whether company is sustainable or not and it will help to reduce costs associated with waste, liability and clean up (Gray et al., 2010). Furthermore, the findings of this study indicate that board independence positively moderates the association between sustainability reporting and performances, which is consistent with Alipour et al. (2019) who found that board independence significantly moderates the aforesaid relationship. Similarly, Kao, Hodgkinson and Jaafar (2018) have also generated the same results by finding out that board independence significantly affects firms' performances in listed companies of Taiwan. Independent directors play no role in daily operations of the business but improves the monitoring of board members and subdue opportunistic behavior of directors. Independent directors put more pressure on managers to enhance sustainability reporting to align actions of the entity with societal values and expectations which ultimately increase organizational legitimacy (Haniffa & Cooke, 2005; Eng & Mak, 2003). In other words, independent directors play a significant role in implementing strategies to enhance voluntary disclosures to protect interest of different stakeholder groups and thereby influence performances of corporations (Klein, 2002). In terms of control variables, negative impact of leverage on firm performances is consistent with the results of Hovakimian et al. (2004) who stated that leverage may negatively affect performances in the long run. Similarly, Alipour et al. (2019) found out that firm leverage has negative impact on all the measurements of performances in listed Iranian countries over six years' period. However, this result is contradictory to Palaniappan (2017) who found no significant association between them.

4. Conclusion

It is debated in literature that sustainability reporting is expected to increase public confidence in organization and more trustworthiness in managing resources such as human, finance, etc. which have direct impact on performance of the entity. With the

low level of sustainability reporting in Sri Lanka, investigating on influence of sustainability reporting on firm performances is contemporarily important. Since there's dearth of studies to examine the role of board independence as a moderator to the association of sustainability reporting and firm performances and considering the paramount

importance of it, this study expanded its scope to investigate the importance of board independence on the aforesaid relationship. All the listed non-financial companies amounted to 174 were used in the study which covered 16 sectors in Colombo Stock Exchange. According to descriptive statistics, the level of sustainability reporting in line with GRI G3 guidelines was not at a satisfactory level. However, the level of board independence is at a satisfactory level, yet below the level of developed economies. Moreover, OLS regression analysis revealed that sustainability disclosures have a significant positive impact on firms' financial performance. Furthermore, it was evident that greater availability of independent directors positively moderated the relationship between sustainability disclosures and financial performance of firms which is a strong affirmation for agency theory. In terms of policy implications, it could be suggested that the regulators and the policymakers need to take necessary steps to promote sustainability disclosures among listed companies in Sri Lanka as it has a positive impact on economic performances of corporations from which stakeholders would gain numerous benefits. It should be noted that present study is limited to listed companies in Sri Lanka due to the convenience of access to reliable information, and thus this scope could be widened to non-listed companies in future studies. Further, source of data collection can be extended to different sources as such as standalone reports as well as corporate websites.

References

- Alipour, M, Ghanbari, M, Jamshidinavid, B & Taherabadi, A 2019, 'Does board independence moderate the relationship between environmental disclosure quality and performance? Evidence from static and dynamic panel data', *Corporate Governance*, 19, vol. 3, pp. 580-610.
- Al-Shaer, H & Zaman, M 2016, 'Board gender diversity and sustainability reporting quality', *Journal of Contemp. Account. Econ*, vol. 12, pp. 210–222.
- Al-Shammari, B & Al-Sultan, W 2010, 'Corporate governance and voluntary disclosure in Kuwait', *International Journal of Disclosure and Governance*, vol.7, no. 3, pp.262 – 280.
- Al-Tuwaijri, SA, Christensen, TE & Hughes, KE 2004, 'The Relations among environmental disclosure, environmental performance, and economic

performance: a simultaneous equations approach', *Accounting, Organizations and Society*, vol. 29, pp. 447 – 471.

Aras, G & Crowther, D 2008, 'Governance and sustainability: An investigation into the relationship between corporate governance and corporate sustainability', *Management Decision*, vol. 46, no. 3, pp.433-448.

Barth, ME, Cahan, SF, Chen, L & Venter, ER 2017, 'the economic consequences associated with integrated report quality: Capital market and real effects', *Account. Organ. Soc.*, vol. 62, pp. 43–64.

Baysinger, BD & Butler, HN 1985, 'Corporate governance and the board of directors: performance effects of changes in board composition', *The Journal of Law, Economics, and Organization*, vol. 1 no. 1, pp. 101-124.

Beiner, S, Drobetz, W, Schmid, MM & Zimmerman, H 2004, 'An integrated framework of corporate governance and firm valuation – evidence from Switzerland', working paper No. 34/2004, *European Corporate Governance Institute, Brussels*.

Brennan, NM & Solomon, J 2008, 'Corporate governance, accountability and mechanisms of accountability: an overview', *Accounting, Auditing and Accountability Journal*, vol. 21, no. 7, pp. 885-906.

Brown, J & Fraser, M (2006), 'Approaches and perspectives in social and environmental accounting: an overview of the conceptual landscape', *Business Strategy and the Environment*, vol. 15 no. 2, pp. 103-117.

Bhatia, A & Tuli, S 2017, 'Corporate attributes affecting sustainability reporting: An Indian perspective', *Int. J. Law Manag.*, vol. 59, pp. 322–340.

Bodhanwala, S & Bodhanwala, R 2018, 'Does corporate sustainability impact firm profitability? Evidence from India', *Manag. Decis.* Vol. 56, pp. 1734–1747.

Bozzolan, S, Fabrizi, M, Mallin, CA & Michelon, G 2015, 'Corporate Social Responsibility and Earnings Quality: International Evidence', *the International Journal of Accounting*, vol. 50, pp. 361-396.

Byrd, JW & Hickman, KA 1992, 'Do Outside Directors Monitor Managers? Evidence from Tender Offer Bids', *Journal of Financial Economics*, vol.32, no. 2, pp. 195-222.

Chaganti, RS, Mahajan, V & Sharma, S 1985, 'Corporate Board Size, Composition and Corporate Failures in the Retailing Industry', *Journal of Management Studies*, vol. 22, no.4, pp. 400-417.

Chen, L, Tang, O & Feldmann, A 2015, 'Applying GRI reports for the investigation of environmental management practices and company performance in Sweden, China and India', *Journal of Cleaner Production*, vol. 98, pp. 36-46.

Cho, CH & Patten, DM 2007, 'the role of environmental disclosures as tools of legitimacy: Are search note', *Account. Organ. Soc.*, vol. 32, pp. 639–647.

Clarkson, PM, Li, Y, Richardson, GD & Vasvari, FP, 2008, 'Revisiting the relation between environmental performance and environmental disclosure: an empirical analysis', *Account. Organ., Soc.*, vol.33, pp. 303 – 327.

Daily, CM & Dalton, DR 1992, 'the Relationship between Governance Structure and Corporate Performance in Entrepreneurial Firms', *Journal of Business Venturing*, vol. 7, no. 5, pp. 375-386.

Dissanayake, D, Tilt, C & Xydias-Lobo, M 2016, 'Sustainability reporting by publicly listed companies in Sri Lanka', *Journal of Cleaner Production*, vol. 129, pp. 169-182.

Dhaliwal, DS, Li, OZ, Tsang, A & Yang, YG 2011, 'Voluntary non financial disclosure and the cost of equity capital; the initiation of corporate social responsibility reporting', *Account. Rev.*, vol. 86, pp. 59–100.

Dharmadasa, P, Gamage, P & Herath, SK 2014, 'Corporate governance, board characteristics and firm performance: evidence from Sri Lanka', *Journal of South Asian Development*, vol. 21, no. 1, pp. 7-31.

Dienes, D, Sassen, R, & Fischer, J 2016, 'What are the drivers of sustainability reporting?' *A systematic review. Sustain. Account. Manag. Policy Journal*, vol. 7, pp. 154–189.

El Ghoul, S, Guedhami, O, Kwok, CC & Mishra, DR 2011, 'Does corporate social responsibility affect the cost of capital?', *J. Bank. Finance*, vol. 35, pp. 2388–2406.

Eng, L & Mak, Y 2003, 'Corporate governance and voluntary disclosure', *Journal of Accounting and Public*, vol. 22, pp.325–345.

Fuente, JA, Garcia-Sanchez, IM, & Lozano, MB 2017, 'The role of board of directors in the adoption of GRI guidelines for the disclosure of CSR information', *Journal of Cleaner Production*, vol. 141, pp. 737 – 750.

Glass, J. 2012, 'The state of sustainability reporting in the construction sector, Smart and Sustainable Built Environment', vol. 1, no. 1, pp. 87-104.

Global Reporting Initiative 2006, 'Sustainability reporting guidelines', 3, available at: [www. Global reporting.org/resourcelibrary/G3-Guidelines-Incl-Technical-Protocol.pdf](http://www.Globalreporting.org/resourcelibrary/G3-Guidelines-Incl-Technical-Protocol.pdf) (accessed 25 August 2013).

Gray, R, Javad, M, Power, DM & Sinclair, CD 2010, 'Social and environmental disclosures and corporate characteristics: a research note and extension', *Journal of Business, Finance and Accounting*, vol. 28 no. 3/4, pp. 327-356.

Hahn, R & Lulfs, R. 2014, 'legitimizing negative aspects in GRI-oriented sustainability reporting: A qualitative analysis of corporate disclosure strategies', *J. Bus. Ethics*, vol. 123, 401-420.

Haniffa, R, M & Cooke, T, E 2005, 'The impact of culture and governance on corporate social reporting', *Journal of Accounting and Public Policy*, vol. 24, no. 5, pp. 392-430.

Herda, D, Taylor, M & Winterbotham, G 2012, 'The Effect of Board Independence on the Sustainability Reporting Practices of Large U.S. Firms', *Issues in Social and Environmental Accounting*, vol. 6, no. 3/4, pp. 178-197.

Hovakimian, A, Hovakimian, G & Tehranian, H 2004, 'Determinants of target capital structure: the case of dual debt and equity issues', *Journal of Financial Economics*, vol. 71, no. 3, pp. 517-540.

Ionel-Alina, I, Emila, P & Mariaa, I 2012, 'Environmental Reporting and Good Practice of Corporate Governance: Petroleum Industry Case Study', *Procedia Economics and Finance*, vol. 3, pp.961 – 967.

Jensen, MC & Meckling, WH 1976, 'Theory of the firm: managerial behavior, agency costs and ownership structure', *Journal of Financial Economics*, vol. 3, no. 4, pp. 305-360.

Keeble, JJ, Topioli, S & Berkeley, S 2003, 'Using indicators to measure sustainability performance at a corporate and project level', *Journal of Business Ethics*, vol. 44, no. 2, pp. 149-158.

Kaplan, SN & Reishus, D 1990, 'Outside Directorship and Corporate Performance', *Journal of Financial Economics*, vol. 27, no. 2, pp. 389-410.

KPMG. The Road Ahead. The KPMG Survey of Corporate Responsibility Reporting 2017, 2017. Available online:<https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2017/10/kpmg-survey-ofcorporate-responsibility-reporting-2017.pdf>

Kao, M, Lynn, H & Jaafar, A 2018, 'Ownership structure, board of directors and firm performance: evidence from Taiwan', *Corporate Governance*, vol. 19, no. 1, 189-216.

Kuzey, C & Uyar, A 2017, 'Determinants of sustainability reporting and its impact on firm value: Evidence from the emerging market of Turkey', *J. Clean. Prod.*, vol. 143, pp. 27–39.

Klein, A 2002, 'Audit committee, board of director characteristics, and earnings management', *Journal of Accounting and Economics*, vol. 33 no. 3, pp. 375-400.

Lattemann, C, Fetscherin, M, Alon, I, Li, S & Schneider, A 2009, 'CSR communication intensity in Chinese and Indian multinational companies', *Corporate Governance: An International Review*, vol. 17, no. 4, pp. 426-442.

Liyanagedara, K & Senaratne, S 2009, 'Corporate sustainability reporting in Sri Lanka', Conference Proceedings, *The Sixth International Conference on Business Management*, Faculty of Management Studies and Commerce, University of Sri Jayewardenepura.

Liu, X & Anbumozhi, V 2009, 'Determinant factors of corporate environmental information disclosure: an empirical study of Chinese listed companies', *Journal of Cleaner Production*, vol. 17, no. 6, pp. 593-600.

Mapparessa, N, Bakry, M, Totanan, C, Mile, Y & Arumsari, A 2017, 'The effect of political visibility, company characteristics and gender Diversity to sustainability report Disclosure', *International Journal of Civil Engineering and Technology (IJCIET)*, vol. 8, no. 9, pp. 1019-1028.

Marrewijk, MV & Were, M 2003, 'Multiple levels of corporate sustainability', *Journal of Business Ethics*, vol. 44, no. 2, pp. 107-119.

Mathuva, DM & Kiweu, JM 2016, 'Cooperative social and environmental disclosure and financial performance of savings and credit cooperatives in Kenya', *Advances in Accounting*, vol. 35, pp. 197-206.

Morsing, M & Schultz, M 2006, 'Corporate social responsibility communication: stakeholder information, response and involvement strategies', *Business Ethics: A European View*, vol. 15, no. 4, pp. 323-338.

Muttakin, M, Khan, A & Subramaniam, N 2015, 'Firm characteristics, board diversity and corporate social responsibility: Evidence from Bangladesh', *Pacific Accounting Review*, vol. 27, no. 3, pp.353-372.

Ong, T & Djajadikerta, HG 2018, 'Corporate governance and sustainability reporting in the Australian resources industry: An empirical analysis'. *Soc. Responsib. J.*

Oliveira, L, Lima Rodrigues, L & Craig, R 2010, 'Intellectual capital reporting in sustainability reports', *Journal of Intellectual Capital*, vol. 11, no. 4, pp. 575-594.

Ortiz, E & Martin, S 2014, 'Global Reporting Initiative (GRI) as recognized guidelines for sustainability reporting by Spanish companies on the IBEX 35: Homogeneity in their framework and added value in the relationship with financial entities', *Intangible Capital*, vol. 10, no. 5, pp.1-18.

Palaniappan G 2017, 'Determinants of corporate financial performance relating to board characteristics of corporate governance in Indian manufacturing industry An empirical study', *European Journal of Management and Business Economics*, vol. 26, no. 1, pp. 67-85.

Radhouane, I, Nekhili, M., Nagati, H & Pache, G 2018, 'Customer-related performance and the relevance of environmental reporting', *J. Clean. Prod.*, vol. 190, pp. 315–329.

Rashid, A, De Zoysa, A, Lodh, S & Rudkin, K 2010, 'Board Composition and Firm Performance: Evidence from Bangladesh' *Business and Finance Journal*, vol. 4, no. 1, pp. 76-95.

Ramadhan, S 2014, 'Board Composition, Audit Committees, Ownership Structure and voluntary disclosure: Evidence from Bahrain', *Research Journal of Finance and Accounting*, vol. 5, no. 7.

Rechner, PL & Dalton, RD 1986, 'Board Composition and Shareholders Wealth: An Empirical Assessment', *International Journal of Management*, vol. 3, no. 2, pp. 86-92.

Rosenstein, S & Wyatt, JG, 1990, 'Outside Directors, Board Independence and Shareholders Wealth', *Journal of Financial Economics*, vol. 26, no. 2, pp. 175-191.

Senanayake PMCHK & Ajward R, 2017, 'Selected board characteristics and performance of listed Hospitality firms in Sri Lanka', *CA Journal of Applied Research*, vol. 1, pp. 20-37.

Shamil, M, Shaikh, J, Ho, P & Krishnan, A 2014, 'The influence of board characteristics on sustainability reporting : Empirical evidence from Sri Lankan firms', *Asian Review of Accounting*, vol. 22, no. 2, pp.78-97.

Sheila, NH, Rashid, HM, Mohammad, A.A & Meera, A.K 2012, 'Impact of Corporate Governance on Social and Environmental Information Disclosure of Malaysian Listed Banks: Panel Data Analysis', *Asian Journal of Finance and Accounting*, vol. 4, no. 1.

Stanny, E & Ely, K 2008, 'Corporate environmental disclosures about the effects of climate change', *Corporate Social Responsibility and Environmental Management*, vol. 15, no. 6, pp. 338-348.

Tian, JJ & Lau, C 2001, 'Board Composition, Leadership Structure and Performance of Chinese Shareholding Companies', *Asia Pacific Journal of Management*, vol. 18, pp. 245-263.

Vafaei, A, Ahmed, K & Mather, P 2015, 'Board diversity and financial performance in the top 500 Australian firms', *Australian Accounting Review*, vol. 25, no. 4, pp. 413-427.

Zhang, L 2012, 'Board demographic diversity, independence, and corporate social performance', *Corporate Governance*, vol. 12, no. 5, pp. 686-700.

Zwetsloot, GIJM & Marrewijk, MNAV 2004, 'From quality to sustainability', *Journal of Business Ethics*, vol. 55, pp. 79-82.

Political communication through non-political social media: Testing an expressive citizenship model

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Abstract

Substantial studies have investigated nature of citizenship and various aspects of conceptualization of citizenship from informed, dutiful to self-actualizing models. The main reason to this shift is political changes and their impact on civic engagement in political participation. Young generation in digital era is identified as transformed citizens from informed to expressive citizens with heavy use of social media, especially Facebook. This study examined the association between young Facebook users' social and entertainment expressive Facebook use and their interactive political expression as an alternative model to traditional citizenship models.

Keywords—*Citizenship models, Expressive use, Political expression, Social media*

1. Introduction

The debate on “a good citizen” and to what extent good citizenship is malleable has been subjected to change over time and shaped by political and social forces. Since the behavior of citizens is affected by rapidly changing political systems, the notion of good citizenship has changed over the course of history. The sine qua non of good citizenship today as socially constructed and maintained are likely to be changed with evolving social and technological conditions (Bennett et al, 2009). Further, with the ascent of social media, increasing scholarship has contended that democratic citizenship models have shifted from informed citizenship to expressive citizenship (Yu and Oh, 2018). This is mainly due to the recent statistics which shows that people are less politically engaged than in the past because they increasingly turn away from news consumption while embracing social- and entertainment-related activities especially among young generation (Stoycheff et al, 2016). Hence new forms of citizenship models are important as this situation should not be viewed as a decline but rather as a change in the form of political engagement which has to be studied (Kligler-Vilenchik, 2017).

The conversion from traditional “dutiful citizen” model to new “actualizing citizenship” model suggests that expression related to social and personal interests within peer-to-peer networks is likely to trigger political behaviors. (Yu and Oh, 2018) Technological improvements and the increased opportunities offered by digital

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media for people to express interests and cultivate social relations lay the foundation for expressive forms of civic and political participation. Therefore, this study focused on how non-political expressive acts on Facebook are associated with political participation to understand the newest form of expressive citizenship model.

2. Literature Review

2.1 Traditional vs new citizenship models

Citizens of any nation act their role in public life depending on the internal and external environmental factors, hence not in static nature. They act differently and most often based on political culture and opportunities of their time and place (Schudson, 1998). With globalization and industrialization, the changes are rapid. Therefore, scholars have done many studies on various citizenship models describing various aspects of civic engagement. In the middle of the twentieth century these models were introduced as hierarchical, dutiful, politically formal citizenship and towards the end of it to more personally defined and self-expressive models (Bennett, 2003). These different citizenship models are in other words theories or systematic set of ideas that can help which civic perceptions or behaviors cluster together, and how they should be interpreted (Kligler-Vilenchik, 2017). He also states that like in other theories, citizenship models also have their own descriptive and normative aspects. Descriptively it explains current voting turn-outs, or levels of young people's political knowledge, yet closely connected to normative assumptions such as how should a "good citizen" act.

The concept of citizenship has three components named membership, participation, rights and duties; that stands and fall together (Bellamy, 2008). As Bellamy (2008) explained Membership is tied to a political community. Rights and duties are attached to this membership together with the possibility of free and equal participation in the community's political processes. Therefore, citizenship is best explained when it is tight to authority.

Some argued that citizenship can refer to any group, but where citizenship is enacted is commonly understood as political (Bosniak, 2006). When defining politics which is socially constructed "Power" is an important component of the concept, especially if linking political participation to an understanding of citizenship as a relation to some kind of authority. Political community as an ensemble of people concerned with the organisation of society make sense of these concerns in a similar way. When people participate and act upon shared meanings, address issues of the structure of society and the just division of its common goods, they enter into the practice of citizenship.

In theoretical aspect, the early theories such as representative liberal theory explain that a good citizen is the informed voter, who can choose intelligently between candidates and parties (Ferree et al, 2002) whereas, in discursive theory good citizens participate in public discourse, and do so while maintaining civility and mutual respect. With multiplicity of definitions of a good citizen, the new citizenship models explain that a good citizen is either informed and membership-oriented, or

participatory and expressive (Kligler-Vilenchik, 2017) However this is also under criticisms. A good citizen can be the same who vote and is informed. Also the one most likely to engage in participatory modes of politics (Cohen & Kahne, 2012). The informed citizenship are knowledgeable participants in several aspects of political life. Thus, only informed citizens can enable a healthy democracy. In dutiful citizenship models, the motivation for political action is more strongly based on a sense of duty or obligation to defined social groups (Bennett, 2003)

2.2 Social media and citizenship models

It is said that individualism is to be blamed for civic withdrawal away from formal politics and according to Bauman (2001) this equals to citizens' withdrawal from community sensibilities as well. It seems that political participation has increasingly become part of an individual self-realization project which has opened new arenas for political participation. As explained by Dahlgren (2001), these arenas seem to be more short-lived and single-issue oriented such as signing petitions, voicing concerns and protests by creating and joining new groups and associations outside the Parliament. The political engagement is therefore mobilized around one particular issue, attracting new forms of temporary collectives.

In informed or dutiful citizenship models, the role of (traditional) media was mostly as a source of information mainly including information like political ads, and primarily the news. The dutiful citizen's political expression is limited and aimed at specific institutional target through voting, or through membership in formal civic organizations (Kligler-Vilenchik, 2017). In these traditional models the media is primarily receiving political news through newspapers, television or radio.

In the new era of digital age peer socializing and entertainment activities on platforms like Facebook have become deeply woven into the fabric of social media users' daily lives. According to statistics in Sri Lanka, 86.65% of Facebook users are recorded in October 2019 (Statcounter, 2019). People use Facebook mainly for social or entertainment purposes. However, in the context of changing citizenship models, this non-political Facebook use has a significant role to play in political participation.

As stated by Zuckerman, (2014) those who use digital media to share perspectives on a daily basis (e.g., sharing a photo about lunch) are more likely to employ the same tools to engage in civic activities (e.g., sharing photos about collective actions). Therefore social expressive use of Facebook (disclosure of everyday personal experiences related to school, work, family, and relationships) and entertainment expressive use of Facebook (expression of personal interests, such as gaming, sports, and music) has an association between political communication on the site, which is interactive political expression, such as sharing content about political and social issues (Boyd, 2014). According to reference (Bennett users who frequently engage in social and entertainment expressive activities on Facebook (like, share or comment) will also be more likely to engage in interactive political expression on the site.

With young people the above proposition is much valid. According to Bennett (2003), young peoples' orientation towards public life is much less about participation in

conventional political action (Dutiful citizenship) and more about expressing complex identities through personally resonant activities, consumption, and self-expression. Hence the following hypothesis were developed to measure the association between social and entertainment expressive Facebook use of young people on their political expression on Facebook.

H1: Social expressive Facebook use is positively associated with interactive political expression on Facebook.

H2: Entertainment expressive Facebook use is positively associated with interactive political expression on Facebook.

3. Methodology

The current study used data collected through Facebook with young Facebook users in Sri Lanka in September 2019 using aged 18 – 30. 150 individuals who self-identified as Facebook users were included in the online survey.

Different types of expressive Facebook usages were captured by asking how often respondents engage in three activities on a 5-point scale ranging from 1 (never) to 5 (very frequently), including “liking,” “commenting on,” and “posting or sharing,” in loops in reference to two topical domains: personal life (e.g., work, school, relationships, or family) and entertainment interests (e.g., sports, movies, food, or music).

Three items asked how often respondents expressed opinions about politically related topics (e.g., elections, government, human rights, and economics) on Facebook. Three modes of political expression, including “liking,” “commenting on,” and “posting or sharing” were asked in loops in reference to political and social issues. The response scale ranged from 1 (never) to 5 (very frequently). Data analysis was conducted using SPSS (Statistical Package for Social Sciences).

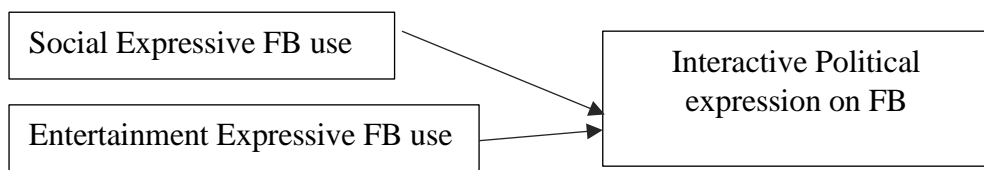


Figure 1: conceptual framework tested

Substantial research findings explain that political communication can be interactive or political communication through social media or political talk in face-to face settings. Political communication in expressive citizenship models transform political observers to political participants (Shah et al, 2007).

Table 1: Operationalization

Independent Variables	
<i>Social Expressive Facebook Use</i>	<i>Scale</i>
<i>how often you have engaged in Facebook,</i>	
• "liking" someone's personal life (work, school, relationship, family)	<i>1 (never) to 5 (very frequently)</i>
• "commenting on" someone's personal life (work, school, relationship, family)	<i>1 (never) to 5 (very frequently)</i>
• "posting or sharing" your personal life (work, school, relationship, family)	<i>1 (never) to 5 (very frequently)</i>
<hr/>	
<i>Entertainment Expressive Facebook Use</i>	
<i>how often you have engaged in Facebook,</i>	
• "liking" someone's entertainment interest (sports, movies, food, or music)	<i>1 (never) to 5 (very frequently)</i>
• "commenting on" someone's entertainment interest (sports, movies, food, or music)	<i>1 (never) to 5 (very frequently)</i>
• "posting or sharing" your entertainment interest (sports, movies, food, or music)	<i>1 (never) to 5 (very frequently)</i>
<hr/>	
<i>Interactive Political expression on FB</i>	
• "Liking" political and social issues (elections, government, human rights etc.)	<i>1 (never) to 5 (very frequently)</i>
• "Commenting on" political and social issues (elections, government, human rights etc.)	<i>1 (never) to 5 (very frequently)</i>
• "Posting or sharing" political and social issues (elections, government, human rights etc.)	<i>1 (never) to 5 (very frequently)</i>

Two hypotheses were tested using regression analysis (H1: Social expressive Facebook use is positively associated with interactive political expression on Facebook; H2: Entertainment expressive Facebook use is positively associated with interactive political expression on Facebook)

The face validity, the questionnaire was given to 25 adolescents. The criteria for inclusion were as follows: Female gender, age range of 18-30 years, and willing to participate in the study. In addition, the questionnaire was given to three university academics, who were familiar with the concept under investigation and instrumentation. Then the participants were required to evaluate the items with respect to problems, ambiguity, relativity, proper terms and grammar, and understandability using a 5-point Likert scale ranging from 1 (not important at all) to 5 (highly important).

4. Results and Conclusion

Examining the demographic profile of the respondents, the age of the sample in the study is younger (M= 24), income and education reflect the sample respondents are earning average of monthly Rs. 35,000 and the education reflect the majority has a degree. Hence the regression results explain the educated youth expressive citizenship use of Facebook and their political communication.

Among newspapers, television and web news use as forms of news media the descriptive statistics explain that how many days the respondents consumed news in past week from new paper(s) (M= 2.39), television (M= 5.43) and websites (M= 4.57) reflecting the television is taking the lead.

The reliability analysis explain that the three latent variables are reliable with above 0.7 Cronbach alpha value as explained in table 2.

Table 2: Reliability Analysis

Variable	Cronbach alpha
Social Expressive FB use	0.805
Entertainment Expressive FB use	0.812
Interactive Political expression on FB	0.756

The correlation analysis of the association between social and entertainment expressive use and interactive political expression on FB explain that there is a significant positive relationship between expressive use of FB and political expression on FB (table 3).

Table 3: Correlation Analysis

Variable	Pearson Correlation	Significance
Social Expressive FB use	0.564	0.000
Entertainment Expressive FB use	0.432	0.000

In the first and second hypotheses, it is predicted that social (H1) and entertainment (H2) expressive Facebook use were positively associated with interactive political expression on Facebook, respectively. As Fig. 2 shows, both social ($\beta=0.31$, $p < .05$) and entertainment expressive Facebook use ($\beta=0.30$, $p < .001$) are positive predictors of interactive political expression on Facebook, supporting H1 and H2.

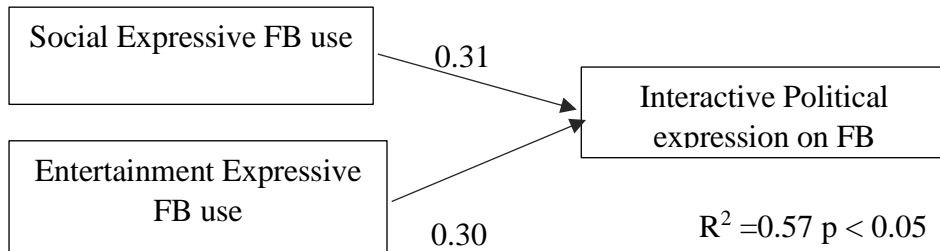


Figure 2: Hypothesis Testing

The coefficients of both hypothesis (H1 and H2) is accepted with the significant value of H1 and H2 are being both less than 0.05. Therefore, the regression results show that the emergent expressive citizenship models can be supported by empirical data.

Several implications can be drawn from these findings. While supporting the expressive-citizenship models, in particular Facebook users who frequently share about their personal life and entertainment interests online are also more likely to engage in interactive political expression on the site. These findings are contrary to prior work suggesting that the use of digital media for social or recreational purposes may distract citizens from public engagement (Shah et al, 2007). One possible explanation for the conflicting findings is that the results of earlier work (Shah et al, 2007) may not be generalizable over time because in the early years of Internet use, those who had Internet access may have had few friends and family members with similar access, which would have limited the opportunities for meaningful interactions (Kraut et al, 2002).

The results also prove that the young generations' political communication is through non-political social media is accurate preposition. Hence the results accept both hypotheses. Moreover, it is clear that the traditional dutiful citizenship models cannot be applied to young generation. Hence expressive citizenship models are much valid.

Several potential limitations are noted. The sample should be more diverse explaining the youth characteristics. Also, the control variables should be tested. Future research can consider the affordances of different social media sites other than Facebook and further examine whether the findings are consistent across different sites and countries. Another limitation of this study is its lack of test-retest reliability, so it is recommended that test-retest reliability be done in future studies.

References

- Bauman, Z. (2001). *The Individualized Society*. Cambridge: Polity Press
- Bellamy, R. (2008). *Citizenship: A Very Short Introduction*, New York, Oxford University Press.
- Bennett, W. L. (2003). Civic learning in changing democracies: challenges for citizenship and civic education. working paper, *Center for Communication and Civic Engagement*, University of Washington, Seattle.
- Bennett, W. L., Wells C., Rank A. (2009) Young citizens and civic learning: two paradigms of citizenship in the digital age. *Citizenship Studies* 13(2): 105–120.
- Bosniak, L. (2006). *The Citizen and the Alien: Dilemmas of Contemporary Membership*. Princeton: Princeton University Press.
- Boyd, D. (2014), *It's Complicated: The Social Lives of Networked Teens*. *Yale University Press*, New Haven.
- Cohen C.J., Kahne J., (2012) *Participatory Politics: New Media and Youth Political Action*. Chicago, IL: MacArthur Foundation.
- Dahlgren, P. (2001). The Public Sphere and the Net: Structure, Space and Communication. In L. Bennet & R. Entman (Eds.), *Mediated Politics: Communication in the Future of Democracy*. Cambridge: Cambridge University press.
- Ferree M.M, Gamson W.A, Gerhards J. (2002), Four models of the public sphere in modern democracies. *Theory and Society*, 31(3): pp. 289–32,
- Kligler-Vilenchik N. (2017), Alternative citizenship models: contextualizing new media and the new “good citizen”. *New Media & Society.*, vol. 11, pp. 1887–1903.
- Kraut R., Kiesler S., Boneva B., Cummings J., Helgeson V., Crawford A. (2002). Internet paradox revisited. *J. Social Issues* 58 (1), pp. 49–74.
- Shah D.V., Cho J., Nah S. M. R. Gotlieb , H. Hwang, N.J. Lee, (2007) Campaign ads, online messaging, and participation: extending the communication mediation model.” *J. Commun.* 57 (4), pp. 676–703.
- Stoycheff E., Nisbet E.C., Epstein D. (2016), Differential effects of capital-enhancing and recreational Internet use on citizens’ demand for democracy. *Commun. Res.*
- Schudson M. (1998), *The Good Citizen: A History of American Civic Life*. Cambridge, MA: Harvard University Press.
- Yu R.P., Oh W.H. (2018). Social media and expressive citizenship: Understanding the relationships between social and entertainment expression on Facebook and political participation, *Telematics and Informatics*, vol. 35, pp. 2299–2311.
- Zuckerman E. (2014), New media, new civics? *Policy & Internet* 6 (2), pp. 151–168.

The Impact of Industrialization on Environmental Sustainability: A case study in Gampaha district

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Abstract

This study is based on impact of industrialization on environment sustainability in Sri Lanka. Objectives of this research are to identify the impact of industrialization on environment sustainability and to provide recommendations to mitigate the damages. Research questions are how does the industrialization impact on environment? And what are the actions which can be taken to mitigate the impact on environment due to industrialization? The research methodology contains mixed method consisting both qualitative and quantitative approaches and interviews have been conducted by the author in order to collect information and analyze them while raw data was collected in aid of analyzing through quantitative approach. Industrialization has become one of the major concerned issues for the sustainability with the dramatic growth of environmental pollution. Environmental sustainability is crucial when it comes to the survival of living being on the planet we all live in. Environmental sustainability talks about sustainable practices that support long-term economic growth without negatively effects social, environmental, and cultural aspects of the community.

Keywords: *Environmental Pollution, Environment Sustainability, Industrialization, Sustainability*

1. Introduction

1.1. Background of the study

Sri Lanka is an Island which is located in Indian Ocean and population approximately about 21 million. (Department of Census and Statistics-Sri Lanka 2012). Contribution to the Gross Domestic Product (GDP) by sector amounts 7.8% from agriculture, 30.5% from industries and 61.7% from Services (Central Bank of Sri Lanka 2018).

The Industry Sector has a long history where the British ruled Sri Lanka in the 20th century. In the early part of this century, there had been factories for processing Tea, Rubber and Coconut, a brewery, tiles, and bricks tea chests in a few other areas only. In 1977 government of Sri Lanka changed their trade policy to open economic policy where importers and exporters could decide what to import and what to export with

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minimum restrictions (Silva 2019). It can be identified as the boom of industrialization in Sri Lanka. Although 30 years of civil war impacted considerably to the growth of industries, in present times, it has become 2nd largest contributor to the economy after the service sector.

Sustainability has become one of the major concerned issues for the industries with the dramatic growth of environmental pollution and public awareness of these in the global level. Rapid industrialization by state and private sector organizations has led to new ways of pollution. In present, soil erosion, coastal degradation, loss of wildlife habitats, waste disposal, water pollution, urban air pollution, marine pollution and hydrological and climate changes are some of the alarming problems that the Sri Lanka has to face. (Zubair 2001)

According to the Directory of the Prescribed Industries/Activities under the National Environmental Act, in Gampaha District there are about 5391 (11.5% of total industries) industries registered and it is only second to Colombo district which is about 5832 industries. Therefore, the researcher is aiming to conduct a case study in Gampaha district to identify the impact of industrialization on environmental sustainability.

1.2. Problem Statement

1.2.1. Motivation of the Study

In Sri Lanka, industrial sector is contributing to the economy as much as 30% to the Gross Domestic Production (Central Bank of Sri Lanka 2018). Reduction in unemployment level in Sri Lanka happened due to the evolution of industries. Although industries are playing a major role in the country's' economy, there are some areas that should be taken into consideration.

Deforestation, contaminating water resources, carbon emission and disposing industrial waste to the environment are some of the concerned issues in Sri Lanka. Environment pollution due to the industrial activities are as high as the pollution due to the urbanization. For an instance, the recent incident in Rathupaswala, where a company called venigros (pvt) ltd. was manufacturing rubber products and disposed their waste led contaminating water resources around the area. Eventually, this water crisis amounts to a number of valuable lives.

Sustainability of the economy in a particular country heavily depends on its environment. Use of natural resources and protect them for future consumption is one of the key drivers for sustainability. If the stability of the environment breaches due to human actions, it will adversely impact on the existence of the human beings. Hence the researcher has identified that it is important to find out the impact of industrialization on environment sustainability.

1.2.2. Research Objectives

- To identify the impact of industrialization on environment sustainability
- To provide recommendations to mitigate the damages to the environment sustainability

1.2.3. Research Questions

- How does the industrialization impact on environment?
- What are the actions which can be taken to mitigate environment impact due to industrialization?

1.3. Significance of the study

1.3.1. Empirical Significance

According to the found details, the impact of industrialization on environmental sustainability has been done by many researchers. Some of them are Rasmi Patnaik (Institute of Management Technology – Nagpur) has done a research on Impact of Industrialization on Environment and Sustainable Solutions – Reflections from a South Indian Region (Research Gate 2019), Effect of Industrialization on Environment (Indian Scenario) by Deepika Bhandari (Independent researcher) (Research Gate 2019).

But there is no evidence that this type of research done in Sri Lankan context. Gampaha District has the greatest number of industries after the Colombo district (Central Environmental Authority 2016) and also one area which has been affected heavily from industrialization. Therefore, the researcher has identified the empirical significance and conducted the research on Impact of the industrialization on environmental sustainability in Sri Lanka focusing on Gampaha District.

1.3.2. Practical Significance

This research will be significant to many parties such as, Central Environmental Authority to take decisions on environmental pollution, Sri Lankan government can get the necessary information when making environmental policies, industries can rethink about their waste disposal and waste management systems, general public around the industrial zones will be heavily benefited and most importantly the environment will be protected to the future generations.

2. Literature Review

2.1. Industrialization

Industrialization can be defined as the increase in industrial activities of an economy. (Treiman 2010) It is believed that industrialization would lead to development of the economy in the long run. Increase in the employment rate, competition within an industry, tax revenue, technology advancements are some of the key features of

industrialization that would lead to the economic development (Raheem & Ogebe 2015).

2.1.1. Factors of industrialization

According to the United Nations Industrial Development Organization (2017) factors of industrialization are Technology, Infrastructure, Capital Investments and Labour. These 4 factors can be further discussed as follows:

Technology: Application of science to industrial or commercial uses refer as the technology in Industrialization. Manufacturing processes were mechanized due to number of inventions in 19th century. Also, it helped to increase efficiency and productivity (Robinson, 2008)

Infrastructure: Infrastructure is key element in industrial development. Economists call infrastructure as combined network of transportation and communication. It is considered as the foundation and framework of economic growth. The roads, railroads, waterways, bridges and canals were developed in the 19th century which help to make a vital link to Industrialization.

Capital Investments: Capital investment can be defined as the amount of money spend by a company to achieve its business objectives. It also refers to the acquisition of long-term assets such as machinery, manufacturing plants, real estate etc. by the company. (Investopedia, 2019)

Labour : Human element of the industrialization referred as the labour. Many labour-intensive productions were carried out in the factories in early days. This human element also included the entrepreneurs and people who provided financing, organizing materials and workers, control operations etc. (Cornwall, 2002). Worker’s education, skill level and motivation are the key factors of deciding the value of labour force. That is the deciding factor of how much of labour hours each worker contributes to the output.

Table 2.1: Summary of factors of Industrialization

Technology	<ul style="list-style-type: none"> • Application of science to industrial uses
Infrastructure	<ul style="list-style-type: none"> • Roads • Water supplies • Electricity
Capital Investments	<ul style="list-style-type: none"> • Refers to the money and the factories themselves • Space
Labour	<ul style="list-style-type: none"> • Workers • Leadership • Entrepreneurship

Source: Developed by Author

2.2 Negative Impacts of Industrialization on Environment

When considering the other sides of the industrialization environment degradation can be seen as one of the concerned issues. Some industries would demand more energy so that it leads to deplete the natural resources (Ying Shin 2015). Some of the major challenges faced by the present generation are climate changes, energy security crisis, global warming, deforestation and rising sea level which are caused by the environmental degradation. Industrialization plays a big role in aforementioned challenges. The impact of industrialization has led to certain positive and large number of negative outcomes. Contaminating water resources, air and soil pollution can be identified as the by-products of economic development in industry. (Hassan 2017)

2.2.1 Sustainability

The term sustainability refers to the capability of maintaining over the long run. (Manderson 2006) The concept of sustainability can be elaborated with three overlapping circles representing economic, social and environmental dimensions. The economic dimension symbolizes the system of producing, distributing, and consuming wealth. Social dimension symbolizes the system of living and importance of the maintaining and improving living standards. The environmental dimension symbolizes the system of providing integrity and preservation of eco systems. (Herremans & Robin 2002)

A. Economic Sustainability

The economic dimension of sustainability concerns the organization's impact on the economic conditions of its stakeholders, and on economic systems at local, national, and global levels. The Economic Category of the sustainability illustrates the flow of capital among different stakeholders, and the main economic impact of the organization throughout society. (Mairal, 2015)

B. Social Sustainability

Social sustainability is about identification and management of both positive and negative business impacts, on people. (Karbassi, 2019) The quality of a company's relationships and engagement with its stakeholders is critical. (United Nations, 2019)

C. Environmental Sustainability

According to Hemarn Daly (1990) who is one of the pioneer of ecological sustainability defined that "Environmental sustainability is the rates of renewable resource harvest, pollution creation, and non-renewable resource depletion that can be continued indefinitely". The practice of environmental sustainability helps to ensure that the needs of today's population are met without limiting the ability of future generations to meet their needs. (Daly 1990)

2.2.2 Factors of environmental sustainability

According to Daly (1990) factors of environmental sustainability can be described as follows,

A. Natural resources

Natural resources are components that exist in the world without the human input. Most natural resources are limited. This means they will eventually run out after a period of time. Natural resources are essential to the survival of humans and all other living organisms. (Balaras , et al., 2002) All the products in the world use natural resources as their basic component, which may be water, air, natural chemicals or energy. Natural Resources can be further divided into two parts as renewable resources and non-renewable resources.

B. Pollution Creation

Pollution creation is the introduction of harmful materials into the environment. These harmful materials are called pollutants. Pollutants damage the quality of air, water, and land. (National Geographics , 2019) Although environmental pollution can be caused by natural events such as forest fires and active volcanoes, use of the word pollution generally implies that a source is created by human activities.

2.3 Research Gap

Researches on the impact of Industrialization on Environment Sustainability focus on Gampaha District, Sri Lanka has not yet been clarified. Therefore, the purpose of this study is to contribute to the new knowledge. In past, Sri Lanka is based on agricultural economy but it can be seen in present that industrial and service sectors are contributing the economy more than the agricultural sector. Sri Lanka is considered as a developing country and the country is industrializing in a rapid rate. The number of projects and industrial zones are increasing day by day. Hence it is very important to identify the impact to the environment before it becomes a major issue to the environment as well as to the country. Further, this study is focusing Gampaha district, because the selected area has been industrialized to a greater extent. And also, this study's outcomes will be benefited to the whole nation.

3. Conceptualization and Research Methodology

3.1 Research Approach

For this this study a mixed of qualitative and quantitative approaches have been used. An explorative research have been carried out in the areas of industrialization and environment sustainability in Sri Lanka. For carrying out the research certain industries in Gampaha district and government agencies have been targeted. It has been executed through face to face in depth interviews and field visits followed by self-administered questionnaire.

3.2 Conceptual Framework

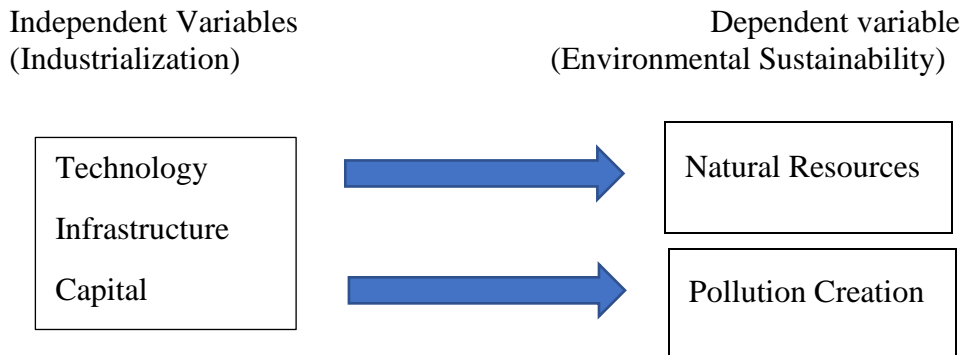


Figure 3.1: Conceptual diagram

Source: Developed by Author

3.3 Developed Hypotheses

H1: There is a significant relationship between technology and Natural resources

H2: There is a significant relationship between infrastructure and Natural resources

H3: There is a significant relationship between capital and Natural resources

H4: There is a significant relationship between technology and Pollution creation

H5: There is a significant relationship between infrastructure and Pollution creation

H6: There is a significant relationship between capital and Pollution creation

3.4 Population and Study Sample

The researcher has chosen a representative population which is local residents who are living around the industrial zones in Gampaha District. In this research, purposive sampling was utilized to select cases with specific purpose and have a very specific need in mind. Sample was limited to 50 local residents who live around the Mirigama Export Processing Zone. (Appendix 1)

3.5 Data collection

Secondary Data : Information on the selected subject area, have been collected from Central Environmental Authority and their publications, journal articles, newspaper articles, books, websites and researches related to the subject area.

Primary Data: The data have been collected through face to face in depth interviews with the industries in Gampaha district and government authorities. Apart from that, the researcher has conducted a survey in Gampaha district with 50 local residents who are living around the Mirigama export processing zone.

Table 3.1 Operational table

Variable	Dimensions	Measures	Question No.
Independent variables	Technology	Improve Living Standard	1
		Development of the country	2
		Impact on community culture	3
	Infrastructure	Road systems	4
		Water supplies	5
		Electricity facilities	6
		Urbanization	7
		Business Opportunities	8
		Increase the efficiency	9
Capital Investments	Amount of space allocated	10	
	Acquisition of lands	11,12	
Dependent variables	Natural Resources	Use of renewable resources	13,14
		Depletion of natural resources	15
		Environment management plan	16
	Pollution creation	Clean and Healthy environment	17
		Environmental pollution	18,19,20,21,22,23,
		Pollution mitigation actions	24

Source: Developed by author

4. Data presentation, Findings and Discussion

Since the researcher conduct the research in both qualitative and quantitative approaches, research has been conducted in mixed method. Qualitative research approach was conducted focusing on Government and Environmental Authority (GEA) and the Quantitative approach was focused on general public who have been affected by the industrial activities. Survey questions and interview questions were prepared based on the research variables. They are technology, infrastructure, capital investment (independent variables) and sustainability, environment pollution (Dependent variable)

4.1. Qualitative Data Analysis

Two questionnaires were prepared in order to get the details from industries and central environment authority. Ten people representing different BOI Industrial Zones in Gampaha District were questioned and five people representing three different organizational levels (Director/ Assistant director/ officers) were questioned with the objective of getting the answers for the research questions. Since the interviewed persons were reluctant to reveal their identities, their names are not mentioned in the research study.

A. The impact of Industrialization on Technology

When an industrial zone is established the area become more urbanized and efficient. People around rural areas also receive the benefits of living more comfortable lifestyles. Especially the electricity and telecommunication facilities are developing with industrial zones. Therefore, technology can be seen as one of the main variable under industrialization.

Based on that, a question was asked “How does the technological development due to industrial zone, has increased the living standard of the households around the industrial zone”?

The Senior Deputy Director – Engineering in one of the BOI zone mentioned, *“We built a grid substation for electricity in the zone which have the capacity of 60 Megawatt and we only consume 45 Megawatt. So that we could provide extra 15 Megawatt for the houses which are around the zone and it results into improve the electricity facility in the area. Further, we have the fiber optic technology (telecommunication) inside the zone, after we receive the fiber optic people around the area also receive the opportunity to get the fiber optic service easily”*.

It is evident that when an industrial zone is established, people around the area receive various kind of benefits with the technological advancement in the area. Hence it can be concluded that technological development due to industrialization is positively impact on the area and the people.

B. The impact of Industrialization on Infrastructure

Infrastructure development: The first question under the infrastructure variable was “What types of infrastructure development have been occurred in the area with the development of the industrial zone”? A Zone Director in one of the BOI zones emphasized,

“We built a common water tank which supplies water to the zone and also to the villagers. And also we provided some space from zone for water transmission line which supply the water to the village. Other than that built some street lamps from the zone to the village. Further we have a separate road system for the zone but we

developed some roads around the area since most of our workers live in the nearby villages, so they can travel easily.

According to the research information, it can be seen that there are various kinds of infrastructure development have been occurred due to industrialization. As it mentioned by the zone director basic human needs such as water, electricity and road systems have been developed with the industrial zones.

Job and Business opportunities:

The second and third question under the same variable was “What type of job opportunities and business opportunities people in the area received after the industrial zone was incorporated? Zone Director in one of the BOI zones answered,

“Most of the low-level workers who work inside the zone are hired from nearby villages. So, they receive number of job opportunities with the zone. We also give priority to people who live nearby areas. We have various types of manufacturing industries inside the zone. Most of them are labour intensive so there are ample job opportunities are available”.

“When talking about the business opportunities, people around area receive indirect and direct business opportunities with the zone. There are number of boarding houses and restaurants /canteens have been started in the area after the industrial zone was incorporated because thousands of workers come each day to this particular area. Other than some of the industries buy some of the raw materials from the nearby areas. Further, we have a dump yard inside the zone, people around the area can get recyclable waste (Glasses, cardboard etc.,) from the material sorting bay and they use to sell those material to different parties. With that they receive another indirect business opportunity”.

It is evident that most of the people who live around the industrial zone received different kinds of job opportunities since most of the factories are human intensive. Specially, there is a high demand for the lower level employees. Further, Indirect and direct business opportunities have been created with the development of the industrial zones.

Urbanization:

Final question under infrastructure was “Does the area became more efficient and urbanized after the industrial zone was incorporated? Zone Director in one of the BOI zone responded to that question,

“Yes of course, after the industrial zone was incorporated lots of private sector organizations, businesses and number of banks have been established in the area. With that lifestyle of the people around the area became more comfortable.”

It can be seen that one of the positive impacts of industrialization is, rural areas become more efficient and urbanized with the development of the industrial zones. Further, it will positively impact on country's economic development.

C. The Impact of Industrialization on Investments

The questions under capital investment variable were "What type of indicators are being used when selecting a suitable location to build an industrial zone and what types of rules and regulations to be followed?" Responded by a deputy zone director in one of the BOI zones,

"Mainly we consider the accessibility to the location. Specially we the distance to the harbor and airport are taken as main indicators. Other than that we also consider the infrastructure facility in the area. Road system, water supplies and electricity are the main indicators of the infrastructure. Further, we also consider the ways of disposing industrial waste. And also we have to do an Environment Impact Assessment (EIA) and have to take the approval from CEA".

When the researcher asked the same question from CEA "What types of environmental rules and regulation should be followed when initiating a new zone or selecting suitable location" respond from the, Director Compliance monitoring Unit - CEA can be analyzed as follows:

According to the Director, "When an industrial zone or an industrial plant establish, there are three types of license that should be taken by the industries under 1980 No.7 National Environment Act. Some of the licensee should be taken after initiating the business. Further in Gampaha District only the Biyagama and Katunayake industrial zones have carried an Environmental Impact Assessment (EIA). You can reduce number of environmental issues with EIA but other zones have number of serious issues because they didn't go through an EIA process when establishing the industrial zones"

Those three licensees or the regulatory tools of the CEA can be summarized as follows:

Table 4.1: Regulator tool of CEA

Regulatory Tool	EIA	EPL	SWML
Gazette notification	No. 722/22 (1993.06.18)	No. 1533/16 (2008.01.25)	No. 1534/18 (2008.02.01)
License Issuance	Prior to start the project	After starting the business	After starting the business
Covered Areas	Environment Impact	Wastewater Standards, Noise, Source Emission, Interim Standards	Solid Waste

Source: Compliance Monitoring Unit, CEA

According to the research details it is evident that industrial zones have number of criteria to check before establishing a zone. When considering the environment regulations considerable amount of industries have failed to achieve the environmental rules and regulations imposed by the CEA. Therefore, as per the CEA details various kind of serious issues have been developed with the time. Although there are good environmental regulatory tools, they are not strong enough to cover every industrial activity.

D. The impact of Industrialization on Natural Resources

- Plantation program

The answer to first and second question under natural resources variable, “Did the Industrial zone carry out a re-plantation programme to cover the lost plants when industrial zone was built? And how do you maintain those plantation? These two questions can be analyzed as follows:

Respondent from assistant director – Environment management department in one of the BOI zone mentioned that,

“Most of the time industrial zones are built in large coconut estates or rubber estates. So we have to cut most of the plantation. Therefore, generally we allocate 20% of the total zone area to plant trees and for gardening purposes. . In this zone we have more than 400 acres, so 20% means it’s almost 80 acres we have been allocated to the

plantations. In that 20% area we don't give permission to establish any kind of industries. As you walk through the park you can see lots of greenery area have been maintained. To maintain the plantation, we have separate gardening unit and we also use waste water which have been purified by the waste water treatment plants."

Therefore, it can be concluded that the industrial zones are concerning on sustainable initiatives by replantation programs and maintaining those plantations. As per the details, 20% of the total zone area can be seen as large area considering the amount of space allocates to the total zone.

- Depletion of natural resources

Third question under the variable was, "Do you believe that natural resources have been depleted by the industrial zone activities? (Ex – Reducing the water level in the area) Respondent from one of the officers (Environment management) in one of the BOI zone mentioned,

"Specially, water requirement of the zone is supplied by the national water board and it is the main water source (around 90%). Other than that we use few tube wells (around 10%) but there is no impact to water resources around the area because we didn't get any complaints from the general public or the CEA". We monitor every activity performed by the individual industries and take necessary actions if there is anything going against the environment. Therefore we take every possible action to minimize the damages to natural resources and protect the environment."

Based on the above answer, it can be seen that, there can be pollutions but there is no considerable depletion of natural resources have been occurred due to industrial activities.

- Renewable resources

Fourth question under the same variable was "What types of renewable resources are being used by the industrial zone?" Respondent from one of the officers – Environment management department in one of the BOI zone mentioned that,

"Though we supply electricity to each of the industrial plants, some of them are using considerable amount of solar power to generate electricity. And also some of the plants have rain water harvesting systems. Other than that BOI zone have a good waste water treatment plant. We collect waste water from each industrial plants inside the zone through a drainage system and we purify them according to the national standards and dispose to a nearest river. The best part is we use considerable percentage of the purified waste water for our irrigation and gardening purposes. That's the how we mainly use renewable resources."

It is evident that industries are concerning about renewable resources and there is a positive trend towards sustainable energy. Further the environmental impact also can be reduced with the consumption of renewable resources.

- Environment Management Plan

Fifth and final question was “Does the industrial zone have an environment management plan? Respondent from assistant director – Environment Management Department in one of the BOI zone mentioned,

“There are set of environmental standard specially designed for BOI zones called “environmental norms”. Every industrial plant inside the zone have to adhere to those standards and policies mentioned in that particular document. We monitor every actions taken by the industries inside the plant and check whether they are following the rules and regulations mentioned and take necessary actions”

It is evident that BOI industrial zones are maintaining a high standard about the environment. But there may be some issues when practicing those regulations. Having a good environment management plan reduce considerable amount of issues which can be occurred.

E. The Impact of Industrialization on Environmental Pollution

Environmental pollution due to industrialization is the main factor that the researcher is focused on with this research. In order to get the idea about industries that are directly impact on environmental pollution researcher questioned, “How do you identify and categorize the industries which directly impact on environmental pollution”?

The respond from the director of research and development – CEA as follows: “We classified all the industries under 3 categories as “A”, “B” and “C” depending on their pollution potential. **Part “A”** comprises of significantly high polluting industrial activities and **Part “B”** comprises medium level polluting activities **Part “C”** comprises low polluting industrial activities”

Below table and maps can be referred to get a further knowledge and number of industries in Gampaha District:

Table 4.2: The Summary of Prescribed Industries/ Activities in Gampaha District

DSD	A' Category	B' Category	C' Category	BOI	Total
Attanagalla	130	74	159	40	403
Biyagama	193	115	180	31	519
Divulapitiya	194	196	182	31	603
Dompe	194	61	157	13	425
Gampaha	144	87	128	9	368
Ja-Ela	228	107	81	44	460
Katana	173	96	246	49	564
Kelaniya	141	67	73	15	296
Mahara	136	117	144	20	417
Minuwangoda	109	91	255	19	474

Table 4.2: Cont'd

Mirigama	136	107	179	21	443
Negombo	85	99	161	15	360
Wattala	239	68	88	43	438
Total	2102	1285	2030	350	5767

Source: Research and Development Department, Environmental Authority

According to the above research details, it can be concluded that CEA has an overall knowledge about the different kinds of industries operates in each district in Sri Lanka. Above maps and table show that how industries are distributed in the Gampaha district and the impact on the environment based on industrial category.

- Water, Sound and Air Pollution

To get the knowledge about different kinds of pollutions due to industrial zone activities researcher asked, “Do you believe that water resources, air and sound have been polluted with the industrial zone activities? Responded by one of the officers – Environment Management Department in one of the BOI zone mentioned,

“As I said we have to adhere to the environmental norms issued for BOI zone. Therefore, we don’t think that there is any considerable environmental pollution happening around. There can be various complaints from the general public, but we can assure that there is no serious pollution is happening due to industrial zone activities since we adhere to our environment policies”

But when interviewing CEA officers, number of serious pollution incidents in Gampaha District have been collected. They can be summarized as follows:

Table: 4.3 – Complaints relating to different Industrial Zones

Industrial zone	Complaint
Wathupitiwala	One of the companies inside the zone produce some high noise and it disturbs to the households around the area.
Katunayake – Stage 3	Air pollution due to burning aluminium by one of the industries inside the zone
Nittabuwa	Improper disposing package waste and wastewater
Mirigama	Air pollution due to battery recycling industry

Source: CEA Gampaha Division

As per the research details it can be concluded that, though the BOI emphasized that there is a minimal environmental pollution, according to the CEA there are significant issues around the BOI zones. Therefore, it is evident that there are numerous ways of pollution are occurring with industrial activities.

- Industry monitoring process

Next question on the same variable was “How do you monitor the industrial activities”?

Responded by one of the officers (Environment management department) in one of the BOI zone mentioned that,

“We have a daily routine schedule to monitor the industrial activities and we check whether each industry adheres to our environmental norms and we take necessary actions based on that”

When the same question asked from CEA, an officer in Gampaha District Division mentioned that,

“We monitor the industrial activities before EPL is issued. Other than that we monitor them when a complaint received and at renewal of EPL. Further, we have a monitoring system based on the industry category, because we can’t wait till the industries renew their license. But the problem is with our current monitoring system we can only achieve 30% of the target because of the lack of capacity”

Below table shows how EPL is issued and industrial activities are being monitored,

Table 4.4: Environment Protection License (EPL) based on Industry category

Industry category	A	B	C
Issuing EPL, follow-up, monitoring and law enforcement	District Offices of the CEA	District Offices of the CEA	Local Government Authorities, namely Municipal Councils, Urban Councils and Pradeshiya Sabhas
Validity Period	1 year	3 years	3 years
Monitoring period	Every 6 Months, at the renewal of the license or when a complaint is received	Every 12 Months, at the renewal of the license or when a complaint receive	At the renewal of the license or when a complaint receive

Source: Compliance Monitoring Unit, CEA

Although, BOI is monitoring their industrial activities, CEA also have to monitor them when necessary. CEA have different types monitoring procedures based on the industrial category. But with the limited capacity, it is evident that CEA unable to achieve their targets. Hence some loopholes in the regulatory tools can be created and arisen further problems in the future.

- Industrial waste

The next question was focused on industrial waste created by industrial activities; therefore researcher questioned “how do you dispose the industrial waste”? The assistant director (Environment Management Department) in one of the BOI zone mentioned,

“We have our waste water treatment plant to dispose the water and the solid waste will be disposed through the Holisim Company, because some of the solid waste will be a raw material to them. Other than that we dispose the solid waste through dumping sites in Gampaha District”

The Director Compliance monitoring Unit CEA replied to the same question as,

“We have common waste water treatment plant in Rathmalana and Ekala maintained by National Water Supply and Drainage Board but we need an integrated waste management system to dispose the solid waste. And also still we don’t have a proper landfill method to dispose the solid waste currently we advise industries to dispose the solid waste through Dumping sites

According to above details it can be seen that there are different methods to dispose the industrial waste. Currently, disposing waste in to dumping sites can be considered as the most effective method. But as per the CEA there is no sustainable method to dispose industrial waste in Sri Lanka. It can be considered as one of the significant issue faced by the industries and also the government.

- Spreading of Diseases

Final question under the environment pollution variable was “Do you believe that diseases have been spread with the industrial zone activities”

One of the officers – Environment Management Department in one of the BOI zones mentioned,

“There were some minor complaints but currently we don’t have any complaints from general public that diseases have been spread with the industrial zone activities”

But when interviewing central environmental authority officer – Environmental Authority Gampaha division mentioned that,

“We received some complaints about Industrial Plant at Mirigama zone which recycle batteries that the plant is disposing some poisonous air and people around area have suffered with breathing problems. And we involved with that problem and advice to the company to take necessary actions to mitigate the pollution”

According to the above discussed details it is evident that industrial activities may harm the people in serious ways. Though the industries are not much concerned about them, there are some incidents happening around the industrial zones. Therefore, diseases which can spread due to industrial activities also should be taken into consideration.

4.2. Quantitative Data Analysis

This chapter contains the presentation of data collected for this study by use of questionnaire and the analysis of data. The researcher will present the data of total 50 respondents who have been participated to the survey. The survey was conducted around the Mirigama Export Processing Zone, Gampaha District.

4.2.1. Cronbach's Alpha Reliability Testing

$$\alpha = \frac{N.C}{V + (N - 1).C}$$

Table 4.5 Reliability Statistics

No. of items	Cronbach's alpha	Decision rule	Comment about reliability
24	0.767	0.767>0.7	Reliable

Source: Developed by Author

As shown in the (Table 4.5), Cronbach's alpha is 0.767, which is more than 0.7 and it indicates that there is good consistency between data, which measures the variable.

4.2.2. Correlation Analysis

Since there are two dependent variables, two correlation were calculated. The first correlation calculation was done to identify the relationship between, Natural resources (dependent variable) and technology, infrastructure, capital investment (independent variables). (Table 4.6) The Second correlation calculation was done to identify the relationship between, pollution creation (dependent variable) and Technology, infrastructure, capital investment (independent variables). (Table 4.6)

Table 4.6: Correlation of Natural resources

Independent variables	Dependent Variable	Positive / Negative	Significance Value	Significant or not Significant
Technology	0.640	Positive	0.000	Significant
Infrastructure	0.611	Positive	0.000	Significant
Capital Investment	-0.453	Negative	0.001	Significant

Source: Developed by Author

Pearson correlation between the Natural resources and Technology is 0.640, which is positive. The significant value is less than 0.05, thus, there is statistical evidence to claim that there is a significant positive relationship between Natural resources and Technology.

Pearson correlation between the natural resources and infrastructure is 0.611, which is positive. The significant value is less than 0.05, Thus there is statistical evidence to claim that there is a significant positive relationship between Natural resources and Infrastructure.

Pearson correlation between the natural resources and capital investment is – 0.453, which is negative. The significant value is less than 0.05. Thus, there is statistical evidence to claim that there is a significant negative relationship between Natural resources and Capital Investment.

Table 4.7: Correlation of Pollution creation

Factor / Value	Pollution creation	Positive / Negative	Significance Value	Significant or not Significant
Technology	0.338	Positive	0.000	Significant
Infrastructure	0.499	Positive	0.000	Significant
Capital Investment	0.590	Positive	0.000	Significant

Source: Developed by Author

4.2.3. Multiple Regression Analysis

Table 4.8: Model summary of regression - Natural resources (dependent variable) and other independent variables

Adjusted R - Square	Significance value of ANOVA	Coefficient values		
		Model	(B)	Sig.
0.723	0.000	Constant	1.014	0.043
		Technology	0.365	0.005
		Infrastructure	0.305	0.002
		Capital Investment	-0.074	0.045

Source: Developed by Author

The adjusted R square value is 0.723 which is significant at 1% (significant = 0.000). The value is 0.723 as a percentage 72.3% of explanatory power is explained here by all three independent variables (Technology, infrastructure, Capital Investment). Further, the regression equation of three independent variables and Natural resources:

$$\text{Natural resources} = 1.014 + 0.365 (\text{Technology}) + 0.305 (\text{Infrastructure}) - 0.074 (\text{Capital Investment})$$

Table 4.9: Model summary of regression - Pollution creation (dependent variable) and other independent variables

Adjusted R - Square	Significance value of ANOVA	Coefficient values		
		Model	(B)	Sig.
0.612	0.000	(Constant)	0.865	0.042
		Technology	0.199	0.049
		Infrastructure	0.260	0.001
		Capital Investment	0.320	0.016

Source: Developed by Author

The adjusted R square value is 0.612 which is significant at 1% (significant = 0.000). The value is 0.612 as a percentage 61.2% of explanatory power is explained here by all three independent variables (technology, infrastructure, Capital Investment). Further, the regression equation of three independent variables and Pollution creation:

$$\text{Natural resources} = 0.865 + 0.199 (\text{Technology}) + 0.260 (\text{Infrastructure}) + 0.320 (\text{Capital Investment})$$

4.2.4. Hypothesis testing

Table 4.10 Hypothesis testing – Natural resources

Factors	Standard beta correlation	Significance	Decision for the hypothesis
Technology	0.365	0.005	H1: is Accepted
Infrastructure	0.305	0.002	H2: is Accepted
Capital Investment	-0.074	0.045	H3: is Accepted

Source: Developed by Author

H1: There is a significant relationship between Technology and Natural resources.

The impact of technology is positive (0.365) and significant (sig.0.05<0.05) towards natural resources in Gampaha District. Since the beta value is significant H1 is accepted. In terms of technology there is 36.5 % positive influence towards natural resources.

H2: There is a significant relationship between Infrastructure and Natural resources.

The impact of Infrastructure is positive (0.305) and significant (sig.0.002<0.05) towards natural resources in Gampaha District. Since the beta value is significant H2 is accepted. In terms of infrastructure there is 30.5 % positive influence towards natural resources.

H3: There is a significant relationship between Capital Investment and Natural resources.

The impact of Capital Investment is negative (-0.074) and significant (sig.0.045<0.05) towards natural resources in Gampaha District. Since the beta value is significant H3 is accepted. In terms of Capital Investment there is -7.4 % negative influence towards natural resources.

Table 4.11 Hypothesis testing – Pollution Creation

Factors	Standard beta correlation	Significance	Decision for the hypothesis
Technology	0.199	0.049	H4: is Accepted
Infrastructure	0.260	0.001	H5: is Accepted
Capital Investment	0.320	0.016	H6: is Accepted

Source: Developed by Author

H4: There is a significant relationship between Technology and Pollution.

The impact of technology is positive (0.199) and significant (sig.0.049<0.05) towards Pollution in Gampaha District. Since the beta value is significant H4 is accepted. In terms of technology there is 19.9% positive influence towards Pollution

H5: There is a significant relationship between Infrastructure and Pollution.

The impact of Infrastructure is positive (0.260) and significant (sig.0.001<0.05) towards Pollution in Gampaha District. Since the beta value is significant H5 is accepted. In terms of infrastructure there is 26% positive influence towards pollution.

H6: There is a significant relationship between Infrastructure and pollution.

The impact of Capital Investment is positive (0.320) and significant ($\text{sig.}0.016 < 0.05$) towards Pollution in Gampaha District. Since the beta value is significant H6 is accepted. In terms of Capital Investment there is 32% positive influence towards pollution.

5. Conclusion and Recommendation

5.1. Conclusion

The research has been done with the objectives of identifying the impact of industrialization on environment sustainability and provide recommendations to mitigate the damages to the environment sustainability. Relevant theories related to the topic has been discussed in the literature. Answers to the research question has been discussed in the research analysis. In this research, the researcher has followed a mix of qualitative and quantitative research approaches.

According to the qualitative analysis of the research, technological advancement due to industrialization has impacted positively to the households who live around the industrial zones. With the industrialization, infrastructure of the area has been developed. When considering investment in Capital Investment number of indicators are being used before selecting a suitable location to start industries in a particular area It is evident that industries are concerning about the natural resources but there are some issues when practicing environmental management plans.

It is evident that current monitoring process of CEA is not strong enough to cover the targets with the limited capacity. One of the concern issues in environmental pollution due industrial activities is different kind of diseases have been spread around the industrial zones in Gampaha District.

According to the quantitative analysis of the research, standardized coefficients beta, it is evident that Capital Investment is the most important factor which has negatively impacts on natural resources in Gampaha District. Reason for that may be most of the industries have failed to adhere to environmental rules and regulations on Capital Investment. But other factors (technology, infrastructure) have no negative impact on natural resources. Further, according to the quantitative statistic all the factors (technology, infrastructure, Capital Investment) have positively impact on pollution creation in Gampaha District.

According to the above discussed factors it can be concluded that industries are one of the major factors which helps for the economic development in the country but industries have to be more sustainable in order to mitigate the damages to the environment. Hence, it can be identified that the researcher has successfully answered to the all the research questions and satisfy the research objectives.

5.2.Recommendations

Integrated waste management system to dispose the industrial waste -

According to the research details it can be found that, there is no proper way to dispose industrial waste in Sri Lanka. The most effective, current practice of the CEA and Industries is to dump the waste in to dump yard in different locations in the country. But they are not a sustainable solution. Therefore, following recommendations can be given,

More sanitary landfill to dispose industrial waste -Sri Lankan government going to initiate a sanitary landfill program in Aruwakkaru (Colombo page, 2019) for the domestic waste but there is no plan to implement any sanitary landfill program for the industrial waste. Therefore, it is recommended to initiate more sanitary landfill programs to dispose the industrial waste.

Offshore landfilling- As a solution for the constraints regarding the suitable location for landfill, Singapore has successfully launched the World's first offshore landfill constructed from the seabed up is located in Singapore Semakau Island. (Civil engineer Org., 2019). Sri Lanka also can initiate to offer shore landfilling programs if there are no sufficient land inside the island.

Incineration - This is one of the waste treatment technology which convert the waste into to IBM, gases, particles and heat. These products are later used for generation of electricity. (Science Direct, 2019).

- Strong policies, rules and regulations to be imposed on industries

It can be found that most of the industries are failed to adhere to the rules and regulations of the CEA. Specially, CEA stated that most of the industries doesn't have the Environment Protection License.(EPL). Therefore, Environmental Act should be amended and make strong environmental policies rules and regulations.

- **Initiate a proper industry monitoring system in Central Environmental Authority**

CEA current monitoring system have the capacity only to cover 30% of the target. The main reasons for that is lack of employees and the outdated manual process So that it is recommend increasing the number of employees in industry monitoring unit in CEA and implement a more updated and computerized system.

- **Initiate a proper communication system in Central Environmental Authority to solve complaints from general public**

Considerable number of people around industrial zones have complained about the environmental pollution activities done by the Industries. But most of them are not satisfy with feedback from CEA. Therefore, there should be a proper communication system to solve complaints from general public.

5.3. Further Research Studies

The limitations of the study have prompted suggestions for further research as listed below;

- This research has unravelled some ways to exploring industrialization and Environmental sustainability in Sri Lankan context. Further research could explore aspects of sustainability for example, social impact of industrialization, impact on economic development due to industrialization.
- The research is limited Gampaha District. Further research can consider the other district in Sri Lanka or covering the all the districts in Sri Lanka.
- In the quantitative analysis data used for the current study was derived from 50 Local residences who live around the Mirigama industrial zone. Further research can select a larger population and larger sample to collect data.
- In this research study adjusted r squared is 0.723. As a result of that model developed represent 72.3%. Further research can be conducted to the balance 27.7%
- In the qualitative analysis interviews were conducted in industrial zones and Central Environmental Authority. Further research can focus on the general public view on environmental pollution due to industrialization.

References

- Ackers, K., 2019. *Eco & Beyond*. [Online]
Available at: <https://www.ecoandbeyond.co/articles/food-sustainability/>
[Accessed 20 September 2019].
- Athukorala, p., 1986. *The Impact of 1977 Policy Reforms on Domestic Industry*.
Volume Upanathi, Vol.1,.
- Carolyn , B., 2006. *CONDUCTING IN-DEPTH INTERVIEWS: A Guide for Designing and Conducting In-Depth Interviews*. 2nd ed. Watertown, USA: Pathfinder International Tool Series.
- Central Bank of Sri Lanka, 2018. *Special Data Dissemination Standards (SDDS)*.
[Online] Available at:
http://erd.cbsl.gov.lk/presentation/htm/english/erd/sdds/rpt_sdds.aspx [Accessed 24 May 2019].

- Central Environmental Authority , 2013. *About Us: Central Environmental Authority*.
[Online] Available at: <http://www.cea.lk/web/en/about-us> [Accessed 30 May 2019].
- Central Environmental Authority, 2016. *Directory of the Prescribed Industries/Activities under the National Environmental Act*, Battaramulla: Central Environmental Authority.
- Cornwall, J., 2002. Mordern Capitalism. In: *Its growth and transformation*. London: Martin Robortson.
- Daly, H., 1996. Environmental Sustainability: Universal and Non-Negotiable. *ESA Journals*, VI(4), pp. 1002-1017.
- Department of Cencus and Statistics - Sri Lanka, 2017. *Sri Lanka labour Demand Survey*, Battaramulla: Department of Cencus and Statistics .
- Goodland, R., 1995. THE CONCEPT OF ENVIRONMENTAL SUSTAINABILITY.
Google Schollar, XXVI(1), pp. 1-24.
- Hassan , I. G., 2017. Identifying challenges facing manufacturing enterprises towards implementing sustainability in newly industrialized countries. *Journal of Manufacturing Technology Managemen*, XXVIII(7), pp. 928-960.
- Helen , N. & Mitchell, G., 2016. What is grounded theory?. *Evidence-Based Nursing* , XIX(2), pp. 34-35.
- Hoque , A., Mohiuddin , . M. & Su, Z., 2018. *Effects of Industrial Operations on Socio-Environmental and Public Health Degradation-Evidence from a Least Developing Country (LDC)*, Bingley, United Kingdom: Emerald Publishing Limited.
- Kelagama, S., 1992. *Liberalization and Industrialization: The Sri Lankan Experience of the 1980s*,. Industrialization Series No 2 ed. Colombo: Institute of Policy Studies.
- Manderson, K. A., 2006. A SYSTEMS BASED FRAMEWORK TO EXAMINE THE MULTI-CONTEXTURAL APPLICATION OF THE SUSTAINABILITY CONCEPT. *Environment, Development and Sustainability*, VIII(1), pp. 85-97.
- Rajapathirana, S. & Athukorala, P., 2000. *Liberalization and Industrial Transformation: Sri Lanka in International Perspective*. New Delhi: Oxford University Press, New Delhi.

Robinson, H., 2008. Industrialization and growth -a comparative study. In: s.l.:A world bank research publications, pp. 229-262.

Surovell, J., 2017. Empirical significance, predictive power, and explication. *Springer Science*, XIV(2), pp. 1-21.

Taherdangkoo, M., Mona, B. & Ghasemi, K., 2019. The role of industries' environmental reputation and competitive intensity on sustainability marketing strategy: Customers' environmental concern approach. *Spanish Journal of Marketing - ESIC*, Volume I, pp. 3-4.

Treiman, D. J., 2010. Industrialization and Social Stratification. *Sociological Inquiry*, III(2), pp. 207-234.

UNIDO, 2019. *UNIDO*. [Online]

Available at: <https://www.unido.org/our-focus/safeguarding-environment>
[Accessed 20 September 2019].

United Nations , 2019. *Build resilient infrastructure, promote sustainable industrialization*

United Nations, 2019. *UN Global Impacts*. [Online]

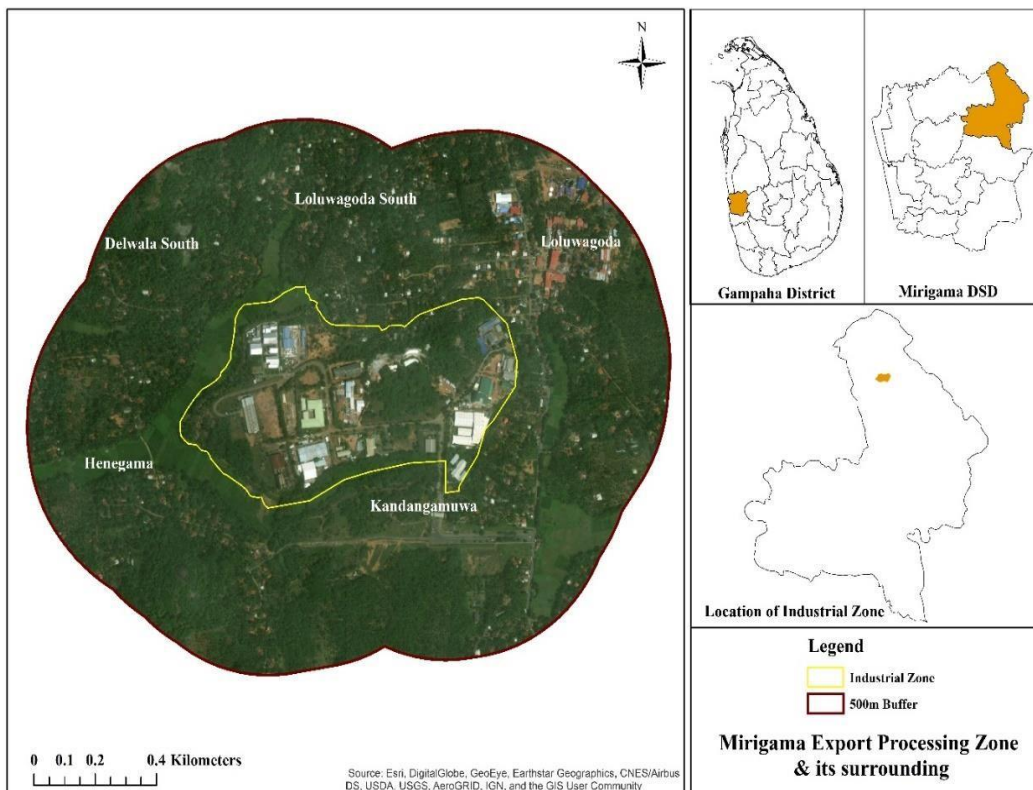
Available at: <https://www.unglobalcompact.org/what-is-gc/our-work/social>
[Accessed 20 September 2019].

Ying Shin, T. T., 2015. Managing Industrialization: A Resource Interaction Perspective. *Interfirm Networks: Theory, Strategy, and Behavior*, XVII(1), pp. 377-478.

Zubair, L., 2001. Challenges for environmental impact assessment in Sri Lanka. *Elsevier*, Issue 21, pp. 469-478.

Appendix 1

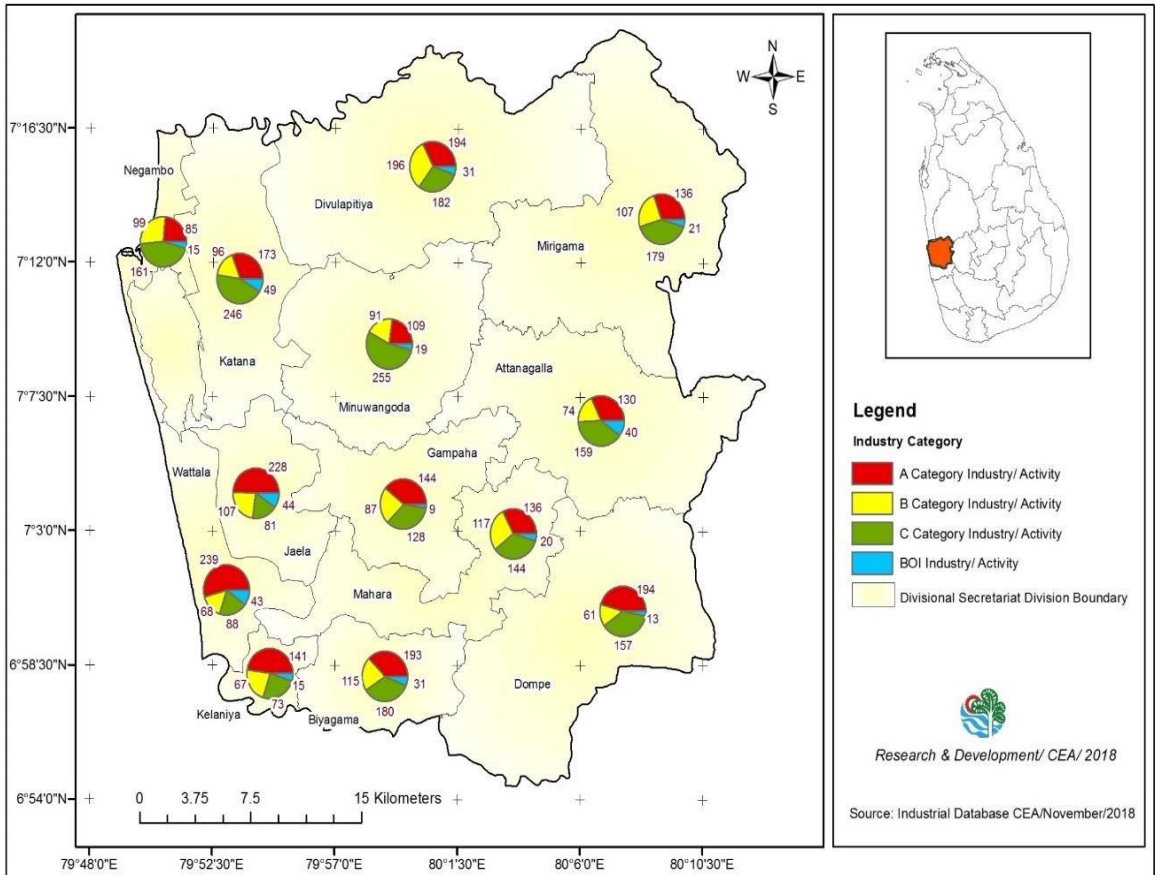
Mirigama Export Processing Zone



Source – Central Environmental Authority

Appendix 2

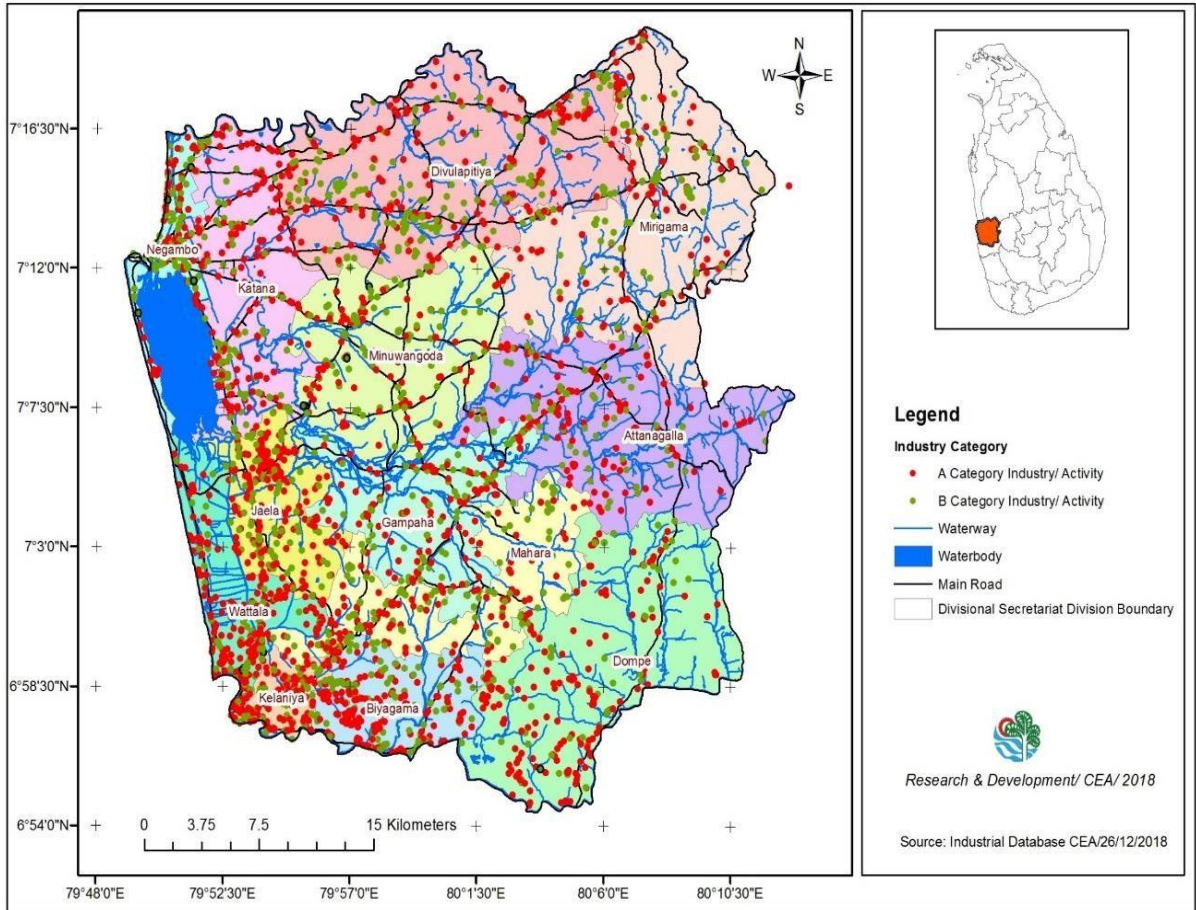
Prescribed Industries/ Activities in Gampaha District



Source: Research and Development Department, Environmental Authority

Appendix 3

Prescribed Industries/ Activities (A&B category) in Gampaha District



Source: Research and Development Department, Environmental Authority

Short Term Nominal Interest Rate as a Predictor of Expected Inflation: Evidence from South Asian Countries

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Abstract

This research paper investigates the relationship between inflation and short-term interest rates for South Asian region and individual countries in South Asia. The study uses annual data for all South Asian countries from the period 2005 – 2015. A balanced panel data analysis is done to examine the relationship in South Asia. Major macroeconomic variables that have been selected through literature analysis are inflation rate, interest rate, money supply, real GDP, exchange rate, employment rate and imports where the inflation rate is the dependent variable. According to the results, treasury bill rate which represents the nominal interest rate is significant at 1% level of significance in South Asia with a negative relationship. With special focus to country level analysis, Bangladesh, Bhutan and Sri Lanka's interest rates positively correlate to respective countries' inflation rates while India, Nepal and Pakistan's interest rates negatively correlate to inflation rates in respective countries. Hence, we can conclude that there are country wise differences in predicting inflation for South Asian countries.

Keywords: South Asia, Sri Lanka, Interest Rate, Inflation, Treasury Bill Rate

1. Introduction

Inflation and interest rates are linked, and frequently referenced in macroeconomics. Inflation refers to the rate at which prices for goods and services rise. The relationship between these two macro-economic variables can be interpreted in many ways. To majority of people inflation implies an insidious, cancerous swelling of prices and the erosion of the purchasing power of their incomes and savings. Economic growth and social progress require some increase in the level of prices though. To the individual, inflation is a money problem. He relates it to higher cost of living. He may see the remedy as acquiring more money, even if his purchasing power falls. He may fail to realise that purchasing power must ultimately be limited by the production and supply

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of goods and services and the demand for them. His remedy for inflation, which is increasing the availability of money by one method or another, may cheapen his money by forcing prices upward.

Economists have related inflation, with its rise in the cost of living, to periods of full employment of labor and other resources. It is thus a phenomenon of booms and prosperity. Inflation may be temporary, as during the boom period of a business cycle, or it may run over a period of years. If the creeping inflation gives way to wild uncontrolled inflation, the monetary system may collapse, government and other debts may be repudiated, and public and private insolvency may result. One may find many examples in modern history of runaway inflation. Inflation has long been thought of as a condition resulting from abundance of currency in relation to the available supply of goods and services. With a strong demand, a limited supply of goods and services, and a great inflow of purchasing power in the markets, the pressures on prices increase and tend to force them upward. Too much money is said to be chasing too few goods. The so-called "demand-pull" factors compel prices to rise.

This is common for all the countries around the world. Inflation has been high pre and post war across countries and many researches have been done to investigate that. Inflation can be predicted beforehand by using interest rates in the country. This is simply what is called Fisher Effect. The relationship between interest rates and inflation, was first put forward by Fisher (1930) who postulates that the nominal interest rate in any period is equal to the sum of the real interest rate and the expected rate of inflation. This is termed as the Fisher Effect. Fisher (1930) hypothesised that the nominal interest rate could be decomposed into two components, a real rate plus an expected inflation rate. He claimed a one-to one relationship between inflation and interest rates in a world of perfect foresight, with real interest rates being unrelated to the expected rate of inflation and determined entirely by the real factors in an economy, such as the productivity of capital and investor time preference. This is an important prediction of the Fisher Hypothesis for, if real interest rates are related to the expected rate of inflation, changes in the real rate will not lead to full adjustment in nominal rates in response to expected inflation. Cooray's (2002) predicting inflation using interest rates has yielded mixed results across countries and across time periods. This research will examine how fisher effect can be applied to the South Asian countries.

South Asia is termed as the collection of countries namely Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, India, Pakistan, and Sri Lanka. The South Asian Association for Regional Cooperation (SAARC), a contiguous block of countries, started in 1985 with seven countries – Bangladesh, Bhutan, India,

the Maldives, Nepal, Pakistan and Sri Lanka – and added Afghanistan as an eighth member in 2007. The South Asia Free Trade Agreement (SAFTA) incorporated Afghanistan in 2011 and the World Bank too added Afghanistan to South Asian Region as well as United Nations Children’s Fund (UNICEF) did the same. South Asia remains the world’s fastest-growing region although capital inflows declined, inflation has been on the rise, and remittances from oil-exporting countries started to weaken (World Development Indicators, 2017).

South Asian countries have similar inflation, exchange and interest rates. Sustained unrest in Sri Lanka pushed up its inflation rates, but in the other countries inflation only rarely reached double digits. Exchange rates also varied compensating for the inflation; most countries had some sort of flexible exchange rate regimes in the later years. Interest rates tended to move downwards in the reform period. But since foreign exchange markets were thin, and currencies were not fully convertible, the exchange rates were not fully market determined; intervention remained considerable IMF (2017).

Mixed results have been yielded about predictability power of inflation rate depend on the time periods selected and countries interested. Studies such as those of Fama (1975), Atkins (1989), Mishkin (1992), and Crowder and Hoffman (1996) have supported the Fisher hypothesis, while other famous studies such as those of Mishkin (1981, 1982), Barthold and Dougan (1986), and Rose (1988), have shown contradictory evidence. Still other studies, such as those of MacDonald and Murphy (1989), Wallace and Warner (1993), and Engsted (1996), find that the empirical validity of the Fisher hypothesis varied when it was analysed in different time periods or countries. Therefore, it is clear that predictability power of inflation rate is not universal; instead it depends on time zone and countries selected. Hence this piece of research will examine the extent that nominal interest rate can be used as a predictor of expected inflation in South Asian context.

The main objective of this study is to examine the predictability power of interest rates to future inflation of each South Asian country based on its specific factors. Further the sub objectives are to investigate the relationship between interest rates and inflation and to identify disparities between interest rates and inflation rates across South Asian countries.

Fisher hypothesis is one of the most studied topics in economics and finance and the use of nominal interest rates as indicators of inflation expectations have recently gained wide popularity. A stable relation between nominal interest rates and inflation as hypothesized by Fisher (1930) has proven difficult to establish empirically. Dwyer (1984) has shown that the Gibson Paradox, which is a correlation between interest

rates and price levels, is peculiar to circumstances of time and place rather than a universal phenomenon. Nominal interest rates are increasingly used as indicators of inflation expectations, probably because they are easily and quickly available for many different forecasting horizons. But still the topic is interesting since these tests yield mixed results based on the considered time period and markets. Most of the empirical studies on Fisher hypothesis are based on US and European economies, with a few studies focused on Japanese economy and Pacific-Basin Countries, G7 countries and some developed Asian countries. It has been suggested that inflation forecasts derived from short-term interest rates are as accurate as time-series forecasts. Previous analyses of this notion have focused on developing, developed, industrial country data and have provided mixed results. No published work relating the Fisher hypothesis in the South Asian countries was found in the course of study. Therefore, this piece of research is designed to test that predictability of expected inflation using short term interest rate and the prevailing inflation in South Asian context. Therefore, this will be special in that way and in another way, which is the usage of controlled variables.

2. Literature Review

Both theoretical and empirical literature have contributed for the development of the Fisher Effect. Literature provides mixed results on Fisher Effect hypothesis.

2.1. Theoretical Review

Fisher Effect was originally introduced by Irvin Fisher in 1930. The idea relating to nominal interest rate and expected inflation was known as Fisher hypothesis. This theory stated that nominal interest rate could be defined as the sum of two major variables, namely the expected real interest rate and the expected inflation. This relationship implies that there is a one-to-one relationship between nominal interest rate and expected inflation Fisher (1930), where the foresight is thought to be imperfect. The nominal rate can be thought of as the total of equilibrium of the expected real rate and market assessment of expected inflation. Irving Fisher pointed out that with perfect foresight and a well-functioning capital market, the one-period nominal rate of interest is the equilibrium real return plus the fully anticipated rate of inflation. In a world of uncertainty where foresight is imperfect, the nominal rate of interest can be thought of as the equilibrium expected real return plus the market's assessment of the expected rate of inflation (Fama, 1975).

Furthermore, it can be stated in below equation.

Nominal Interest Rate (n) = Real Interest Rate (r) + Inflation Rate (i)

Nominal interest rate refers to the interest rate before taking inflation into account. In other words, it is the sum of real interest rate and expected inflation. Nominal can also refer to the advertised or stated interest rate on a loan, without taking into account any fees or compounding of interest (European Central Bank, 2016). Central banks set short-term nominal interest rates, which form the basis for other interest rates charged by banks and financial institutions. Nominal interest rates may be held at low levels artificially after a major recession to stimulate economic activity through low real interest rates, which encourages consumers to take out loans and spend money. However, a necessary condition for such stimulus measures is that inflation should not be a present or a near-term threat.

Conversely, during inflationary times, central banks tend to set nominal rates high. Unfortunately, they may overestimate the inflation level and keep nominal interest rates high as well. The resulting elevated level of interest rates may have serious economic repercussions, as they tend to stall when spending.

As to World Bank a real interest rate is an interest rate that has been adjusted to remove the effects of inflation to reflect the real cost of funds to the borrower and the real yield to the lender or to an investor. Simply it is the final interest rate when the expected inflation is deducted from nominal interest rate (European Central Bank, 2016). While the nominal interest rate is the interest rate officially assigned to the product or investment, the real interest rate is a reflection of the change in purchasing power derived from an investment based on shifts in the rate of inflation.

According to World bank definition, expected inflation is investors and public expectations of current or future inflation. These expectations may be or may not be rational, but they may affect how the market reacts to changes in target interest rates.

2.2. Empirical Review

The standard view referred to as the Fisher effect involves examining movements in short term interest rates, expected inflation so as to predict the future inflation using the former. Many authors present a range of ideas through their empirical work throughout history and therefore the review of literature related to these subjects yields mixed results.

According to (DePamphilis, 1975) study, Irving Fisher in 1930 has hypothesised that nominal interest rates could be decomposed into a real and a price component. The long-run equilibrium real rate of interest equates real saving and investment in the long-run. The price factor consists of investors' expectations relating to the future rate of inflation. These expectations are historically determined by a distributed lag on

previous price changes. The influence of the weights associated with this distributed lag decays geometrically into the past. He concludes that a one percent sustained increase in the inflation rate will, with the passage of time, increase the nominal rate of interest by the same amount.

Nominal interest rate is defined as the sum of expected inflation and real interest rate in (Söderlind, 1998) study while (Friedman, 1997) has defined it as relative prices set on loan agreements struck between borrowers and lenders. Further it says these rates are determined in markets where loans are extended and received; and to influence the interest rate either supply of funds by lenders or demand for funds by borrowers should be influenced. (Podkaminer, 1998) in his study has said that a sufficiently high, constant, nominal interest rate is alone capable of generating steady inflation.

“Real interest rates are among the most important economic variables and have been studied extensively. They are a central element in savings, consumption decisions and in debates about how to encourage savings and are also a critical explanatory variable for investment decisions since they represent the real cost of borrowing ” (Mishkin, 1988). Further Barro and Martin (1990) conclude that high real interest rates reflect positive shocks to investment demand (such as improvements in the expected profitability of investment) or negative shocks to desired saving.

The way in which money is viewed to affect real economic activity in almost every theory of the macro-economy is by altering the real interest rate or the terms of trade Mark (1985). Empirically, in the United States the hypothesis of a constant ex-ante real interest rate is generally rejected for most periods, except perhaps the 1953- 71 period chosen by Fama (1975) to test the efficiency of the Treasury bill market. Rose (1988) questioned whether the ex-ante real interest rate is stable or it was characterized by a univariate process with a unit root. For many periods and countries, he failed to reject the presence of an integrated component in the ex-post real interest rate, as did Walsh (1987) for various sample periods in the United States. Potential non stationarities of the ex-ante real interest rate have important implications not only for determining the effects of monetary policy or fiscal policy, but also for some issues that are central to financial theory of Garcia and Perron (1996).

Inflation is a primary concern of Fisher Effect. The maintenance of price stability is important because fluctuating prices distort economy's price signals and can result in the misallocation of resources. The objective price stability translates into maintaining low and stable price, which is considered to conducive for economic growth and employment generation. The barometer for measuring price stability is inflation DAS et al. (2009). According to Schmidt (1957) inflation is a disproportionate and relatively sharp and sudden increase in the quantity of money or

credit, or both, relative to the amount of exchange business. In simple terms it is the continuous increasing in general price level. Further it says that inflation always produces a rise in the price level and is related primarily monetary and fiscal policy forcing prices upward. Economists have related inflation, with its rise in the cost of living, to periods of full employment of labor and other resources. It is thus a phenomenon of booms and prosperity.

Many researchers have been done in identifying determinants of inflation across many time periods and countries. According to those empirical studies, inflation may occur due to many reasons namely money supply (monetary expansion), remittance, GDP, imports and exports, exchange rates, employment and interest rates (Mitchell 1981, Narayan et al. 2011 and Moser 1995).

2.3. Relationship between Interest rates and inflation

According to Fama (1975) during the 1953-71 periods, there are definite relationships between nominal interest rates and rates of inflation that are subsequently observed. As per his studies interest rate remains the best single predictor of the inflation rate; and nobody has uncovered variables that make substantial contributions to the prediction of inflation beyond that provided by the interest rate alone. Moreover, one of the more interesting propositions of the model, that the largest part of the variation in nominal interest rates reflects variation in expected inflation rates, seems intact.

Moreover, during this period the bill market seems to be efficient in the sense that nominal interest rates summarise all the information about future inflation rates that is in time-series of past inflation rates. Finally, another interesting result is that the substantial variation in nominal bill rates during the 1953-1971 period seems to be entirely due to variation in expected inflation rates; in other words, expected real returns on bills seem to be constant during the period In U.S market. Fama further says studies conducted using pre world data, that means before 1953 does not perform efficiently in predicting inflation. In contrast depending on the time period and the country selected through his study concludes that nominal interest rate is a good predictor of expected future inflation rate.

Based on a univariate time-series modeling of the real interest rate, Fama (1977) find that the interest-rate model yields inflation forecasts with a lower error variance than a univariate model, and that the interest rate model's forecasts dominate those calculated from the Livingston survey. Although a flurry of articles appeared after Fama's (1975) the original article focused on Fama's assumption of a constant real rate of interest and only a few studies have examined the forecasting approach detailed in Fama and Gibbons (1984). For example, using quarterly U.S. data, (Hafer & S. E., 1985) the relative forecasting accuracies of the interest-rate model, a

univariate time-series model of inflation, and forecasts taken from the American Statistical Association-National Bureau of Economic Research (ASA-NBER) were compared. Based on ex ante forecasts for the 1970-84 period, they find that the survey forecasts generally have the greater relative accuracy.

Based on the data quarterly 3 months T-bill rates from 1952 -1971 for USA Crowder (1996) says that their empirical support for the Fisher relation is obtained without specifically modeling any changes that may have taken place in the dynamics of inflation over the sample period and accordingly 1 percent increase in inflation yields a 1.34 percent increase in the nominal interest rate. Accordingly, it is clear that there is a positive relationship between these two variables.

Friedman (1980) through the single equation level, the results provide evidence that, with all other things equal, five of the six major categories of lenders in the U.S. long-term fixed-interest loan market reduce their demands for loans in response to an increase in expected inflation. Even life insurance companies, whose liabilities are almost entirely in nominal form, respond to price expectations in this way. Secondly, at the multi-equation partial-equilibrium level, the results indicate that, with all other things equal, this response by lenders will raise the equilibrium nominal loan yield by 0.65 percent in response to a 1 percent increase in expected inflation. The results also indicate that this 0.65 percent adjustment requires approximately four years for completion. The empirical results presented in his paper indicate that lenders' portfolio behaviour does play an important role in the expected price inflation/nominal interest rate relationship.

Further, Khumalo et al. (2017) in his study of the relationship between inflation and interest rates in Swaziland revisited, found that the monetary authority of a country enables to bring the inflation to a manageable level by controlling the interest rate as it changes the money demand of individuals.

Rachel and Smith (2015) attempted to identify which secular trends could have driven a fall in long term interest rates. The quantitative analysis highlighted slowing global growth as one force that may have pushed down on real rates recently but shifts in saving and investment preferences appear more important in explaining the long-term decline. Meanwhile, desired levels of investment have fallen as a result of the falling relative price of capital, lower public investment, and due to an increase in the spread between risk-free and actual interest rates. Moreover, most of these forces look set to persist and some may even build further. This suggests that the global neutral rate may remain low and perhaps settle at 1% from the medium to long run.

Kilci (2018) in the study of analysis of the relationship between inflation and central bank interest rates in turkey: Fourier approach, empirically proved that the existence

of causality relationship between interest rate (repo rate) and CPI for Turkey within the period from 2005 to 2017.

According to studies conducted by Hafer and Hein (1990) the important result they were able to derive is that, based on data from several countries, inflation forecasts generated from observed nominal interest rates do not dominate those from a univariate time-series model. This conclusion contrasts with that of Fama and Gibbons (1984), who focused solely on U.S. data. Based on the evidence from Belgium, Canada, England, France, and Germany, he has found that time-series forecasts of inflation have equal or lower forecast error and produce unbiased forecasts more often than the interest-rate model. The interest-rate model, it should be noted, generally over predicted inflation for the 1978-86 period for all countries studied. The other important finding from this study is that the interest-rate model forecasts may provide marginally useful information that allows one to improve on the time-series inflation forecasts. This is true for France, Germany, and the United States. This result suggests that the best inflation forecast is one that combines the information inherent in both the time-series and interest-rate models.

Söderlind (1998) conducted his study for two countries namely USA and UK for 1953 – 1995. His data shows that the simple forecasting rule would have worked fairly well in predicting the level of inflation expectations for most of the postwar period. According to Choi (2002) and his studies conducted using US three months T bill rates for a period of 1947 – 1997 Inflation tends to be positively related to short-term inflation forecast ability and is highly plausible that long-term uncertainty outweighs short-term uncertainty during high-inflation periods and, hence, that inflation is positively related to inflation forecast ability.

Kasman, et al. (2006) The study conducted for two types of countries developed, developing for a period of 1957 – 2004 shows a positive relationship between inflation rate and nominal interest rate. Barthold and Dougan (1986) suggested that the predictability power of inflation prior to Second World War is negative while predictability power after war period is positive when considering USA and Australia and under all monetary regimes. Further it says that the early 1980s are a notable exception, since the very volatile real interest rates during this period weaken the link between nominal interest rates and inflation expectations. The results from ex post data are, on average, less favourable to the simple rule than the survey data. They are also less reliable because they vary considerably between subsamples. The idea behind the ex-post regression is that, under rational expectations, the difference between expected and actual inflation should be uncorrelated with the interest rates. However, this may easily fail in a small sample if, for instance, the economy is hit by a series of unprecedented inflation shocks (as in the 1970s). The difference between

the results for the ex-post data and the survey data suggests that this is an important factor behind many of the traditional results regarding the Fisher effect. Nominal interest rates seem to be able to predict much of the variation in the level of inflation expectations, perhaps as much as three quarters. This fraction may even be somewhat larger if we consider average inflation over a few years, but it is clearly smaller for changes in inflation. The reason seems to be that real interest rates and risk premium have relatively more short-run movements than inflation expectations.

Costas and Smith (1998) suggested a threshold effect in the relation between inflation and returns. Since real balances and bank deposits are substitutes in households' portfolios, the zero-nominal return on real balances anchors the rate of return on bank deposits. In a low-inflation economy in which credit is not rationed, an increase in inflation leads to lower real rates (and a higher capital-output ratio) conversely, in a high-inflation economy in which credit must be rationed, an increase in inflation leads to a smaller capital stock. Thus, whether or not the economy has credit rationing is crucial for the link of the inflation level to the inflation effect on returns. Also, its assumption of a constant implicit real rate of return on real balances anchors the nominal rate. Using cross-country data, Michelle et al. (1999) find that inflation and nominal rates are only weakly positively correlated for low-to-moderate-inflation economies, whereas inflation has a positive effect on nominal rates for high-inflation economies. This line of research reconciles framework, in that asset substitutability is emphasized. Their framework, however, emphasizes the link between the inflation process and asset substitutions, assuming that the implicit real returns to real balances rise with inflation if inflation is persistent.

Many reasons have been given for the apparent absence of a short-run Fisher effect in the U.S. before World War I. Friedman and Schwartz (1982) speculated that inflationary expectations adjusted with a very long lag as agents only gradually "learned their Fisher," while (Summers, 1983) argued that money illusion in financial markets was perhaps responsible for the lack of empirical support. Barsky (1987) argued that inflation was essentially a white noise and an unpredictable process before World War I. As a result, Barsky (1987) concluded that "there was probably little variation in expected inflation prior to 1913." If expected inflation was constant, then no correlation would exist between expected inflation rates and nominal interest rates. Barsky and DeLong (1991) also emphasized the inability of investors to forecast inflation but focused explicitly on the failure of investors to understand the quantity theory.

According to the preliminary work done, evidence of negative correlation between inflation and interest rates where the two variables are treated as stationary processes which are subject to temporary disturbances (Mishkin, 1981), (Gibson, 1972)

(Mishkin, 1978). The analysis done by Evans and Lewis (1995) identifies the different types of negative correlations that can be explained theoretically. First, Tobin (1969) and Mundell (1976) present that higher inflation results in a portfolio shift out of nominal assets and into real assets that decreases the return on assets. Second, Fama (1981) and Gibbons (1982) discuss that higher real rates reflect higher productivity in the economy and real rates are correlated with output disturbances.

The paper by Leiderman (1979) presented empirical evidence on the relationship between expected inflation and interest rates for the case of Argentina (1964-76) and arrived at two major conclusions from the analysis. They yielded mixed results. "First, in setting the quarterly nominal interest rate the market appears to use all the information about the subsequent inflation rate that is in time-series of past inflation rates. Thus, Fama's findings on this issue for the United States hold also in the different setting of a high-inflation, semi-industrialized country. Second, the sample information indicates that, at variance with a strict version of Fisher's theory, an increase in expected inflation is not fully transmitted to the nominal interest rate, so that it implies a reduction in the contemporaneous real interest rate."

Klein (1975) stated that "clearly, any period in which the Gibson Paradox is observed will not yield a good fit of the Fisher equation" and he verified this by finding no significant relation between interest and inflation in the United States until about 1960. Summers (1983) has analyzed a long time series of U.S. interest and inflation rates with similar results. Studies using postwar U.S. data have found a significant effect of expected inflation on nominal interest rates, although in no case has that effect been so large as to keep after-tax real rates of return unaffected by expected inflation (see, for example, Fama, 1975; Tanzi, 1980; Peek, 1982; Makin, 1983). There is, then, a clear difference between the pre- and postwar eras either in the way in which bond market participants forecasted inflation or in the way in which expectations of inflation affected nominal yields.

Koch and Hein (1988) compared inflation forecasts derived from tax-exempt yields to those from taxable Treasury bills. Comparing monthly out-of-sample forecasts for the period 1978-86, they did not find any improvement in inflation forecasts by using the tax-exempt yields. Crowder also found in his research that in contrast to Fama (1975), that short-term interest rates may not be good predictors of future inflation. In fact, there are opposite predictive structures that have been identified. But it may take a number of years before the effect of inflation shocks are fully reflected in nominal interest rates as evidenced by the variance de-composition analysis.

Even if the theory suggests that the long-run behavior of the ex-ante real rate is linked directly to the long-run relationship between inflation and nominal interest rates and

the Fisher identity defines the ex-ante real rate as the difference between the nominal interest rate and expected inflation. Evans and Lewis (1995) conclude based on their empirical estimates that inflation does not move one-for-one with the nominal rate in the long run. These results complement the earlier findings of permanent shocks in real rates in the literature.

Levi et al. (1978) has a view that empirical investigators of the effects of anticipated inflation have not been well served by prior beliefs based either on the Fisher hypothesis. The Fisher hypothesis has tended to serve as a criterion for the validity of measures of anticipated inflation for those investigators who search for the measure which results in an estimate of differentiations close to unity. Further it says like the Philips curve, neither the Fisher hypothesis nor the Darby hypothesis represents an isolated phenomenon, but rather should be viewed as a reduced-form relationship derivable from a set of structural equations which compose a reasonably comprehensive macro-economic model.

According to study conducted by Barsky (1987) reexamination and finds that the evidence does not support a short-run relationship between interest rates and future inflation. However, the nonexistence of a short-run Fisher effect does not rule out the possibility that there is a long-run Fisher effect in which inflation and interest rates share a common trend when they exhibit trends. This paper also conducts tests for co-integration along the lines of Engle and Granger (1987) to test for a common trend in interest rates and inflation, and it does find evidence for a long-run Fisher effect in the postwar U. S. data. The above evidence resolves the puzzle of why the Fisher effect appears to be strong in some periods but not in others. The existence of a long-run Fisher effect implies that when inflation and interest rates exhibit trends, these two series will trend together and thus there will be a strong correlation between inflation and interest rates. Just as this analysis predicts, the Fisher effect appears to be strong in the periods when interest rates and inflation exhibit trends. On the other hand, when these variables do not exhibit trends, a strong correlation between interest rates and inflation will not appear if there is no short-run Fisher effect. Thus, the presence of a long-run but not a short-run Fisher effect predicts that a Fisher effect will not be detectable (Sims, 1980) for an excellent review of this topic. There are periods when interest rates and inflation do not have trends. It is exactly in these periods that we are unable to detect any evidence for a Fisher effect. (Mishkin, 1988)

Literature does suggest about methodology. Crowder (1996) recognized that valid tests of the Fisher relation may require consideration of the time series properties of the data. These include papers by Rose (1988), Mishkin (1992), and Evans and Lewis (1995). Rose analyzes the time series properties of the variables that constitute the Fisher paradigm and concludes that interest rates possess a unit root in their

autoregressive representation, but inflation does not. If these properties do characterize the data, a regression of interest rates on inflation is necessarily spurious (Newbold and Davies 1978) because it attempts to link variables that maintain different orders of integration. In this case the real interest rate is a non-stationary series and the textbook representation of the Fisher relation may be rejected out of hand. Rose's conclusions must be viewed carefully since the statistical inference drawn from his tests does not account for the small sample distributions of standard unit root tests in the presence of moving average errors that may characterise U.S. inflation. Moreover, it is widely recognised that conventional univariate unit root tests have a difficult time distinguishing unit and near unit root processes and may not be able to provide a definitive test of the proposition. Mishkin (1992) takes the non-stationarity of inflation and nominal interest rates as a maintained hypothesis and applies the Engle and Granger (1987) methodology to test for common stochastic trends. The simple Fisher relation predicts that two series share a common stochastic trend and a long-run unitary (ignoring tax considerations) response of nominal interest rates to movements in the expected inflation rate. While noteworthy, Mishkin's analysis does not provide particularly sharp statistical inference because his estimate of the relation between inflation and nominal interest rates is very imprecise. However, Mishkin's analysis serves as an important first step, but it would be useful to obtain better measures for the long-run relation.

3. Methodology

The main objective of this study is to investigate the predictability power of inflation rate using nominal interest rate in South Asian countries while other variables stay as control variables. Further, the sub-objective of this study is to illustrate disparity between interest rate and inflation rates across South Asian countries. This study uses annual data for South Asian countries from the period 2005 – 2015. Major macroeconomic variables that have been selected through literature analysis are inflation rate, interest rate, money supply, real GDP, exchange rate, employment rate and imports. Annual Treasury bill rate, Real GDP, exchange rates, imports of goods and services and Broad Money Supply (M2) data were obtained from World Development Indicators database of the World Bank 2017. A balanced panel data regression is done to examine above mentioned main objective. A balanced panel is a multi-dimensional data set observed over multiple time periods. And the specialty in this research is it uses all the countries in South Asian Region. Therefore, this is a population study.

Dependent variable of the study is inflation rate of South Asian countries. Through previous literature both inflation and CPI index's first difference have taken as inflation rate in different analysis. CPI has been used by many scholars in their studies (Engsted, 1995). Change in the consumer price index is a widely perceived and recognized measure of inflation. It may not be conceptually ideal, but it does have its own cyclical pattern, and has less statistical irregularities than some other measures of the inflation rate. The first difference of natural logs of consumer price index has been taken as the inflation of related countries. But in this research inflation rate directly will be used instead.

This study focused on testing the movement of inflation rate in relation to the selected independent variables. Annual Treasury bill rate has been selected as the main indicator to measure the impact of interest rate on inflation rate in South Asian context. Treasury bill rate is identified as a risk-free financial instrument since it is government guaranteed security. This study uses control variables in estimating predictability power of inflation using interest rate. Here in this piece of research four such control variables are used, and they are real GDP, imports, exchange rate and broad money supply (M2), employment rate.

Regression Model

$$IR = \beta_0 + \beta_1 TB + \beta_3 Ex + \beta_5 GDP + \beta_4 Im + \beta_6 M2 + \beta_6 Emp$$

Where,

IR	- Inflation Rate
TB	- Annual Treasury bill rate
Ex	- US dollar exchange rate
GDP	- Real GDP
Im	- Imports of goods and services (US\$)
M2	- Money supply (m2)
Emp	- Employment Rate

Two models will be run to test predictability power of inflation rate using nominal interest rate. One model will be used to test for South Asia as a whole while second model will be run for each individual country separately to examine how those macro-economic variables behave in country context.

4. Analysis and Findings

Independent variables are in different forms. Some variables like TB rate, employment rate are in percentages. Some variables like imports of goods and

services, real GDP are in Rupee millions. Therefore, to bring all variables to one basis the log forms of independent variables were used.

Therefore, the model which was used for estimation is as follow.

$$IR = \beta_0 + \beta_1 \log TB + \beta_3 \log Ex + \beta_5 \log GDP + \beta_4 \log Im + \beta_6 \log M2 + \beta_6 \log Emp$$

4.1. Model 01: South Asia

The overall analysis of relationship between Inflation rate and other macro-economic variables determines inflation in South Asia. Empirical analysis uses all 8 countries of South Asian region from 2005 to 2015. Panel data analysis used for the analysis.

Accordingly, variables were included to the model based on correlation values, i.e. from the highest correlation to the lowest, by giving careful attention to the sign of the variable coefficient in model, in order to overcome multicollinearity problem. Further, VIF test confirmed that the model is free from the errors of multicollinearity. Hausman test recommended the suitability of random effect model over fixed effect model. The model was adjusted to overcome the errors of heteroskedasticity. The results are given in Table 01.

Table 01: Results of South Asia

Statistic	T. Bill rate	Exchange rate	Real GDP	Imports	Money supply	Employment rate
Co-efficient	-93.23	26.42	-4.38	27.47	-9.36	122.74
P -value	0.00	0.043	0.00	0.00	0.00	0.00

Source: Compiled by author

Overall model and significant variables are significant at 1% level of significance. R² of the model is 41% which indicates 41% of dependent variable explained by selected independent variables. Treasury bill rate which represents the nominal interest rate is negatively significant at 1% level of significance.

4.2. Model 02: Country Analysis

A time series multiple regression model for individual countries were run to test the sub objectives of research as mentioned above. To investigate the relationship between inflation rates and interest rates along with identifying disparity between interest rates and inflation rates across South Asian countries. Afghanistan and Maldives were dropped due to lack of data in testing individual models. Models were

run for other six countries only. Results of models are interpreted below. Variables were tested for stationary levels and tested for multicollinearity and heteroskedasticity. Multiple regression model results of each country is given below.

Table 02: Regression output results of country analysis

	Bangladesh	Bhutan	India	Nepal	Pakistan	Sri Lanka
T. Bill rate	13.09***	51.19**	-8.32***	-7.77***	-22.98***	21.16***
Exchange rate	-22.87***	244.99**	24.12**	-15.99**	-30.54**	35.23***
Real GDP	-0.71***	132.99**	-1.27***	-1.28***	-0.92***	-0.73***
Imports	14.48***	-0.96***	-0.89***	-16.44***	-5.99***	8.29***
Money Supply	-200.8***	-7.66***	2.76***	29.32***	32.17***	-13.84***
Employment rate	-16.02***	-49.74***	-354.62***	-278.72***	-33.14***	-27.76***
Observations	32	32	32	32	32	32
F statistic	0.03	0.0000	0.0000	0.0000	0.0000	0.0000
R-squared	23%	30%	33%	29%	27%	17%

Source: Compiled by author

4.3. Findings

The model 01 for South Asian Region is significant under 5% level of significance and therefore it can be concluded that the inflation rate of South Asian countries can be predicted through nominal interest rate. There is a negative relationship between interest rate and inflation rate in South Asian region, which means, when interest rate changes, the inflation rate will change to the opposite direction.

All the independent variables are also significant under 5% level of significance. Even in individual country contexts except for Afghanistan and Maldives (Estimation of models were unable due to lack of data) inflation rate can be predicted through interest rate. The F statistics of individual models are less than 0.05. Each country's

model namely; Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka is significant under 5% level of significance.

The individual p values of respective independent variables in each model are less than 0.05 which leads not to accept null hypothesis. Therefore, independent variables allocated for each model in each country is also significant under 5% level of significance. There is a disparity between inflation rate and interest rate across South Asian countries. Models for individual countries estimated different co-efficient for each country which means the degree of changing inflation rate is due to the change of interest rate. Bangladesh, Bhutan and Sri Lanka's interest rates positively correlate to respective country's inflation rates while India, Nepal and Pakistan's interest rates negatively correlates to inflation rates in respective countries.

5. Conclusion

This study was carried out to identify the predictability power of inflation rate using nominal interest rate for South Asian region. That was the main objective of the study and sub objectives were aimed to find country wise predictability power and disparity between inflation rate and interest rate across South Asian countries. Thus, to meet with objectives a panel model regression and 6 time series regression models were estimated. And it was found that inflation rate can be predicted through short term nominal interest rate. Also, there is a disparity between inflation rate and interest rate across countries in the region.

As explained in previous chapter it is concluded that the predictability power of inflation rate can be done using short term interest rate. As per the thesis it is by using TB rates. Further it was revealed that this scenario is common for all the South Asian countries considered and there is a disparity between interest rate and inflation rate across countries. According to (Fama, 1975), (Hafer & Hein, 1990), (Söderlind, 1998) it has been concluded and founded that interest rate is the best predictor of inflation rate. There is a disparity for countries like India, Nepal and Pakistan for there is a negative relationship between interest rate and inflation rate. Scholars like Mishkin (1981), (Fama 1975), (Gibson, 1972), (Friedman, 1980) have found that there is a one to one negative relationship between interest rate and expected inflation. Bangladesh, Bhutan and Sri Lanka are having a positive relationship between inflation and interest rate (Crowder, 1996) (Choi, 2002) (Kasman, et al., 2006), (Michelle, et al., 1999) through their researches, they have proved that there is a positive relationship between interest rate and inflation rate even if the interest rate is a predictor of expected inflation. So, it can be concluded that even if the interest rate is a predictor of inflation there can be positive and negative relationships between

interest rate and inflation rate depending upon the country and the time period which was tested. Therefore, the results of this research can be used by central bank of any country in implementing monetary policy and deciding on actions on interest rate as an instrument.

References

- Barro, R. J. & Sala-i-Martin, X 1990, 'World real interest rates', *NBER Working Papers from National Bureau of Economic Research Inc*, no 3317.
- Barsky, R. B 1987, 'The fisher hypothesis and the forecastability and persistence of inflation', *Journal of Monetary Economics*, vol. 19, no. 1, pp. 3-24.
- Barsky, R. B. & DeLong, B. J 1991, 'Forecasting pre-world war i inflation: the fisher effect and the gold standard', *The Quarterly Journal of Economics*, vol. 106, no. 3, pp.815-836.
- Barthold, T., & Dougan, W 1986, 'The fisher hypothesis under different monetary regimes', *The Review of Economics and Statistics*, vol. 68, no. 4, pp. 674-679.
- Woon Gyu Choi 2002, 'the inverted fisher hypothesis: inflation forecastability and asset substitution', *IMF Staff Papers*, Palgrave Macmillan, vol. 49, no. 2, pp 1-4.
- Cooray, A., 2002, 'The fisher effect: a review of the literature', *Research papers from Macquarie University, Department of Economics*, no. 206
- Costas, A. & Smith, B. D 1998, 'Financial intermediation and regime switching in business cycle', *American Economic Review*, vol. 88, no. 3, pp. 516-36.
- Crowder, W. H 1996, 'The long run relationship between nominal interest rates and inflation: the fisher equation revisited', *Journal of Money, Credit and Banking*, vol. 28, pp. 102-18.
- Das, A., John, J., & Singh, S 2009, 'Measuring core inflation in India', *Indian Economic Review*, vol. 44, no. 2, pp. 247-273.
- DePamphilis, D. M 1975, 'Long term interest rates and the anticipated rate of inflation', *Journal Business Economic*, pp. 11-18 Pages
- Dwyer, G 1984, 'The Gibson paradox: a cross-country analysis', *Economica*, vol. 51, no. 202, pp. 109-127.

Engsted, T 1995, 'Does the long-term interest rate predict future inflation? A Multi-Country Analysis', *The Review of Economics and Statistics*, pp. 42-54.

European Central Bank 2016, 'What is the difference between nominal and real interest rates?' accessed by:https://www.ecb.europa.eu/explainers/tell-me/html/nominal_and_real_interest_rates.en.html.

Evans, M. D. D. & Lewis, K. K 1995, 'Do expected shifts in inflation affect estimates of the long-run fisher relation?', *The Journal of Finance*, vol. 50, no. 1, pp. 225-253.

Esra N. Kilci (2018), Analysis of the relationship between inflation and central bank interest rates in turkey: fourier approach, *International Journal of Economic and Administrative Studies*, 2019 (22): pp.135-146.

Fama, E 1975, '*Short-term interest rates as predictors of inflation*', *The American Economic Review*, vol. 65, no. 3, pp. 269-282.

Fama, E 1977, Interest rates and inflation: the message in the entrails', *The American Economic Review*, vol. 67, no. 3, pp. 487-496.

Fisher, I 1930, '*The Theory of Interest*', Macmillan Company, United Nations of America.

Friedman, B 1980, 'Price inflation, portfolio choice, and nominal interest rates', *The American Economic Review*, vol. 70, no. 1, pp. 32-48.

Friedman, B. M 1997, 'Who puts the inflation premium into nominal interest rates?', *The Journal of Finance*, vol. 33, no, 3.

Friedman, M. & Schwartz, A. J 1982, '*Monetary trends in the United States and the United Kingdom, their relation to income, prices, and inflation*', National Bureau of Economic Research, University of Chicago Press.

Garcia, Rene & Perron, Pierre 1996, 'an analysis of the real interest rate under regime shifts', *The Review of Economics and Statistics*, vol. 78, no. 1, pp. 111-125.

Gibson, William E 1972, 'interest rates and inflationary expectations: new evidence', *American Economic Review*, vol. 62, no. 5, pp. 854-865.

Hafer, R W & Hein, Scott E 1985, 'on the accuracy of time-series, interest rate, and survey forecasts of inflation', *The Journal of Business*, vol. 58, no. 4, pp 377-398.

Hein, S. E. & Hafer, R. W 1990, 'Forecasting inflation using interest-rate and time-series models: some international evidence. *The Journal of Business*, pp. 1-17.

South Asian Regional Update, 2017, International Monetary Fund.

Kasman, S., Kasman, A. & Turgutlu, E 2006, 'Fisher hypothesis revisited: a fractional cointegration analysis', *Emerging Markets Finance and Trade*, vol. 42, no. 6, pp.59-76.

Klein, B 1975. 'Our new monetary standard: the measurement and effects of price uncertainty, 1880-1973', *Wiley Online Library*, vol. 13, no. 4, pp. 461-484.

Koch, T. W. & Hein, S. E 1988, 'Interest rates, taxes and short-term inflation forecasts'.

Leiderman, L 1979, 'Interest rates as predictors of inflation in a high-inflation semi-industrialized economy', *The Journal of Finance*, vol. 34, no. 4, pp. 1019-1025.

Levi, M., & Makin, J 1978, 'Anticipated inflation and interest rates: further interpretation of findings on the fisher equation', *The American Economic Review*, vol. 68, no. 5, pp.801-812.

Lindiwe Catherine Khumalo, Emmanuel Mutambara and Akwesi Assensoh- Kodua (2017). Relationship between inflation and interest rates in Swaziland revisited. *Banks and Bank Systems (open-access)*, 12(4), 218- 226.

Mark, N 1985, 'A note on international real interest rate differentials', *The Review of Economics and Statistics*, vol. 67, no. 4, pp.681-684.

Michelle, B., Boyd, J. H. & Smith, B. D 1999, 'Inflation and asset return', *European Economic Review*, vol. 43, pp. 737-754.

Mishkin, F. S 1981, 'The real interest rate: an empirical investigation', *Carnegie-Rochester Conference Series on Public Policy*, Vol. 15, pp. 151-200.

Mishkin, F 1988, 'Understanding real interest rates', *American Journal of Agricultural Economics*, vol. 70, no. 5, pp. 1064-1072.

Frederic S. Mishkin 1978, 'Efficient-markets theory: implications for monetary policy', *Brookings Papers on Economic Activity, Economic Studies Program*, vol. 9, no. 3, pp. 707-752.

- Mitchell, D 1981, 'Determinants of inflation uncertainty', *Eastern Economic Journal*, vol. 7, no.2, pp. 111-117.
- Morck, R. & Yeung, B 1991, Why investors value multinationality. *Journal of Business*, 64(2), pp. 165-87.
- Moser, G. G 1995, 'The main determinants of inflation in Nigeria'.
- Narayan, P. K., Narayan, S. & Mishra, S 2011, 'Do remittances induce inflation? fresh evidence from developing countries'.
- Podkaminer, L 1998. Inflationary Effects of High Nominal Interest Rates.
- Rachel, L. and Smith, T. D. 'Secular drivers of the global real interest rate', *Staff Working Paper No. 571*, Bank of England.
- Rose, A. K 1988, 'Is the real interest rate stable?', *The Journal of Finance*, Vol. 43, no. 5, pp. 1095-1112.
- Schmidt, E 1957, 'Full employment as a cause of inflation', *Proceedings of the Academy of Political Science*, vol. 26, no. 3, pp. 9-26.
- Sims, C 1980, 'Macroeconomics and reality', *Econometrica*, vol. 48, no. 1, pp. 1-48.
- Söderlind, P 1998, 'Nominal interest rates as indicators of inflation expectations', *Scandinavian Journal of Economics*, vol. 100, no. 2, pp. 457-472.
- Summers, L. H 1983, 'The nonadjustment of nominal interest rates: a study of the fisher effect', *NBER Working Paper*, no. 836.

The Social Support impact on Professional Empowerment of the Female Nursing Professionals in Sri Lanka

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Abstract

Professional Empowerment increases the opportunities of professional growth. It relates to both external and internal beliefs and attitudes. Considering the deficit of nursing professionals around the world, it is essential to empower the current nursing community to manage the aging matters and burnouts. The prime objective of this study was to examine the relationships among the Social Support (SS) towards the professional empowerment (PE) of the registered nurses in Sri Lanka who is currently following their undergraduate studies. A questionnaire survey was used to test the hypothesis which were distributed among 191 female nurses of state hospitals in Sri Lanka. According to the descriptive analysis, the responses were close to the average to agreed level in the results. The highest standard deviation belongs to community support with a level of 0.82. This is illustrated that community support has a comparatively higher variance. Based on the Kolmogorov test it was assumed that the data were normally distributed, and the parametric techniques can be applied in the analysis with pearson correlation and the regression analysis. The results indicated that all three factors have moderate association with the professional empowerment. For further research it is suggested that different factors should be considered towards the professional empowerment in various categorical hospitals in Sri Lanka.

Index Terms - Professional Empowerment, family support, workplace support, community support, Social Support

1. Introduction

Professional interests are important aspects in the professional path of youth, and there is a need for studies to investigate and map the processes of insertion, performance, continuation in courses and prevention of drop-out. The choice of the profession can also be influenced by factors such as home incentives, school incentives, peer and community expectations, etc. (Brownie, 2018).

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The performance of health care systems depends on the knowledge, skills and motivation of the people responsible for delivering services (Albrecht TL, 2003). Education and training are key investment tools as old skills become obsolete with the advent of new technologies. Nurses can be introducing as lifelong learners. Continuous professional Development-CPD through education is plays an important role to empower them (Snyder, 2009).

Professional empowerment is essential for enhancing nurses' roles, strengthening their professional image, and continuously improving the health care system nationally and globally (Fletcher, 2006). Nurses need to maintain competency and keep up to date with the most recent research and developments in patient care. The nursing profession is accountable for providing high-quality care for patients and families in the society. Hence that it is extremely important in the nursing profession to empower their community. Nursing is still challenged by negative attitude, stereotypes and nurses continue to lack of empowerment (Assunção AÁ, 2013).

The total population of the registered nurses in Sri Lanka will be approximately 40,000 and most of them are joining in their service as diploma nurses. As much of the professionals are females; it is essential to address how empowerment has developed among them with the opportunities. Even though, literature is available on Western and Asian countries, there are not enough literature of any kind that has been written exclusively in the discipline of professional empowerment of nursing community in Sri Lankan context.

The state will provide post-basic training courses on a limited group of nurses' times to time, to get the promotions in the carder and skill development. As there are fewer opportunities, some of them are following their higher studies personally while working to achieve their personal goals. Though they are well skilled in the clinical set up only a limited number has engaged in the continuous education ladder which is comparatively less than 10% of the population. They are doing a lot of sacrifices with long hours of duties due to the lack of staff and other family commitments while reserving a personal time for their studies. Most of their ultimate achievements are ending with self-satisfaction; as there are no proper scales that impact their increments in their salary scales / allowances where other countries paying high scales with higher studies. In the preliminary studies / interviews with their comments, it was noticed they are facing physical, attitudinal and structural barriers which can impact for their empowerment while continuing their studies with their other commitments.

Hence, this research will contribute theoretically to fill the gap of knowledge existing in literature concerning family and workplace social support with planned behavior of female nursing professionals who follow higher studies for their professional empowerment in Sri Lanka.

2. Literature Review

The nursing profession has always been considered as a female's job (Tracey, 2007). The researchers have also stated that the concept of gender ideology is affected by social, political, and economic factors. Career development between men and women, indicated there is evidence of differences in performance. Compared with male nurses, female nurses are not behaving more spontaneously, participate more actively in professional work, and not have higher ambitions for developing and advancing their careers. Gender issues must be considered when we look at career development (Albrecht TL, 2003).

The factors influencing the choice of the profession have been the focus of many studies in a wide range of areas, in the framework of social and behavioral psychological theories (Dale., 2001).

Nursing education positively impact on health care outcomes (Bartram, 2004). The continuing professional development of the registered nurses is not exclusively the responsibility of the individual or the employing authority but of both. The individual nurse has the right to expect the provision of training opportunities, and the employer should expect the nurse to maintain and develop the skills for which she is employed (Jooste, 2005) (Richards, 2010) (McMillian, 2006).

Nurses are facing various difficulties engaging in their continuous education. Physical barriers can include lack of time due to working hours, family and child care responsibilities; difficulties in paying course fees and fear of losing benefits; ill health; difficulty with reading and writing; difficulties with English if this is not the learner's first language; and difficulties with statistics. Attitudinal barriers refer to being nervous about going back to the classroom and concern about not being able to keep up; skepticism about the value of continuing education; low self-esteem and lack of confidence both generally and in relation to learning; low aspirations and lack of role models; lack of trust in formal institutions; and a perception that they are too old to learn. Structural barriers include lack of support; limited opportunities for learning near to place of residence/work; lack of the necessary entry requirements to post registration programs; and lack of knowledge about learning opportunities (Fletcher C. , 2001).

Social support and professional empowerment were significantly and positively correlated with nursing career development among male nurses (Chen, 2010). Changes in their professional role can also lead to a great deal of frustration for the profession, when trying to satisfy the demands of the organization and the needs of the staff (Fletcher C. , 2001) .

Nurse managers face the dilemma of either releasing staff for training, which may result in staff shortages, or discouraging nursing skills development - and the manager is more likely to be criticized for being short of staff than for having nurses who are short of skills. These comments contributed to arousing the researcher's interest in finding the relationship of the identified factors towards their professional empowerment. where the problem is in terms of the professional empowerment Nurses themselves want to feel cared for. Caring involves being treated with dignity and respect (Albrecht TL, 2003)and (Cohen S, 1985).

Social support was defined as verbal and nonverbal communication that helps one manage uncertainty and increases one's perception of personal control over one's life experiences. Thus, the focus was on workplace communication and physicians' perceptions of them (Franklin, 2011).

As to social support, it was the individuals who receive physical and emotional comfort given by family, friends, colleagues, supervisors, and it has both direct and moderating effects on mental health. To our knowledge, there is a lack of research on social support and career development. However, social support was the major resource that nurses identified that they needed when dealing with occupational pressure. Individuals that have multiple sources of social supports perceive less occupational pressure (Kraimer, 2001).

For male nurses, who choose an unconventional occupation, it is particularly reliant on support from others. In various social support, supervisor's support was important. Without a supervisor's support, a nurse may experience health problems (e.g., high blood pressure, depression, job stress, etc). The high levels of support from one's supervisor have the potential to decrease feelings of emotional exhaustion (S.H. Hamaideh rn, 12 February 2008). Moreover, coworkers' support was also important. (Shirey, 2004) study indicated the occupational pressure incurred by the job itself is reduced when they receive the support of their coworkers. (Bartram, 2004)stated that social support derived from either a supervisor or a coworker is negatively associated with the main job stressors experienced by male nurses, such as role conflict, role ambiguity, work overload, and resource inadequacy. A study revealed that support

from family and friends, as well as interaction with a mentor, enhanced registered nurses' perception of job satisfaction and aspirations of professional advancement. (LisaSundin, 2007) found that professional empowerment had a negative association with occupational burnout and had a mediating effect between the work environment (especially in terms of feelings of control and social support) and occupational burnout. In other words, the more the social support nurses had, the higher their potential to remain in the nursing job and develop nursing career. No study investigated the correlation between social support and nursing career development. In this study, we hypothesize that social support is positively correlated with successful nursing career development.

A very important factor in managing stress has proved to be social support. Social support refers to social interaction in which resources are received from others (Cohen S, 1985). Social support helps to manage uncertainty, increases one's perception of personal control over one's life experiences (Albrecht TL, 2003), and helps one toward goals (Brownie, 2018).

In medical work, support from both leaders and co-workers is strongly connected to lowered job strain and improved health outcomes (Lindfors PM H. T., 2009)[(Tsai Y-C, 2012) (Wang J-N, 2010) (Wang L-J, 2011). Social support can promote coping (Franz S & 10:51., 2010), diminish occupational stress (Walsh J. Gender, 2013;) (Wu H, 2010;)and reduce perceptions of depersonalization (Snyder, 2009). It can prevent psychiatric symptoms and common mental disorders (Jasper S, 2012;) (Assunção AÁ, 2013;) and has a protective function against possible suicidal intentions (Wall M, 2014;) (Lindfors PM M. O., 2009). Social support can provide advantages other than stress management. Some studies indicate that social support significantly explains job satisfaction (Jönsson, 2012;) (Pearson A, 2006;) and positively correlates with physicians' organizational commitment and engagement (Freeborn, 2001;). There is also some evidence showing connections between social support and learning or professional development; there are correlations between social support and work orientation (Jackson VA, 2008;), as well as general practitioners' work practices. There is some evidence that social support can develop working skills in patient-caregiver relationships [13] and social support can impact managerial learning (Ouweneel AP, 2009;). Co-worker support is significant for professional efficacy and self-efficacy.

According to the Theory of Planned Behavior, people are reasonable and evaluate consequences before engaging in certain actions. Attitude toward behavior is one's positive or negative evaluation of self-performance of the behavior. Subjective norm is one's perception about the behavior as influenced by social pressures and can lead

to doing or abandoning the behavior. Perceived behavioral control is one's perceived ease or difficulty of performing the behavior. This theory has used in various studies in predicting the behavior of different groups of healthcare providers, including nurses too. so it can be address with the career choice, social support and the continuous education of the Nurses towards their professional empowerment (Fletcher, 2006) and [1 (Franklin, 2011).

The need for nurses is growing with the ever increasing ageing population in the western world (Franklin, 2011) and the approaching retirement of a major part of the nursing workforce in these countries who are aged over 45 years (Hill, 2011). According to the qualitative and quantitative studies in the United States of America found that the nursing shortage was not related to recruitment of students into programs, but rather workplace issues such as job stress, management issues were the reasons for failure to nurture new nurses (JJ Duvall, 2010). Other factors included education issues such as lack of qualified facilitators and clinical sites to allow more students to be admitted into programs.

Hence, this study has been carried out to find the relationship among the professional empowerment with family support, workplace support and social support of the Sri Lankan Nurses who are following continuous education.

3. Research Problem

According to some preliminary studies Sri Lankan Nurses still received a feeling that they are not receiving inadequate support from significant others, including their workplace and others.

Nurses need to maintain competency and keep up to date with the most recent knowledge and developments in patient care. The nursing profession is accountable to society for providing high-quality care for patients and families. Hence, it is extremely important in the nursing profession to empower in order to achieve professional growth.

Nursing is still challenged by negative stereotypes and nurses continue to lack empowerment. Fletcher (2006) suggested professional empowerment is essential for enhancing nurses' roles, strengthening their professional image, and continuously improving the health care system nationally and globally. Hence, understanding the influences of social support, professional empowerment to nursing career development of male nurses may be an important issue.

To understand the relationship of the social support towards the professional empowerment in Sri Lankan context, the researcher has the following question;

How does the social support impact towards the professional empowerment (PE) of the female nurses in Sri Lankan context?

4. Research Methodology

The primary objective of this study is to identify the relationships of various kinds of social supports towards the professional empowerment of the female registered nurses in Sri Lanka. As stated in the literature survey, social support has positive relationship with professional empowerment. Thus, three variables (FS, WS & CS) are identified as independent variables and PE is the dependent variable in the research framework. The following three hypotheses are developed:

H1: There is a relationship between Family Support and the Professional empowerment

H2: There is a relationship between Workplace Support and the Professional empowerment

H3: There is a relationship between Community Support and the Professional empowerment

To examine the aforesaid hypotheses, a questionnaire survey was carried out among the female registered nursing officers in Sri Lanka. The population was more narrowed to the female registered nurses who are following their graduate studies in Sri Lanka. It can consider a population of 3000 nursing undergraduates who are currently following higher education while working in government hospitals in Sri Lanka.

The researcher selected a random sample out of the final year undergraduates currently studies in Nursing in a higher educational institute named KIU for the study. Further; the sample design is referring only for the female nursing officers who are at the final year studies. This study was designed as a quantitative and cross-sectional study. A written questionnaire which comprises with questions of Family Support, Workplace Support and the Community Support and professional empowerment which has been distributed among the sample. Furthermore, it was designed using a Likert five scale models with the options from strongly agree to strongly disagree. Each option was scaled: 5= strongly agree; 4= agree; 3= neutral; 2= disagree and 1= strongly disagree.

For the collection of data, permission was obtained from the management of the KIU to distribute the questionnaires. Questionnaires were delivered to registered nurses who were on final examinations on that period. The research team was assigned with clear and specific guidelines to distribute the questionnaires and get the filled responses. They have been guaranteed of complete confidentiality and honest opinions were encouraged. Out of the distributed questionnaires 191 respondents were considered for the final study excluding 5 international nurses and 7 male nurses who were given their responses. For the data analysis, statistical package for social science-21, has been used.

5. Results

Table 1. Reliability analysis of the variables

Variable	Cronbach's Alpha value at sample	Number of Items	N
FS	.861	04	191
WS	.836	04	191
CS	.780	02	191
PE	.904	14	191

Source: Research Data

Kothari (2004) indicated that instrument reliability refers to the level of internal consistency or the stability of the measuring devices. For testing of reliability of the instrument of the present study, Cronbach's alpha was used and those values of four variables are more than 0.7. Further the internal consistency reliability of the measures employed in this analysis can be considered as good for FS, WS, SS and PE measures.

Table 2. Descriptive Statistics

	FS	WS	CS	PE
Mean	4.2356	3.4725	3.3927	3.6057
Std. Deviation	.62100	.78445	.82733	.51251
Variance	.386	.615	.684	.263
Skewness	-.431	-.380	-.688	-.434
Std. Error of Skewness	.176	.176	.176	.176
Kurtosis	-.160	-.112	.631	1.185
Std. Error of Kurtosis	.350	.350	.350	.350

Source: Research Data

According to descriptive statistics (table 2), all the mean values of variables are greater than 3 and close to the Likert scale 4. It can consider that the responses regarding the variables are close to the agreed level from neutral level. The highest standard deviation belongs to community support with a level of 0.82. This is illustrated that community support has a comparatively higher variance. The minimum variance belongs to family support and the professional empowerment with a minimum standard deviation of 0.263. This indicates professional empowerment has a minimum variance comparatively. With reference to the figures of skewness, all are laid between -1 to +1. it can be assumed that the data were symmetrical and based on the Kolmogorov test ($p=0.58 > 0.05$) data were normally distributed. Therefore, parametric techniques had been applied in the analysis.

Table 3. Correlation Analysis

	FS	WS	CS	PE
FS	1			
WS	.275**	1		
CS	.175*	.583**	1	
PE	.249**	.502**	.604**	1
**. Correlation is significant at the 0.01 level (2-tailed).				
*. Correlation is significant at the 0.05 level (2-tailed).				

Source: Research Data

The study results (table 03) indicate that there is a significant and a moderate positive correlation among the identified factors towards the professional empowerment. This means that family support (FS), workplace support (WS), and community support (CS) are having positive association with the professional empowerment (PE) of the Government female Registered Nurses in Sri Lanka who is upgrading their knowledge to a degree level.

Effect of individual factors on professional empowerment has been analyzed Multiple Regression Model, model summary is given by table 4.

Table 4. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.641 ^a	.411	.401	.39651	2.061
a. Predictors: (Constant), Community support, family support, workplace support					
b. Dependent Variable: PE					

It was noticed that there is a **strong joint association** between the individual factors and professional Empowerment with the multiple correlation “R” value of 0.641. R-square of 0.411 indicates that 41.1% of professional empowerment has been covered by this model. Durbin-Watson test statistic was 2.061. Therefore, residuals are independent, and the model is valid.

Probability of F test statistics of the regression ANOVA is highly significant as the P value is 0.000. This means that the model is jointly significant and independent factors jointly influence on professional empowerment. Model is appropriate.

Table 5-ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.506	3	6.835	43.476	.000 ^b
	Residual	29.400	187	.157		
	Total	49.907	190			
a. Dependent Variable: PE						
b. Predictors: (Constant), FS, WS , CS						

Source: Research Data

Based on the table 06, all the Variance Inflation Factors (VIF) are less than 10 and it indicates that independent factors are not highly or perfectly correlated. Therefore, no multicollinearity problem in the regression model. Accordingly, the regression model is highly valid.

Table 6- Coefficients								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.777	.218		8.137	.000		
	FS	.093	.048	.113	1.930	.055	.924	1.082
	WS	.129	.046	.197	2.789	.006	.629	1.591
	CS	.291	.043	.469	6.791	.000	.659	1.516
a. Dependent Variable: PE								

Source: Research Data

$$Y = \beta_0 + \beta_1 FS + \beta_2 WS + \beta_3 SS + \mu$$
$$PE = 1.777 + .093FS + .129WS + 0.291 SS + 0.2$$

Based on the above equation, the professional empowerment will increase by 0.093 where the family support will increase by one unit where the other factors remain constant. Similarly, the professional empowerment will increase by .129 where the workplace support will increase by one unit where the other factors remain constant and the professional empowerment will increase by .291 where the community support will increase by one unit where the other factors remain constant. Hence, data are supported to accept the H1, H2 and H3.

According to the demographic analysis, the highest number of respondents were through Grade III nursing officers. Most of the respondents who were in the sample are reflecting the young adults and only fewer percentage are reflecting as senior adults. It can be a good symbol for the future in health sector to have more qualified nurses for the patient care as most nursing officers are who directly connected with the patient care. Most of the respondents in the sample will reflect with the inpatient departments. Considering the ward managers, subordinates and peers support impact with the work schedules can consider the reason behind the high number of respondents regarding this. So that it reflects that the Social support is necessary to empower them professionally while they are doing their continues education. Less number of respondents are the theater sections considering their duty schedules.

6. Discussion

The nurses are a group of health care professionals who are almost engage in the patient care. They are facing boundless challenges and require critical thinking and to be able to make suitable prompt decisions. Consequently, healthcare organizations must empower their nursing staff and permit their participation in Continuous education and Decision making which in turn lead to improve nurses' satisfaction, commitment, retention, and over all patient care (Franz S , 2010).

This study examined the relationship of the social support factors FS, WS and CS towards the professional empowerment the female registered nurses in Sri Lanka. Based on the study results it can consider that there is a moderate positive relationship among the factors and professional empowerment who are currently following their bachelor's studies while working.

Based upon the study results; Social support factors which were discussed in the Study having an impact towards the professional empowerment. But considering the some of the responses given in the study it emphasized that there are some areas to be concerned for empowering them with motivational strategies (Fletcher, 2001).

7. Conclusion

The nursing profession is accountable to society for providing high-quality care for patients and families. Nurses need scientific knowledge to improve their decision-making skills regarding what care to be provided for patients (Franz S & 10:51., 2010). Practicing nurses need to be supported by their authorities enable them to pursue continuing formal education. Hence, continuing professional empowerment is extremely important in the nursing profession, especially because of staff shortages with aging matters. Nurses need to maintain competency and keep up to date with the most recent knowledge and developments in patients' care.

It can be concluded that the current health care structure has expanded the opportunities for the Sri Lankan nursing professionals to come forward in their disciplines compare to the early decades which is a good understanding to develop the collaborative professional development.

Though they are doing these continuous education programs for their achievement with self-satisfaction professionally; there are no proper scales which impact on their increments in their salary scales where other countries paying high scales with higher studies. It might increase more family support for these nursing officers who are following further studies.

The state should have more workforce development and personal career planning programs in more effective and divided manner. As there is a shortage of professionals to fulfill the carders motivating, appreciating, rewarding and personal and career development is essential to satisfy them.

In the SL the context for learning beyond registration has not changed significantly. The perceived value of professional accredited and recognized awards by nursing registration bodies have been eroded as part of a more general shift towards award-bearing academic learning. Educators in the tertiary institutions must communicate these changes to authorities since these have implications for workforce planning and the granting of study leave. In SL, after the registration by the SLNC, there was no periodical evaluations moving regarding the nurse's development. It should be

addressed in a level of appreciation as they have achieved the professionally qualified levels and the demands on the specific areas belong to the specializations and upgrade their certification by evaluating their achievements.

As which is important factor to support on these nursing professionals.

7.1. Limitations

This research was run with a limited time factor and it could not check deeply regarding the data collection issues faced with the data set. Also, it is suggesting going in depth study of identified supporting factors towards the professional empowerment with other suitable assessing models and find out the barriers if occurs for the empowerment of them. It can be separately studying how these factors affects in the private /state sector working disciplines and the gender impact in each set up.

Further; based on the different age limits how the empowerment distributed of the nursing professionals and with their working disciplines and the workplaces impact on their professional empowerment and the how the designations had impact on this also can be address in future.

Supplementary, this study provides baseline information about the relationship of the social supporting factors towards the professional empowerment and it is open to continue this study for future research studies using different factors towards the professional empowerment in various categorical hospitals in Sri Lanka.

References

Albrecht TL, G. D., 2003. *Handbook of health communication. Mahwah. s.l.:* Lawrence Erlbaum.

Assunção AÁ, M. C. P. H. e. a., 2013;. Working conditions and common mental disorders in physicians in Brazil.. *Occup Med.* , Volume 63:, p. 234–237.

Bartram, T. A. J. a. T., 2004. How empowerment and social support affect Australian nurses' work stressors. *Australian Health Review* , Volume 28(1), pp. 56 - 64.

Brownie, S. W. A. C. N., 2018. Nursing as a pathway to women's empowerment and intergenerational mobility. *J Clin Nurs*, 23 05, Volume 27, p. 4050– 4057.

Tolsdorf, 1976. *Social networks, support, and coping: an exploratory study.. s.l.:*Fam Process.

Chen, S.-H., 2010. Relationships Among Social Support, Professional Empowerment, and Nursing Career Development of Male Nurses. *Western Journal of Nursing Research*, 34(7), pp. 862-882.

Cohen S, S. S., 1985. *Issues in the study and application of Social support and health..* Orlando (FL): Academic Press.

Dale K., F., 2001;. Satisfaction, commitment, and psychological well-being among HMO physicians.. *West J Med.*, Volume 174:, pp. 13-18.

Fletcher, C., 2001. Hospital RN's job satisfactions and dissatisfactions. *JONA*.

Fletcher, K., 2006. Beyond Dualism: Leading Out of Oppression. *Nursing Forum*, 26 04, Volume 41, pp. 50-59.

Franklin, P. A. P. F. C. G. E. S. E. S. S. e. a., 2011. Building Academic Geriatric Nursing Capacity: Results after the first 10 years and implications for the future.. *Nursing Outlook.*, Volume 59, pp. 198-205.

Franz S, Z. A. S. A. e. a. 2. & 10:51., 2010. Franz S, Z Aggression and violence against health care workers in Germany—a cross sectional retrospective survey.. *BMC Health Serv Res.*, Volume 10, p. 51.

Hill, K., 2011. Nursing and the aging workforce: Myths and reality, what do we really know?. *Nursing Clinics of North America.. Nursing Clinics of North America.*, Volume 46, pp. 1-9.

J., S., 2009. The role of coworker and supervisor social support in alleviating the experience of burnout for The role of coworker and supervisor social support in alleviating the experience of burnout for caregivers in the human-services industry.. *South Commun J*.

Jackson VA, M. J. M. R. e. a., 2008;. A qualitative study of oncologists' approaches to end-of-life care.. *J Palliat Med.* , Volume 11, p. 893–906.

Jasper S, S. M. A.-K. H., 2012;. Too little appreciation for great expenditure? Workload and resources in ICUs... *Int Arch Occup Environ Health.*, Volume 85:, p. 753–761.

JJ Duvall, D. A., 2010. Using a Structured Review of the Literature to Identify Key Factors Associated With the Current Nursing Shortage. *Journal of Professional Nursing*, sept-oct, 26(5), pp. 309-317.

Jooste, K., 2005. The career goals of nurses in some health care settings in Gauteng.. *Curationis*, Volume 28(3), pp. 47-53.

Kraimer, M. L. W. S. J. & J. R. A., 2001. Sources of support and expatriate performance: The mediating role of expatriate adjustment. , *Personnel Psychology*, Volume 54-1, pp. 71-99.

Lindfors PM, H. T. M. O. e. a., 2009. *Mitigating on-call symptoms through organizational justice and job control: a cross-sectional study among Finnish anesthesiologists..* s.l.:Acta Anaesthesiol Scand.

Lindfors PM, M. O. L. R. e. a., 2009. Suicidality among Finnish anaesthesiologists.. *Acta Anaesthesiol Scand.* , Volume 53, p. 1027–1035.

LisaSundin, J. C. J., 2007. The relationship between different work-related sources of social support and burnout among registered and assistant nurses in Sweden: A questionnaire survey. *International Journal of Nursing Studies*, 44(5), pp. 758-769.

McMillian, J., 2006. Acceptance of Male Registered Nurses by Female Registered Nurses. *Journal of Nursing Scholarship*, 38(1), pp. 100-106.

Ouweneel AP, T. T. V. Z. S. e. a., 2009;. How task characteristics and social support relate to managerial learning: empirical evidence from Dutch home care.. *J Psychol.* , Volume 143, p. :28–44.

Pearson A, P. K. D. D. e. a., 2006;. Comprehensive systematic review of evidence on the structure, process, characteristics and composition of a nursing team that fosters a healthy work environment.. *Int J Evid Based Healthc.* , Volume 4, p. 118–159.

Richards, L., 2010. Perceptions of registered nurses in four state health insititutions on continuing formal education. *Curationis*, 33(2).

S.H. Hamaideh rn, p. M. M. r. ., p. R. M. r. ., m. I. F. r. ., p. N. K. m., 12 February 2008. *international nursing review*, Volume 55-1, pp. 40-47.

S., J., 2012;. Psychosocial work environment and predictionofjob satisfaction among Swedishregistered nurses and physicians – a follow up study.. *Scand J Caring Sci.* , Volume 26:, p. 236–244.

Shirey, M. R., 2004. Social Support in the Workplace: Nurse Leader Implications. *Nursing Economics*, 22(6).

SK, B. N. & G., 2001. *The Practice of Nursing Research. Conduct, Critique and Utilisation.* 4 ed. Philadelphia: WB & Saunders Com-pany.

Tracey, C. & N. H., 2007. The multifaceted influence of gender in career progress in nursing. *Journal of Nursing Management*, Volume 15.

Tsai Y-C, L. C.-H., 2012. Factors and symptoms associated with work stress and health promoting lifestyles among hospital staff: a pilot study in Taiwan.. *BMC Health Serv Res.* , pp. 12-199.

Wall M, S.-G. K. M. D. e. a., 2014;. Suicidal ideation among surgeons in Italy and Sweden – a cross sectional study.. *BMC Psychol.*, Volume 2, p. 53.

Walsh J. Gender, 2013;. the work-life interface and wellbeing: a study of hospital doctors. *Gen Work Organ.* *Gen Work Organ.* , Volume 20:, p. 439–453.

Wang J-N, S. W. C. T.-S. e. a., 2010. Prevalence and associated factors of depressive symptoms among Chinese doctors: a cross-sectional survey.. *Int Arch Occup Environ Health.*, Volume 83, pp. 905-911.

Wang L-J, C. C.-K. H. S.-C. e. a., 2011. Active job, healthy job? Occupational stress and depression among hospital physicians in Taiwan.. *Ind Health.*, Volume 49, pp. 173-184.

Wu H, Z. Y. W. J.-N. e. a., 2010;. Factors associated with occupational stress among Chinese doctors: a cross-sectional survey. *Int Arch Occup Environ Health.* *Int Arch Occup Environ Health.* , Volume 83:, p. 155–164. .

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Author's Guide

Who should contribute?

An open invitation to submit papers is made via the NSBM website as well as communications addressed to Deans of Faculties of Management Studies in state and private sector universities in Sri Lanka. In addition, scholars of repute are invited to contribute. Contributions from intellectuals from industry are also welcome.

Contributions

These can take the form research articles, case studies, research notes or book reviews.

Research articles: They constitute both conceptual and empirical papers. They will be of a positivistic or non-positivistic nature. The word limit is between 6,000 to 9,000 words. Each article is required to be accompanied by an abstract of 200 to 250 words and up to five key words, organized in the alphabetical order. All articles submitted will undergo a double-blind review process after being cleared by the Editorial Board.

Case studies: They will necessarily be of an empirical nature and may include organization-based research/ projects. The conditions stipulated for research articles will apply here as well.

Research notes: This is a shorter version of a research article with a narrower scope which does not fall into the above categories. A research note will consist of 3,000 to 6,000 words. Other requirements stipulated above will apply.

Book reviews: These are critical reviews of recently published HR/ Management related books with particular relevance to South Asian countries. The word limit is between 1,000 to 2,000 words. On being cleared by the Editorial Board submissions will not be subject to double blind review process.

Submissions requirements

Each submission must be in English language type-set using MS Word (font size 12 with 1.5 spacing). They must contain the title of the paper, name(s) of the author(s), abstract and key 2 words. The text of a research article will in general contain the introduction, research questions, review of literature, methodology, data analysis, findings and conclusions followed by a list of references and annexes.

The softcopy (in MS Word) should be submitted to the Editor, NSBM Journal of Management. In addition, a hard copy (printout) is also required submitted. Each submission must accompany a statement of originality in the covering letter

addressed to the Editor. In case there are multiple authors, the principal author can submit the statement of originality.

Submissions should be original contributions and should not have been submitted to any other conference or publication previously or at present. By submitting an article, the author transfers copyright to the journal. A contributor is, however, at liberty to publish his/ her article/ paper in a work of which he/ she is the author/ editor or joint author/ editor. Authors are required to sign a copyright agreement if the article is accepted. They are fully responsible for obtaining permission and clearing any copyrights issues relating to the content of their submissions.

Review and acceptance procedure

Each submission will be initially cleared by the Editorial Board and thereafter undergo a double-blind review process. The comments and suggestions received will be sent to the authors with requests for minor/ major revisions before the paper is accepted for publication. A paper may even be rejected based on the reviewer comments which will be duly informed to the contributor. Further, the editorial board or the reviewers may sometimes request access to data and workings during the review process and the relevant authors must be willing to supply these when requested for.

Referencing and numbering of Figures and Tables

Referencing is required to be done according to the Harvard style and a guide will be made available on request.

Figures shall be numbered consecutively using Arabic numerals. They will be labelled below the figure (e.g. Figure 1, Figure 2). Borders are not required to be included for Figures unless essential. Further, Figures must be produced in black/ white images embedded in the text.

Tables shall be numbered consecutively using Arabic numerals and labelled above the Table (e.g. Table 1, Table 2). Only horizontal lines shall be used to distinguish the content within a Table. It is advised to keep one blank line above and below each table/ figure to separate them from the text. The title of the Figure/ Table must be in one line. Capitalize each word in the Figure/ Table label except propositions and conjunctions. Figure/ table titles must be in Times New Roman 12 pt. and centre aligned.



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