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Faculty of Management Studies, Rajarata University of Sri Lanka

Effect of investors' psychology on capital market investment: An application of the theory of planned behavior

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Abstract

Nowadays, the finance arena is moving from fundamental theories and technical analysis tools towards the behavioral theories in an attempt to explain the investors' behavior in the market place. Theory of Planned Behavior is a widely used behavioral theory that can be used to predict and explain individuals' irrational behavior under several conditions. The theory states that attitude toward behavior, subjective norms, and perceived behavioral control, together shape an individual's behavioral intentions and actual behavior. This study aimed to examine the impact of investors' psychology on behavioral intention in investing in the capital market by applying this model. A self-administrated structured questionnaire was distributed for a sample of 97 investors who invested in the Colombo Stock Exchange to gather the data regarding their attitude, subjective norms and perceived behavioral control. The researchers employed both descriptive and inferential statistics to make the data meaningful of the data and measure the relationships. In addition, Cronbach's Alpha, KMO and Bartlett's tests were employed as diagnostic tests. The findings reveal that attitude has a positive impact on the behavioral intention while two other variables; subjective norms and perceived behavioral control are statistically insignificant. Hence, it suggests that attitudes have impact on the behavioral intention whereas subjective norms and perceived behavioral control do not impact on behavioral intention in investing in the capital market in Sri Lanka.

Keywords: *Attitude, investment intention, perceived behavioral control, subjective norms, theory of planned behavior.*

1. Introduction

Decision making is a complex process as it involves an analysis of diverse aspects that are likely to exist under a variety of possible circumstances. Making an investment decision is somewhat difficult because it should be a selection among many investment alternatives that include the different degree of risk and return with different time horizons. The capital market is one of the investment routes available for the individuals and private sector which can gain long-term benefits. A capital market is a network of specialized financial institution, series of mechanisms, processes and infrastructure that, in various ways facilitate the bringing together of suppliers and users of medium to long-term capital for investments[1]. In a capital market, a wide range of investment avenues are available for the investors, namely; equity instruments, credit market instruments, insurance instruments, hybrid instruments, and derivative instruments. However, in Sri Lankan context there are a limited number of capital market investment avenues for the investors which are categorized under equity market and bond market. Investors play a critical role in the capital market by allocating their excess funds among different markets and instruments and their investment choices are motivated by different factors including social factors, demographic factors, market factors and psychological factors.

Behavioral finance is one of the novel and important branches of finance. It describes factors of human psychology and their effects on investment decisions in the financial market. It also uses the special knowledge in psychology, sociology as well as finance to explain uncommon behaviors of investors which cannot be understood completely by the traditional finance. Behavioral finance evaluates people in the real world because individual investors are ordinary people who are affected by factors of psychology and emotions. The application of psychological models into the investors' rational decision making process is an emerging area in behavioral finance (Dayaratne & Wijethunga, 2015). As it is an emerging research area, there are only a few studies that have been undertaken in Sri Lankan context. Thus, this paper aims to examine the investors' behaviour by adopting one of the famous models in psychology called Theory of Planned Behavior (TPB) which links one's beliefs and behavior to the decision making process. The TPB states that attitude, subjective norms, and perceived behavioral control together shape an individual's behavioral intentions and actual behavior which was proposed by Ajzen in 1991 as an improvement of the Theory of Reasoned Action (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980).

However, explaining the human behavior is a very complicated task because people act in different ways (Ajzen, 1991). Although in traditional finance theories it assumed that investors are always rational, they make their investment choices by balancing the expected benefits and the degree of risk of particular investments. However, the validity of that assertion was subjected to serious criticisms among the stakeholders of the capital markets (Dayaratne & Wijethunga, 2015). The behavioral finance experts challenge the traditional view of rational investment decision making and believes that investors are not always rational, and induced by numerous factors, including both rational and irrational factors. The recent pieces of evidence also revealed that the irrational behavior which is guided by the psychology of the investors is one of the major influential factors for the investment decision (Dayaratne & Wijethunga, 2015).

The established financial theories content that higher the degree of risk, higher return. The stock market investment is labelled as a very riskier investment avenue which generates the greater return to the investors. Unfortunately, equity market participation not satisfactory

[1] Al-Faki (2006)

compared to the other investment avenues in Sri Lanka because most of the people seek short term benefits rather than engage in investments which generate long-term benefits. It badly influences not only for the investors' well-being but also for the entire economy. Equity market statistics represent that the 609,575 local individual participation, with only 5% - 10% active accounts which means 90% - 95% of the total accounts in the market is inactive[2]. Moreover, the equity market account holders are 2.9% of the total population which is also indicates the neutral growth of active participation during the last two years. Even though capital market investments generate long-term benefits the investors are not motivated to invest in the equity market. Thus, this study aims to examine the impact of psychological factors on capital market investments by applying the TPB for answering the questions of whether the individuals' psychological factors cause for the equity market investments in Sri Lanka.

The rest of this paper is organized as follows. The key literature on the topic is summarized in section 2. The conceptual framework of the study and the data, data collection procedure, sample selection and the econometric modeling is discussed in section 3. Section 4 documents the results derived from the econometric model are summarized in that section in tabular form with a brief interpretation as appropriate for the purpose. The conclusion based on the results is presented in section 5.

2. Review of literature

TPB is one of the key theories which can apply to predict and explain the actual behavior of individuals. It is important to review the earlier steps that led to the development of TPB. Several earlier theories contributed to the development of the TPB, and the two most important theories were the Information Integration Theory (IIT) and the Theory of Reasoned Action (TRA). The Theory of Reasoned Action was developed by Fishbein and Ajzen in 1975 and Ajzen and Fishbein in 1980 as an improvement of Information Integration Theory which was developed by Anderson in 1971. The limitations of TRA led to the development of TPB. It was proposed by Ajzen in 1985 through his article "From intentions to actions: A theory of planned behavior". The TPB can cover peoples' unconscious behavior which cannot be explained by the TRA. It upholds the key assumptions contained in the TRA, with certain modifications that allow for greater accuracy and reliability in understanding one's actual behavior. The difference between the TPB and TRA is the inclusion of perceived behavioral control in addition to attitude towards the behavior and subjective norms.

According to TPB, human behavior is guided by three kinds of considerations: beliefs about the likely consequences or other attributes of the behavior (behavioral beliefs), beliefs about the normative expectations of other people (normative beliefs), and beliefs about the presence of factors that may further or hinder performance of the behavior (control beliefs) (Ajzen, 2002) (Refer Figure 1). Simply, the theory states that attitude, subjective norms, and perceived behavioral control, together contour an individual's behavioral intentions and actual behavior. The behavioral belief in TPB is represented by attitude towards the behavior. According to Ajzen (1991), attitude toward the behavior refers to the degree to which a person has a

[2] CDS Monthly Report, 2019 April

favorable or unfavorable evaluation or appraisal of the behavior in question. There are two types of attitude, attitude towards the physical object and attitude towards behavior or performing a particular action.

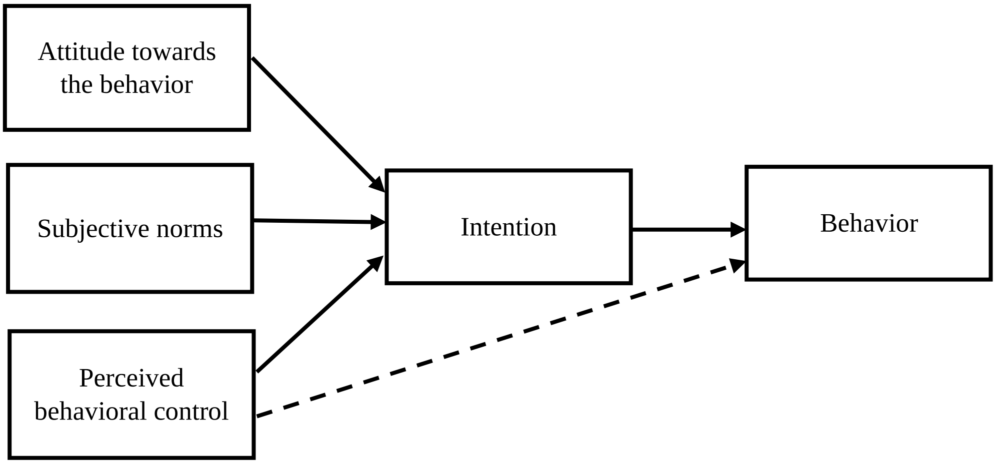

Figure 1 Theory of planned behavior

Source: Theory of planned behavior (Ajzen, 1991).

The more positive the attitude an individual has towards the object and behavior, the more likely is the behavioral intention and performance of the behavior (Gopi & Ramayah, 2007). The normative belief in TPB is represented by subjective norms. Subjective norm is an original construct from TRA that deals with the influence of social environment or social pressure on the individuals and thus on behavioral intention (Gopi & Ramayah, 2007). Ajzen (1991) defined subjective norms as the perceived social pressure to perform or not to perform the behavior. This refers to the belief about whether significant others think he or she will perform the behavior. Simply, subjective norm refers to the influence of one's peers, family, friends and important others in performing the behavior. The control belief in TPB is represented by perceived behavioral control. According to Ajzen (1991), perceived behavioral control refers to people's perception of the ease or difficulty of performing the behavior of interest. Perceived behavioral control is a function of resource availability and ones' confidence towards perform an action. It means behavioral intention or actual behavior increases when individuals perceive they have more resources and confidence. The central factor in the TPB is the individual's intention. Ajzen (1991) assumed that intention to capture the motivational factors that influence a behavior and indication of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior. Generally, the strong the intention is, the more likely the behavior will be performed.

The TPB model is a very powerful and predictive model for explaining human behavior. Phan and Zhou (2014) emphasized that over the past years; the TPB has been validated and experimentally supported by hundreds of studies. Applicability of TPB has been studied by many psychologists, sociologists and economists from different perspectives. The theory provided greater support for the study a wide range of behavioral intention in finance and investments. Not only finance but also many other disciplines including Marketing, Medical Science, Social Science and Information Technology. Sondari and Sudarsono (2015) conducted a study using the TPB to predict intention to invest in Indonesia using partial least square (PLS) showed that attitude towards investment and subjective norms have significant influence towards the intention to invest.

Similarly, Alleyne and Broome (2011) also investigated that the factors which influence the investment intention of potential investors and utilized Sitkin and Weingart's theory of risk propensity (1995) as predictors of investment intention in addition to the TPB. However, they found that all variables of two models such as attitudes, subjective norms, perceived behavioral control and risk propensity are significant predictors in investment intention. On the other hand, the TPB framework has been successfully applied in a wide range of investment avenues including mutual fund investment, gold investment, real estate investment and stock investment. Conversely, the TPB is used by Lam (2008) to investigate factors affecting on investments in Mutual Fund. Based on the analysis, it was found that attitude towards behavior, past behavior and subjective norm have a positive influence on investors' intention to invest in the mutual fund. Further, Lam (2008) found that both past behavior and intention have positive significant influence on investors' actual investment behavior. Moreover, it has found that perceived behavioral control is not a significant contributor to both behavioral intention and actual investment.

Interestingly, Gopi and Ramayah (2007) utilized the TPB to predict intention on online trading. The study proved that positive impacts of attitudes, subjective norms and perceived behavioral control on behavioural intention to online share trading and emphasized that TPB could be a useful model for explaining changes in behavioural intention and actual usage. Similarly, Lee (2009) contributed to behavioral finance by conducting a study on adoption of online stock trading in Taiwan and it developed a theoretical model to explain and predict the stock traders' behavioral intentions to use online trading by using the concepts of perceived benefit, perceived risk and trust and integrating the Technology Acceptance Model (TAM) and TPB models. The findings illustrated that the proposed model has good explanatory power in predicting customers' intention to use online trading. In another research conducted by Bhuvanam and Mohan (2015) on online share trading found that perceived behavioral control, subjective norm have a direct positive relationship with behavioral intention to use internet stock trading. Further, it emphasized that attitude is a weak predictor and attitude has a positive insignificant impact on behavioral intention.

Shanmugham and Ramya (2012) conducted a study to identify the influence of social factors on individual investors' trading behavior in the stock market with the support of TPB. It concluded that a strong positive correlation between attitude, perceived behavioral control and intention towards trading whereas subjective norm is negatively related with intention towards trading behavior. Individual's investment intention is significantly affected by his or her attitude towards investment, subjective norm and perceived behavioral control (Phan & Zhou, 2014). And also Phan and Zhou (2014) proved that individual investment intention is guided by four psychological elements, namely overconfidence, excessive optimism, psychology of risk and herd behaviour and each of the element plays as a determinant of attitude toward behaviour. Ezama, Scandroglio and de Liano (2013) provided evidence of attitude, perceived behavioral control have direct positive significant influence to investors' intention to invest in stock market while subjective norms have not made significant influence. Moreover, they emphasized that, TPB model seems an efficacious tool for explaining and predicting the individual investors' behavior in the stock market. TPB is applied to analyze wide range of marketing behavior and application of TPB in behavioral intention in investment decision is still lacking in the Sri Lankan context. Dayaratne and Wijethunga (2015) employed TPB to analyze the impact of investors' psychology on behavioral intention in investing in the capital market. They suggested that there is a significant impact from subjective norms on the behavioral intention to buy shares in Colombo Stock Exchange (CSE) while attitude and perceived control behavior not impact on behavioral intention in investing CSE.

When referring to the empirical literature, it reveals that TPB has a wide range of applications. However, in Sri Lankan litreture, there are no enough literture exists on behavioural investigation of capital market investments. Thus this study aims to bridge this gap through applying TPB in the context of Sri Lankan capital market because researchers emphasized that TPB is a successful and efficacy tool to explain and predict individual investors' behavioral intention. Thus, this study also aims to examine the impact of psychology on behavioral intention in investing in the capital market by utilizing TPB.

3. Methodology

The TPB states that attitude toward behavior, subjective norms, and perceived behavioral control, together figure out an individual's behavioral intentions and actual behavior. The researchers derived conceptual framework from the TPB (Ajzen, 1991) as follows. This study utilizes three independent variables (attitude towards the behavior, subjective norms, and perceived behavioral control) for measuring the psychological factors and investment intention as the dependent variable.

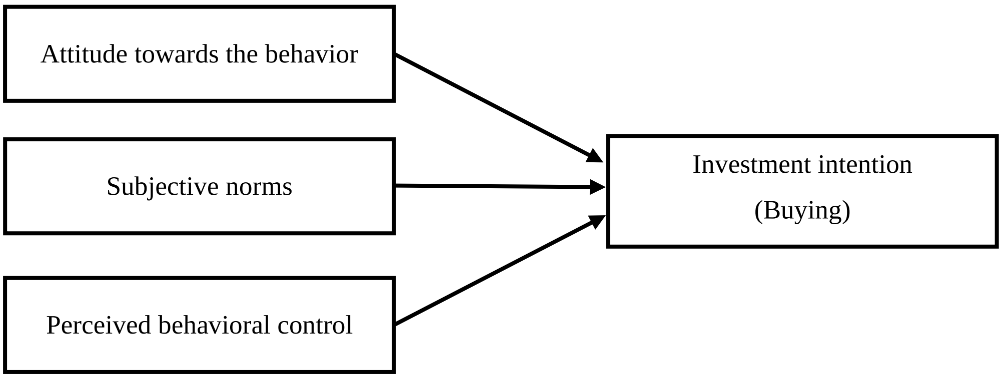

Figure 2 Conceptual framework

Source: Adopted from the theory of planned behavior (Ajzen, 1991).

The data for this research were fundamentally gathered through a survey by distributing a structured questionnaire. The questionnaire consists with two parts to fulfil the objectives of the study. First part covered the demographic information and investments portfolios of individual investors. The second part of the questionnaire aimed to measure psychological factors. The researcher utilized seven-point Likert scale with 1 for strongly unlikely to 7 for strongly likely as the measurement scale to evaluate the degree of investor's agreement with the psychological factors on their investment intention. However, the dependent variable (intention) was measured by using a categorical scale. Most specially, the questionnaire was heavily based on the questionnaire developed by Dayaratne and Wijethunga (2015) in their study.

The researchers distributed the questionnaire to individual investors through Registered Investment Advisors (RIAs) in the CSE and directly distributed the questionnaire to the investors by visiting the brokering firm premises itself. In addition, the questionnaire was emailed to the identified investors who have already invested in the CSE. In sum, 1000 questionnaires were distributed to investors during May-June 2019 and 97 active investors responded to the distributed questionnaire.

This study utilized a probit regression analysis to achieve the objectives of the study because the probit model is a popular measurement for an ordinal or a binary response model. The Probit model regression is as follows;

$$P_r = (Y = 1/x) = \Phi\ (x^1\ \beta) \rightarrow (1)$$

Where,

P_r = Probability

Φ = Cumulative distribution function of the standard normal distribution

B = Maximum likelihood

4. Results and discussion

In this study, the sample comprises with 97 active investors who respond to the questionnaire. 76 of the respondents were male taking up to 78.4% of the total sample. Most of them were degree holders (49.5%) and among the responders, 62 were private sector employees and 14 from the government sector, 13 and 8 from semi government, self employment in respectively. 47.4% of the sample belonged to the annual income category of below Rs. 150,000 and the majority of the respondents have investment experience more than 10 years.

Cronbach's Alpha was employed to measure the internal consistency of the questionnaire. Guilford (1965) suggested that Cronbach's Alpha value should take more than 0.7 for fulfilling the internal reliability questionnaire. In this study, Cronbach's Alpha value is 0.815 for dependent variable and 0.75, 0.810, 0.765 for attitudes, subjective norms and perceived control behaviour in respectively which is greater than 0.7. Thus, it implies that the highest internal consistency in the questionnaire items and it emphasized that the researcher could use for further analysis. The KMO and Bartlett's Test is utilized to measure the sample adequacy of the study. Kaiser (1974) recommended that acceptance level of the sample adequacy is >0.5 and the value between 0.5 and 0.7 suggests as average adequacy, 0.7 and 0.8 interprets as good, value between 0.8 and 0.9 concludes the sample adequacy as great and value above 0.9 indicates a superb sample adequacy. In this study, it indicates that the KMO and Bartlett's Test value of dependent variable is greater than 0.8 which falls into the category of great sample adequacy and all independent variables indicate sample adequacy as good and it is considered as an acceptable sample for further analysis.

According to Table 1 the results indicated that all four variables have a significant positive correlation with each other variables. Among all variables, the correlation between attitude and subjective norms takes the highest value as a moderate positive correlation, which represents the coefficient of 0.651 at 0.01 significant levels. There is a low positive correlation in between investment intention and attitudes (r = 0.352). The subjective norms is also positively associated with investment intention, which represents low positive correlation (r = 0.235). Similarly, the third independent variable, perceived behavioral control also has a low positive correlation (r = 0.232). Further, attitude and perceived behavioral control (r = 0.473) have low positive correlation and subjective norms and, perceived behavioral control have moderate positive correlation, which represents as r = 0.597.

Table 1
Results of Pearson's correlation analysis

		Intention	Attitude	Norms	Control
Intention	Pearson Correlation	1	0.352**	0.235*	0.232*
	Sig. (2-tailed)		0.000	0.020	0.022
Attitude	Pearson Correlation	0.352**	1	0.651**	0.473**
	Sig. (2-tailed)	0.000		0.000	0.000
Norms	Pearson Correlation	0.235*	0.651**	1	0.597**
	Sig. (2-tailed)	0.020	0.000		0.000
Control	Pearson Correlation	0.232*	0.473**	0.597**	1
	Sig. (2-tailed)	0.022	0.000	0.000	

Note: N = 97.
***. Correlation is significant at the 0.01 level (2-tailed).*
**. Correlation is significant at the 0.05 level (2-tailed).*

In order to examine the impact of psychology on behavioral intention in investing in the capital market, the researchers utilized probit regression analysis. The statistical output of probit regression is presented in Table 2.

Table 2
Results of the probit regression

		Delta-method				
	dy/dx	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Attitude	0.1085	0.0403	2.69	0.007	0.0295	0.1876
Norms	-0.0140	0.0471	-0.30	0.766	-0.1065	0.0784
Behavioral control	0.0341	0.0392	0.87	0.385	-0.0427	0.1110

Since, the Chi square of 12.91 with P value of 0.0048 indicated that whole model is statistically significant at 0.05 significant level. The results emphasized that attitude is statistically significant whereas other variables are statistically insignificant. It means that if the average level of investors' attitude increases by an infinitesimal amount, the probability for the investment intention taking the value one rises by 10.85%. It verifies that if someone has a favorable attitude regarding the capital market he or she is more tend to invest in the capital market. A study conducted by Phan and Zhou (2014) aims for exploring factors influencing on individuals’ investment behavioral intention in the Vietnamese stock market and it concluded that individual’s investment intention is significantly affected by his or her attitude towards investment. The findings of this study also support the argument of Phan and Zhou (2014) that attitude towards investment has the strongest impact compared to other independent variables.

However, the findings are inconsistent with a study conducted by Dayaratne and Wijethunga (2015). They found that subjective norm significantly influenced the investing in the CSE. Further, they emphasized that opinion of peers, opinions of other important parties, information released by media significantly affect on investors’ intention towards the stock market investments.

5. Conclusion

The study aims to investigate the impact of investors’ psychology on their behavioral intention in investing in capital market in the Sri Lanka. This study employed the TPB which was proposed by Ajzen (1991) as the theoretical base. The probit regression model is used to achieve the desired objectives. The results revealed that attitude has a significant impact on behavioral intention in investing in the capital market. However, subjective norms and perceived behavioral control do not have significant influence towards behavioral intention. The findings of this study revealed that attitude is the only variable that significantly impacts on investors’ behavioral intention in investing in capital market while other two variables are insignificant. Prior studies also suggested that favorable attitude towards investment intention can be formed by highlighting the advantages attached with that investment. The main goal of the CSE is encouraging the investors to invest in the stock market especially by altering the attitudes of prospective investors who still panic in stock market investments. Thus, in order to enhance the awareness regarding the capital market investments, the CSE needs to organize more events and programs to the public because it will impact to change the attitude of prospective investors. Ultimately, it will improve the investors’ favorable attitude towards the stock market investments.

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Human resource management and entrepreneurship fit: A systematic review of literature

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Abstract

Over the decades, the exponential competitive rivalry among the firms combined with the technological changes have rushed firms to pursue sophisticated techniques for reaping competitive advantage. Organizations have been starving to enhance their adaptability, innovation, creativity, risk taking, and entrepreneurship have become the invader in the competition. Although there are many factors impact on organizational entrepreneurship, Human Resource Management is indispensable. Precisely, it's the fundamental duty of an entrepreneur to recruit, manage, motivate, reinforce, satisfy, retain and maintain human resources to enhance entrepreneurial success and growth. It is imperative to comprehend the role of Human Resource Management in developing sustainable entrepreneurship and entrepreneurial ventures. Moreover, knowing how Human Resource Management practices and procedures can be used to assist accelerate the changing landscape in entrepreneurial firms. This study investigates the consequences and relationship between human resource practices and entrepreneurial success. Thus, it embraces conceptual analysis of the Human Resource Management practices espoused by entrepreneurs and to analyze the interrelationship between human resource practices and entrepreneurship in spite of success, through literature and how far this research has progressed. Drawing on large corpus of the research, the study found that the entrepreneurs embrace the significant Human Resource Management practices fostering entrepreneurial success effectively and efficiently. Notwithstanding, results manifest that human is more vital rather than money for entrepreneurs. Intriguingly, entrepreneurs should possess sufficient level knowledge and understanding on Human Resource Management and its functions.

Keywords: *Competencies, entrepreneur, entrepreneurial success, entrepreneurship, human resource practices.*

1. Introduction

Entrepreneurship plays a crucial role in the economic development of developing countries (Kengatharan, 2013). Due to ever changing environment and competitive rivalry among business ventures, it is progressively recognized that the effectual management of human resources is an imperative component for entrepreneurial success, sustenance and growth. HRM is a strategic and wide-ranging function of business which empowers employees to contribute effectively and productively to overall company benefit and accomplishment of organization's goals and objectives.

Further, Human Resource Management (HRM) is the amalgamation of HRM practices into the management and development of human resources in an organization (Nguyen & Bryant, 2004). In the entrepreneur’s effort of transforming the knowledge into products and services so as to maximize profit, indeed, human resources have significant influence on entrepreneurial growth and expansion. Despite, effectual management and development of human’s skills knowledge, creative abilities talent, aptitudes required to provide a competitive edge that result in entrepreneurial performance and success. In further, significant research studies have disclosed that manpower is the core, integral resources in enhancing productivity, performance, and success of entrepreneurship. Therefore, entrepreneur should possess managerial competencies to effectively deploying and developing them to obtain most out of it.

In the era of 1980s, seminal works such as Galbraith (1985) has found out the significance of the learning the role of human resource in the development of entrepreneurial ventures. Consequently, as an entrepreneur can foster innovation, creativity, flexibility, risk tolerance and changes through formulating and implementing the human resource policies, programs and practices. It encompasses of certain features of the interrelationship between employee and employer as recruitment and selection, training and developing, and performance appraisal and compensation and other benefits. In order to conquer competition and sophisticated technological change, entrepreneur should focus on developing, managing, compensating, rewarding, satisfying and retaining its human resources. So, entrepreneurs should focus on designing and implementing policies and practices to enhance entrepreneurial success, therefore human resource practices should be aligned with the entrepreneurial goal. The overriding purpose of the paper is to investigate the role of HRM in reaping entrepreneurship success and describes how HRM practices and procedures can be used to help entrepreneurs to navigate their companies.

1.1 Originality/ value of the study

The resource view of strategy grasps internal resources as a source of unique and inimitable competitive advantage. This strategic perspective, applied to HRM, suggests that aligning HRM sub-systems with a strategy will produce behaviors and outcomes consistent with the strategy. A present prevalent strategy tries to foster entrepreneurial behavior among employees by seeking breakthrough performance and product innovation (Twomey & Harris, 2000). In spite of the fact, HRM can inspire entrepreneurial behavior through that, entrepreneur can reap entrepreneurial success. This is one of the studies conducted in Sri Lankan context to highlight the ideal insight that can embraced by the entrepreneur to elicit entrepreneurial success.

1.2 Objective of the study

The fundamental objective of the study is to explore the effect, consequences and interplay between HRM practices and entrepreneurial success and to investigate how an entrepreneur can embrace HRM practices to conquer the unforeseen circumstances more specifically, to reap sustainable entrepreneurial competitive advantage. More so, the present study focuses on identifying the critical HRM functions that ought to be harnessed by the entrepreneur by analyzing the existing literature and empirical research findings.

1.3 Research questions

In order to achieve the aforesaid objectives, it is pivotal to enquire the following questions;

a) Does HRM matters in reaping Entrepreneurial success?

b) How Does HRM practices affect entrepreneurial success?

c) What are the consequences of HRM practices in entrepreneurship?

1.4 Research gap

The interest in human capital within the entrepreneurship literature is longstanding and has surged over the last two decades (Marvel, Davis & Sproul, 2016). Firms must now improve performance by reducing costs and increasing quality and providing innovative products and processes and increasing their speed to market. In fact, few studies on HRM in entrepreneurial firms exist. HRM, however, is crucial to understanding the organization of entrepreneurial firms (Lee, Peris-Ortiz & Fernández-Guerrero, 2011). Both entrepreneurship and HRM, however, have problems delimiting their fields of research. This is particularly true of entrepreneurship because of the great ambiguity that exists in its definition and dimensions (Lee et al., 2011). Lucidly, a gap exists in both the entrepreneurship and human resources literature, and this gap should be addressed by studying the role of HRM in entrepreneurial firms (Keating & Olivares, 2007). Filling this gap is important because HRM plays a key role in entrepreneurial firms as the shaker and mover in firm development and growth, and because the literature has simply not researched this area in great enough depth.

Given the importance on human capital within the entrepreneurship literature and the accumulation of this research stream, now is a particularly appropriate time to review the work conducted thus far. To date, meta-analytic reviews of human capital and firm outcomes can be found in the work of Unger, Rauch, Frese and Rosenbusch (2011) and a review of entrepreneurship education on human capital assets, behaviors, and performance in (Martin, McNally, & Kay, 2013). Each provides enthralling evidence that human capital is critical to promoting aspects of entrepreneurship, but they do not contain a comprehensive discussion of the human capital and entrepreneurship research stream. Further, one perspective suggests that sets of HRM practices do not themselves create competitive advantage; instead, they foster the development of organizational capabilities which in turn create such advantages (Wright, Dunford, & Snell, 2001). Henceforth, it vitally important to explore the functions that should be practiced by the entrepreneur in reaping entrepreneurial success.

2. Methodology

The present study is thus, based on the review of the existing literature and findings. Therefore, number of research articles have been downloaded from various databases for the purpose. Harnessing search strategies, 90 research articles were identified with regard to the concepts of greenwashing and green entrepreneurship. Notwithstanding, in accordance with antecedent studies, henceforth criteria were harnessed in choosing the article (Kengatharan, 2015): (a) a peer-reviewed journal published betwixt 1990 and the present; and (b) full text published in English. The full papers were garnered from reputed databases such as Wiley Online Library, ProQuest business, Business Source Premier (EBSCOhost), Expanded Academic (Gale), Emerald Insight, Sage Journals, Science Direct (Elsevier), ISI Web Science, the Sloan Work and Family Research Network at Boston College, and Google Scholar, where a vast number of articles were considered useful for the aforesaid topics.

3. Theoretical underpinning

3.1 Concept of human resource management and practices

Over the past few decades, explanation for HRM is that the participation and involvement of every managerial decisions and activities have the significant influence the relationship between the organization and its employees (Beer et al., 1984). Moreover, human capital is the knowledge, skills, and abilities (Hayton, 2005), conversely HRM consists of effective management of human resources in the business venture (Lin et al., 2008). Storey (2007) has detected that HRM concept is a controversial approach and usually concern with business-oriented and business conjoined approach that focuses on managing human resources since it involves wide variety of activities like job analysis, human resource planning, recruitment, selection, placement, induction, orientation, training and development, compensation, reward management, performance management, collective bargaining, conflict resolving and so forth. However, HRM is a distinctive approach of an organization's work systems and employment practices constituted by a set of activities that together aim to manage human resources as to achieve organizational objectives (Bratton & Gold, 2003). HRM includes all activities related to the management of employment relationships in the firm (Lin et al., 2008).

In spite of the fact, it's complicated and critical to manage and maintain the human resources in order to enhance grater partner gratification because of the (dynamic nature) different roles they play in an organization (Sulhaini, 2012). In the book of Human Resource Strategies for the High Growth Entrepreneurial Firm' Heneman and Tansky (2006) stated the contrasts between wanted equipment techniques, work force attributes, recruitments, and other human resource practices among the start-ups. They found that work force qualities of the staff are much progressively significant in the startups and that recruitment/selection varies among them. HRM is a people management approach to achieve the organization's objectives through the employment of its human resources by means of aligned human resource strategies, policies and practices. The term HRM is corresponding with the management of people in an organization (Hunt, 1992) that encapsulates planning, organizing, staffing, leading, controlling and coordinating activities of human resources inside of an enterprise (Saint-onge, 2004). Strategic HRM aims to provide companies with internal capacity to modify fittingly and adjust to their competitive atmosphere by integrating HRM policies and practices (Kidwell & Fish, 2007).

As stated by Armstrong and Taylor (2014) HRM encapsulates some integral purpose such as revamping the efficiency and effectiveness of the human resources, assure positive synergy among the employees and employers of the organization, individual development of human resources. Additionally, the resource based view encourages a shift in emphasis towards the inherent characteristics of employee skills and their contribution to value addition. According to the resource-based view differences in the physical, organizational and human resources of firms impact fundamentally on their competitive ability (Barney, 1991). HRM practices, such as formal recruiting systems, training programs, and formal appraisal and compensation systems, have been proven to provide support in business operations and are associated with improved organizational performance (Dekker et al., 2014). Therefore, HRM has been defined as “the strategic integration of HR practices into the management and development of employees” (Nguyen & Bryant, 2004). It covers such aspects of the relationship between employer and employee as recruitment and selection, training and development, appraisal and compensation.

Hornsby and Kuratko (2004) distinguished the normal patterns in HRM practices for new businesses. They discovered that an enormous number of new companies take part in “advanced” human resource practices than the literature attests and that new companies inclined to have a similar HR concerns as the developing firms, pointing that approaches probably won't negate that much between them. Humans are the most precious, resilient and flexible resources of a business venture since, they have the potentiality and competency to learn, develop and adopt to enhance their skills, knowledge and abilities to develop magnificent customer value (Nasution & Mayondo, 2008). Additionally, HRM encapsulates specification of pertinent managerial activities such as “Human resource management is the stimulation, selection, retention, development, and utilize human resources effectively and efficiently in order to accomplish (goal congruence) individual and organizational objective (Cascio, 1998). Typically, the fundamental intent of HRM practices is to impact on employee behavior in order to influence the business performance (Wright & Nishii, 2007). McEvoy (2004) analyzed the viability of personnel management in small firms as contrasted with the expectations for such programs in the set-up firms. Observed that small firms appear to be pompous about the adequacy of their personnel programs and recommended that quite a bit of this may identify with utilizing few trained or devoted or human resource personnel.

HRM, thus, is about creating and sustaining superior human resource contributions for firms (Litz & Stewart, 2000). Many authors have claimed that the adoption of HRM practices may lead to reaping sustained competitive advantage through developing human capital and encouraging employees to pursue the interest of the firm (Perren & Stevens, 2008). Considering HRM practices, literature has typically categorized and inspected in a wider HRM concepts and many researchers differentiate the stated areas; recruitment and selection, training and development, compensation and reward systems, and performance appraisal systems. HRM practices also can contribute to promote a culture of innovation, creativity and initiative-taking, developing entrepreneurial attitudes within the firm that are difficult-to-imitate (Bratnicki, 2005). Research has shown that SHRM practices are helpful in enhancing both individual and organizational performance in different contexts, including China (e.g. Gong et al., 2010).

High-performance human resource practices develop employee skills, their involvement in decision-making, and their motivation to exert discretionary or spontaneous efforts (Appelbaum et al., 2000). Strategic HRM has been discovered form three viewpoint (Delery & Doty, 1996; Twomey & Harris, 2000) that are universalistic, contingency, and configurational. The universalistic studies focus on the gains of the firm through adopting effective policies and practices. Contingency and configurational perspective are relay on the concept that specific HRM practices would support the cooperate strategy by customizing behaviors and outcomes of human resources of the firm. Number of studies have underpinned that HRM is inevitable for the success and effectiveness of the entrepreneurship. The findings highlight that HRM practices and process must focus on developing relationship among employees as they do for individual job fit (Larsen, 2001).

3.2 Defining the concept of entrepreneurship and entrepreneurs

Entrepreneurship is a difficult concept to pin down because it draws on various academic disciplines with differing perspectives. Entrepreneurship is a slide complicated concept to describe since it is seen on various disciplines with different viewpoint. The concept of entrepreneurship was first be revealed in the literature on individuals as entrepreneurs (Kirzner, 1973). The concept of entrepreneurship can be recapitulated as a process of enhancing values by integration of significant facilities and combined with the resources to captive a business opportunity (Stevenson, Roberts, & Grousbeck, 1989). Moreover, it can be viewed as a process of recognizing business opportunities in order to generating value by combining required resources and harnessing them optimally (Stevenson et al., 1989). The individual who manage and run the business could be known as entrepreneur. Entrepreneurship approach, notwithstanding, not merely creating and establishing a business venture it goes beyond that, it is a firm-level remarkable thing (Stevenson & Jarillo, 1990; Lim et al., 2008). Entrepreneurship is the process by which "opportunities to create future goods and services are discovered, evaluated, and exploited" (Shane & Venkataraman, 2000). In other words, it is the process by which organizations and individuals convert new knowledge into new opportunities in the form of new products and services. It is described through three fundamental concepts: innovativeness, risk taking, and pro-activeness (Covin & Selvin, 1989; Zahra, 1993). Innovativeness underpins the process of searching for creative or novel things or solutions to solve a problem and or produce a product (satisfy a need). Innovativeness occurs in terms of discovering new market, introducing new products and services, seeking new sources of martial. Risk taking is the ability and willingness to deal with risk. Moreover, an entrepreneur needs to work in an uncertain environment and possibilities of failure. In general risk can be manageable and can be avoid through entrepreneurs' competencies and significant decision-making capabilities. Pro-activeness focuses on execution and fulfilment the concept of entrepreneurship through doing the necessary activities and actions.

A combination of these concepts causes business startup. The term entrepreneurship defined as a series of steps, moreover, discovering business concepts and new process, capitalized on the existing opportunities, and considering calculated risk, specific knowledge, and enforcement. The entrepreneurial process encapsulates of well set of undertaking and actions to discover new business open doors, formulate a business idea, estimate and obtain essential required resources, execute the business idea subsequently effectively oversee and capitalize on the business (Morris & Jones, 1993). Entrepreneurship is a process where entrepreneurs initiate small business and or as new business through their invested capital. As per the websters' collegiate dictionary it aims to explain as, entrepreneur is an individual who devoted, organize and coordinate, calculate the risk involved in an enterprise. In essence, entrepreneurship is the process of innovation and capitalizing opportunities with diligent and persistent, along with bearing financial, psychological, and social risk. However, it is done with the inspiration of economic gain, achievement, self-satisfaction and desire for independence (Hellmann, 2002).

3.3 Conceptual linkage of human resource management practices and entrepreneurship

HRM application is contemplated as imperative managerial function that have the significant impact on the result of entrepreneurship (Morris & Jones, 1993). The effective and efficient management of the human resources influence the outcome of any business either success or failure (Katz et al., 2000). HR applications have considerable impact on different aspect in terms of acquiring, developing and retaining human resources. HRM theories and concepts play a part in comprehending the issues, problems and unforeseen circumstances in the environment confronted by the entrepreneur and entrepreneurial firm (Altinay et al., 2008). Indeed, HRM plays a prominence part in the development and growth of the firm however, there are limited number of studies on HRM and entrepreneurial ventures exist (Keating & Olivares, 2007). Remarkably, the contribution of HRM practices to the survival of new ventures, and the impact of resource acquisition, allocation and development on the speed and direction of growth in rapidly expanding firms (Barrett & Mayson, 2007). Therefore, HRM, notwithstanding, is critical to comprehending the firm of entrepreneurial firms. While innovation may be the product of one brilliant mind, the process of design, production and distribution depends on effectively managing the work, effort and commitment of people (Keating & Olivares, 2007). It has been found that an emphasis on entrepreneurial aspects leads to an increased EO only in the case of training and development (Florén, Rundquist & Fischer, 2016). Previous research on reward systems has shown that rewards can change attitudes, motivate individuals and viewed as investments that are designed to induce individuals to join a company and make them perform well over time (Schmelter et al., 2010). Therefore, this can only be achieved by creative and talented employees. Creative and knowledgeable employees make this happens. They do innovation and constantly think about new ideas and new solutions to problems unlike conventional people do.

Zhou, Zhang and Montoro-Sánchez (2011) epitomize the concern on their entrepreneurial behavior, innovative and creative sides of the employees incorporate as a dimension. HRM made up of different sub systems among them the reward system is seen as an imperative function in addition to foster motivated employees to be creative and encourage their innovativeness. The formation of interpersonal relationship and the development of communication among employees themselves and between owner managers and their employees, can stimulate the dynamics of entrepreneurial behaviors. Hence, HRM is all about generating and supporting loftier HRM participation and involvement for business firms (Litz & Steward, 2000). As it was cited by Castrogiovanni et al. (2011) many researchers have asserted that acquisition of HRM practices would foster achieving sustained competitive advantage by reinforcing human capital pool and fostering employees to follow the firms' interest (Lado & Wilson, 1994; Wright et al., 2001; Barney & Wright,1998; Kidwell & Fish, 2007; Perren & Stevens, 2008).

Number of seminal arguments describe why human capital, or prior knowledge, is of distinctive importance to the field of entrepreneurship (Ardichvili et al., 2003). Foremost, human capital is pivotal to discovering and creating entrepreneurial opportunity (Marvel, 2013). Human capital also assists in harnessing business opportunities by obtaining financial resources and implementing ventures (Dimov, 2010). Third, human capital aids in the gleaning new knowledge and the creation of advantages for new firms (Bradley et al., 2012). In general, human capital is the often used selection criteria among venture capitalists when evaluating potential venture performance. Numerous studies have shown that, the significance of human resource functions in the success of failure of the business venture (Terpstra & Olson, 1993). Entrepreneurs frequently tackle operations and activities that encapsulates discover, access, utilize opportunities to put in application into new approaches to resource and process management (Uyar & Deniz, 2012). This relies on the entrepreneur's decisions, policies and practices executed to change the quality of the human resources. Scholars have conceptualized about the entrepreneurial process commencing with individual action or opportunity identification and proceeding to venture creation and firm outcomes (Lumpkin et al., 2004). Entrepreneurial action prior to venture creation is nascent entrepreneurship and includes individuals performing alone, or with others, in efforts to start a venture (Gartner et al., 2004). Bruno et al. (1987) stated that, there are various significant factors impact on failure of a business such like: lack of product design, poor time management practices, imprecise definition of business, over dependence on single customer, assuming debt too quickly, problems of venture capital relationship, lack of team work, human resource related problems. Successful business ventures had remarkable or superior resources in terms of managerial enlightenment and monetary support possessing solid business plan (Lussier, 1995). It has reviled specifically that HRM is a strategic partner of entrepreneurship and entrepreneurs as a strategic partner for the long-run effectiveness of start-up firms. And also, by understanding this role, both of current and prospective entrepreneurs will take advantage of HRM (Tang et al., 2015).

Recruitment and Selection

Recruitment refers to the process of collecting highly talented and competent candidates who are probably to be recruited by an organization to carry out the task or perform a job effectively (Chan & Kuok, 2011), conversely selection process addresses the end stage following the recruitment process whereby a best suited candidate who has the ability to fill a vacancy position is chosen (Pynes, 2004). It was detected by Kingfiser that they tent to recruit at the top and bottom level of the venture, without having much consideration on the middle of the organization, and that recruitments manifest to be violate (Baker & Aldrich, 1994). International handbook of entrepreneurship and HRM contrasted the recruitment practices of small and large firms, indicated few practices that differ substantially between the two (Barrett & Mayson, 2008). Furthermore, the study indicates that employees of the organization have rigid preferences in the organizations they apply to and that this forms part of the employee's selection criteria. HRM at kingfisher focuses on this function to improve the employee effeteness and performance. A general theory of entrepreneurship: the individual opportunity nexus; identified the recruitment practices of startup entrepreneurs. Williamson (2000) indicated about a strategic model of recruitment for small business ventures, that concerning on the requirement to absorb legitimacy and the need to improve individual firm character.

Human Resource Development

Discipline of Human Resource Development (HRD) is the study of how individuals and groups in organizations change through learning (Chalofsky & Lincoln, 1983). According to Torraco and Swanson (1995) HRD has served the needs of the organizations to give employees with up-to-date expertise and knowledge. HRD can be defined as a set of systematic and planned activities designed by an organization to provide its members with the opportunities to learn necessary skills to meet current and future job demands (Werner & DeSimone, 2011). Therefore, HRD encompasses training and development, employee development, technical training, management development, executive and leadership development, human performance technology, organization development, and organizational learning. HRD incorporates developing people with an intent to enhance the performance of the employees related with the job, developing job direction with aims on maximizing performance of their future requirements, introducing corporate development that foster optimum utilization of human competencies and improving human performance that assist organization effectiveness and efficiency (Gilley et al., 2002).

Training and Development

Training and development are identifying and accessing and via planned learning assisting employees to develop fundamental competencies which enable individuals to perform current and future job (McLagan, 1983). Antecedent research specifies that training and development is related to innovation (Beugelsdijk, 2008; Lau & Ngo, 2004; Shipton et al., 2006). HRM at Kingfisher focuses on the employee development through training. Kingfisher provides training program to increase the organizational sustainability through employee development (Torrington et al., 2008). Selective recruitment of entrepreneurial employees, relevant competencies also can be earned through training and development practices (Delaney & Huselid, 1996; Schmelter et al., 2010).

Performance Management

Performance management is known as the wide range of intentional trails, policies, dealings, and interventions to assist and support employees to enhance their performance (DeNisi & Murphy, 2017). It typically encapsulates ongoing method of identifying, evaluating and improving the performance of employees and groups in organizations (Aguinis & Pierce, 2008). PM has the responsibility to monitor and evaluate the performance of the employees at workplace not withstanding management must identify the present performance of the employees and act to deal with the digression (Torrington et al., 2008). Performance evaluation is one of the subsystems of HRM that play a significant role in the formulation of entrepreneurial behavior. Generally, Performance evaluation is a process in the holistic performance management in further evaluating each employee's performance in order to formulate objective decisions for employees (Moghimi, 2004).

Motivation

According to Broussard and Garrison (2004), comprehensively define motivation is the attribute that foster us to do something and or not to do something. Intrinsic motivation is activated by personal enjoyment, interest, or pleasure, conversely extrinsic motivation is ruled by reinforcement eventualities. Deci, Koestner and Ryan (1999) observe, intrinsic motivation strengthens and endures happenings through the spontaneous gratifications intrinsic in effective volitional action. It is disclosing in behaviors such as play, exploration, and challenge seeking that people often do for external rewards. Turner (1995) contemplates motivation to be synonymous with cognitive rendezvous, he describes as voluntary usages of high-level self-regulated learning strategies, such as paying attention, connection, planning, and monitoring. Enhancement of employee skills and of the motivation to use those skills leads to creativity improvement (Sun et al., 2007). According to the review of the literature human resources are the integral assets for business ventures, since they are the only resources that have the capability to create and innovate new things and ideas. The effective and efficient management of human resources in entrepreneurship foster entrepreneurial success and growth. Consequently, a business success relies on viewing human resource practices as an entrepreneurial phenomenon.

The human resource plays a very significant role in the success of organizational performance. Garavan (2007) says that there is now an established trend where there are well chosen HRD practices that have a directly affect both individual and organizational performance. According to Tseng and McLean (2008), the success of any business will depend to a big extent on an organization's ability to use its employee skills as well as expertise. Specifically, this body of literature suggests that HR practices lead to firm performance when they are aligned to work together to create and support the employee-based capabilities that lead to competitive advantage (Wright et al., 2001). Generally, the intention of HRM practices is to influence employee behavior in order to impact business performance (Wright & Nishii, 2007). A lot of effort has gone into understanding the relationship between HRM practices and firm performance. Previous research clearly shows that if appropriate HRM practices are implemented, they represent one of the most crucial firm resources (Barney & Wright, 1998), and they also contribute to the accomplishment of firm objectives and the creation of value. However, extant research has been criticized for only showing an association between systems and practices of HRM and firm performance, but leaving uncertainties about concrete causes and effects (Guest, 2011).

4. Conclusion and recommendation

Over the past 20 years' global competitiveness has forced firms to become more entrepreneurial in order to survive. The congruent between HRM and entrepreneurship has been studied by numerous authors. This conceptual paper sighted explore the congruence between HRM practices and entrepreneurship. Correspondingly, the review of literature is concentrating on the interconnection between HRM practices and entrepreneurship success. Based on the analysis of the existing literature, the present study underpins the importance of effective HRM practices on entrepreneurial success and highlighted that the wide variety tasks and duties should to be undertaken by the entrepreneur corresponding with the HRM. HRM is a prominent element of managerial decisions that affect organizational entrepreneurship.

Therefore, the changes in this discipline are likely corresponding with the fluctuations seen at entrepreneurship level. It signifies the efficient and effective HRM policies, programs and practices will foster entrepreneurial success in reinforcing itself to conserve talented and innovative employees. HRM inspires entrepreneurship through parameters such as cooperation, organizational learning, knowledge sharing, trust and risk taking. If companies pursue entrepreneurially oriented goals such as being more proactive, encouraging innovativeness and risk taking and competing more aggressively, the strategic HR activities automatically will turn to provide necessary HR support such as human capital, sufficient training programs and competitive compensation and reward systems to company in order to achieve its goals and strategies in the long run.

Consequently, entrepreneurs should admit the requisite to improve and develop the organization's HR policies and practices. Notwithstanding, the concept of HR management plays a prominent role in entrepreneurship, there have been few studies in this filed (Madmoli, 2016). Indeed, HRM practices and programs like promotion, rewarding, compensation, and the like are the factors that enhance employee's innovation and creativity. Moreover, innovation and creativity are the two-fundamental prerequisite of entrepreneurship. Consequently, good HR management practices can foster entrepreneurship. Further researcher is required in order to obtain a better picture of the HR practices in their firms that are doing well, as well as to identify the specific practices that may contribute entrepreneurial success or failure. This structured analytical literature review provides a strong base to move ahead in the further study and to explore the correct, exact as well as effective findings too. Intriguingly, entrepreneurs should have at least ordinary level knowledge about human resource management and its functions. It is also explored that if entrepreneurs are oriented toward HRM, they will establish effective human resource management on their firms. Moreover, it is anticipated that by implementing HRM specific state and private supported programs to start-up and entrepreneurial ventures. It will improve their capacities to operate effectively by an accurate management of their unique asset human.

Drawing on the literature and investigate results entrepreneurs are recommended to regulate essential level of entrepreneurial activities and HR departments can set their roles and activities to encounter the necessity of entrepreneurial goals of organizations. Consequently, the positive contribution of HR activities on firm performance can upsurge. HRM is vital for the entrepreneurship success HRM practices should emphasis on constructing associations among employees as they do on matching individual employees to job situations (Larsen, 2001). While the traditional model of HRM encourages matching employee contributions to organizational needs and inducements, a more relevant perspective to corporate entrepreneurship would inspire the building of relationships among employees, between employees and the organization, and between employees and key organizational stakeholders. These inter-relationships are necessary because they embody indispensable channels for the flow of knowledge and information.

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Impact of electronic banking practices and ownership on operational efficiency: Evidence from commercial banks in Rathnapura district of Sri Lanka

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Abstract

Based on the theory of constraints, the present study tests the impact of electronic banking practices and ownership on the operational efficiency of Sri Lankan commercial banks. Views of operational level managers were collected from state-owned and public-owned banks based on the Rathnapura district of Sri Lanka. A pre-tested structured instrument was used in deriving 255 valid responses. Multiple regression analysis evidenced the strong positive impact of electronic banking practices on the operational efficiency of both categories of banks. Further, ownership found to be moderating the said relationship where the public-owned banks reap greater operational gains from the investment in electronic banking practices compared to state-owned banks. Use of Automated Teller Machines is the top most electronic banking practice while internet and mobile banking also found significant in affecting operational efficiency. Moderating effect of ownership serves the theoretical implication while practical implication calls for enhancing flexibility in electronic banking practices of state-owned commercial banks. A closer look on other possible intervening variables on to the tested association is suggested for future studies.

Keywords: *Electronic banking, electronic business, operational efficiency, ownership, Sri Lanka.*

1. Introduction

Electronic Business (EB) is defined as "the use of electronic networks and associated technologies to enable, improve, enhance, transform or invent a business process or business system to create superior value for current or operational customers" (Sawhney & Zabin, 2001). Simply, it implies use of technology for offering greater value to the customers. Additionally, Tian and Stewart (2008) have viewed EB as performing transactions of goods and services through communication networks. Likewise, different authors have defined EB as a merge between business operations and technology, in particular, the network technology. Thus, EB can be basically viewed as the application of internet technology for streamlining business processes of any nature. Theoretically, EB composed of three main components namely, e-marketing, e-commerce and e-operations. E-marketing is known as new attitude and modern realistic involvement with marketing of goods, services, information and even ideas via internet and other electronic means (EI-Gohary, 2010) while e-operations encompasses digital processes to fulfil the customer requirements through products and services (Columbus, 2000; Dehkordi, Rezvani, Rahman, Fouladivanda, Nahid, & Jourya, 2012; Barnes, Hinton, & Mieczkowska, 2003; Boyer, 2001). Electronic commerce is defined as the use of electronic communications and digital information processing technology in business transactions to create, transform and redefine relationships for value creation between or among organizations, and between organizations and individuals (Nisha & Sangeeta, 2012). E-commerce is considered a subset of EB as it is limited by its scope; to business transactions of the organizations (Dehkordi, et al., 2012). Yet, it is often use interchangeably with EB (Dehkordi, et al., 2012; Wu, Mahajan & Balasubramanina, 2003). Hence, scholars and practitioners use both terms to denote use of technological applications in the business processes. Accordingly, the present study too uses these two terms to refer the usage of Information and Communication Technologies (ICTs) for variety of operational and strategic objectives such as, sharing information, maintaining business relationships and carrying out business transactions with customers, business partners and also with merchants. Electronic business alters the business models of many industries (Columbus, 2000). In particular, the banking industry today is revolutionizing and experiencing a major transformation as a result of technological applications in the traditional banking activities (Simon, EI-maude, Jibreel, & Abam, 2013; Tennakoon, 2014). Consequently, a branch of EB has emerged as electronic banking which encompasses the technology-associated banking operations such as Internet Banking (IB), Mobile Banking (MB), telephone banking, and Automated Teller Machines (ATM) (Akhisar, Tunay, & Tunay, 2015). EB delivers a faster yet secure transaction platform for bankers leading to greater customer sophistication (Kimani, 2015; Too, Ayuma, & Ambrose, 2016). Traditional modes of banking inhabit numerous inefficiencies leading to uprising overhead. For instance, longer cycle time, delayed communication, incompatible systems, and excessive documentation are among the drivers of poor service delivery leading to customer dissatisfaction (Yushuf & Bala, 2015). Traditional banking requires meeting physically and to maintain significant number of staff to provide services. Usually, these transactions are time consuming which leads in rising the operational cost (Chaffey, Chadwick, Johnston, & Mayer, 2009). The banking industry has revolutionized due to emergence of EB. The featured EB tools are ATM, IB, MB, online credit cards, online bill presentment and Electronic Fund Transfer (EFT) systems. Application of these modest EB tools resulted in reducing the physical bank branches, operation costs, staff, transaction processing time, paper work and telephone usage (Akhisar et al., 2015; Simon et al., 2013).

ATM is a major digital banking tool which minimize operational cost to a greater extent. It is significant in terms of financial measures too. Use of ATM reduces the traffic of the bank counters thus improve the customer service (Kimani, 2015). In 1967, the very-first ATM was installed on a street in London. Ever since the ATM technology revolutionizing the banking industry (Irani, 2018; Batiz-Lazo & Barrie, 2005). While the basic function of an ATM continues to be dispensing money, hardware and software used at them have undergone a drastic change. Today, number of variations of ATM such as CDMs (Cash Deposit Machines), and CRM (Cash Recycling Machines) are used by different bankers for enabling wider range of banking operations (Irani, 2018). Here, in this study, researcher disregarded the different features of these teller machines and commonly referred all the off-the bank teller machines as ATM. Generally, they offer services such as balance inquiry, card-free access, video-teller capabilities, biometric identification, deposits, withdrawals & transfer funds from/ among accounts, cheque deposits, cheque book requisitions, pay utility bills/premiums, change of Personal Identification Numbers (PIN) etc. (Kong, Zhang, & Kamel, 2006). In Sri Lankan context, this is the most popular technology-enable banking solution adopted by many customers. At the end of 2018, there were 4655 ATM outlets throughout the Sri Lankan licensed commercial bank network (Central Bank of Sri Lanka, 2019).

IB allows customers to execute their financial transactions via the internet with bank’s website. It permits almost all transactions except some specialized services such as pawning (Kagan, Acharya, Lingam, & Kodepaka, 2005). In 2018, 2933 billion LKR payments were made through the IB as to the records of Central bank of Sri Lanka.

MB is the next major EB practice by digital bankers. There, Mobile Apps are used as the principal gateway to the banking services over the mobile devices mainly the smart phones and tablets (Aboelmaged & Gebba, 2013). The rapid growth of mobile technology and the ever-growing ubiquity of mobile devices over the years, have resulted in MB to evolve from a simple information delivery channel to a comprehensive banking transaction platform (Dandeniya, 2014). Through MB, users are able to access financial and non-financial services such as account management, balance enquiry, transfers, bill payment, Personal Identification Number (PIN) change and cheque book request (Shaikh & Karjaluoto, 2015). Over 24.5 million mobile bank subscribers in Sri Lanka accounts for 32 billion LKR transactions in 2016 (Seneviratne, 2016). A steady growth of MB transactions has resulted in 143 billion LKR increase in total value of transaction volume in 2018 (Central Bank of Sri Lanka, 2019).

Based on functional effectiveness and empirical evidences (Simon et al., 2013; Dandeniya, 2014; Akhisar et al., 2015; Aluthge & Tennakoon, 2017; Perera, 2018) it can be observed that the EB practices leading a greater transformation in banking operations. Yet, the application of EB practices vary from bank to bank even with the identical EB tools. For instance, the services offered ATM service of one bank may not the identical to the services offered by ATM of other banks. Many reasons could be ascertained for the heterogeneity of EB practices among the banks while ownership of the bank appear to be a prime factor (Weerasinghe, Ekanayake, Wijekoon, Katthuriarachchi, Wanniarachchi, & Wijayaratna, 2019). State-owned commercial banks typically experience greater level of financial and operational obligations towards the government. Public-owned commercial banks’ EB strategies are usually crafted and lead by independent team of managers. They enjoy greater flexibility in blending the technology with traditional banking practices whereas state-owned bankers encounter hardships in balancing legal and administrative obligations and customer sophistication. Resultantly, state-owned commercial banks may encounter difficulties in reaping the benefits associated with EB while public-owned commercial banks may find it easy to transform their operations in to customer friendly banking solutions (Weerasinghe, et al., 2019).

Sri Lanka's first state-owned commercial bank; Bank of Ceylon was incorporated in 1939. Later in 1961 the next state-owned bank namely, the People's Bank was incorporated. Two of these Sri Lankan state commercial banks were incorporated before 1970s where all the public-owned banks were incorporated 1970 afterwards. In 1970, the Hatton National Bank was incorporated as the first public-owned commercial bank of Sri Lanka. Progressively number of private sector banks were established after 1980s & championing the technological advancements in banking industry today (Yapa & Hasara, 2013). At the beginning, banking services were limited to the plantation sector & after 1977 it was opened to all the business sectors (Nadarajah, 2010). At present, Sri Lanka has 33 banks for 21 million peoples. As at December 2018, there were 11 public-owned banks and nine state-owned banks in Sri Lanka (Central Bank of Sri Lanka, 2019). Today, there are 26 licensed commercial banks operating in Sri Lanka including the two state-owned commercial banks (Central Bank of Sri Lanka, 2019). Resultantly, the rivalry within the industry rises demanding superior customer service. Both state-owned and public banks found EB practices as the ultimate solution to gain competitive advantage. Not only EB practices raise customer satisfaction they also maximize operational efficiency of banks (Fernando & Nimal, 2014; Tennakoon & Manodara, 2017). Yet, in Sri Lankan context, two commercial bank categories; the public-owned banks and state-owned banks showed significant differences with respect to their EB performances. For instance, in a comparative study on EB of private and public sector banks of Sri Lanka, Weerasinghe et al. (2019) highlighted a significant difference between private and public banks in terms of adoption of EB practices. Another study by Selvarajan and Ranasinghe (2012), showed that there a disparity in between public and state banks with respect to enablers and inhibitors of e-transformations. Among the inhibitors specific to public sector banks was the governmental regulations which act as a road block for e-transformation of public banks as opposed to private banks (Selvarajan & Ranasinghe, 2012). This finding is supported by the contributions by Weerasinghe et al. (2019), Selvarajan (2010) and Selvarajan (2011). Similar findings were found in other contexts too (Agrawal, Chauhan, & Kukreti, 2017). Nevertheless, no study as per the researcher's best knowledge, has established the cause/s for the variation in EB performance of two commercial bank categories. Hence, there is a gap in connection with the influencing variables which might cause swinging the gains of EB practices.

Goldratt's (1984) Theory of Constraints (TOC) suggested to identify, exploit, subordinate, evaluate and repeat the process to manage the constraints in order to improve organizational performance (Goldratt, 1990). The constraints are classified as market, material, capacity, logistical, managerial, and behavioral (Narasimhan, McLeaavey, & Billington, 1995). Market constraints refer to demographic and socioeconomic factors. For instance, younger generation shows a greater EB temptation in adopting EB practices (Aluthge & Tennakoon, 2017). Material as a constraint associates with the problem of ensuring the smooth flow of materials of expected quality for operations. This is not so significant in the service sector compared to manufacturing sector. Capacity constraints is about inadequacy in key resources whereas logistical constraints referred to issues connected with movement of material. Managerial constraints are the strategies and policies that adversely affect system performance while

Behavioural constraints involves behaviours of key stakeholders (Bramorski, Madan, & Motwani, 1997). TOC has been practically applied, and empirically tested by practitioners for solving performance problems of industrial setup (Bauer, Vargas, Sellitto, Souza, & Vaccaro, 2019). TOC concept posited that the constraints always limit the achievement of higher performance by the organizations. TOC stresses on identification of leading limiting factor/s of a process or a system and systematically improving that limiting factor which is known as "constraint" until no longer it limits the desired performance target (Bauer et al., 2019). In an attempt to apply TOC to banking industry, Bramorski et al. (1997) concluded that most of the constraints in banks are often associate with policies procedures rather than the capacity or equipment. They have identified operational expense as one of the key measures of the application of TOC for banks. In general, state-owned banks are often abided by the government regulations which is already detected to be constraint towards greater EB performances (Selvarajan & Ranasinghe, 2012; Selvarajan, 2010). Based on the premises of TOC, the present study argues that the banks' technological throughputs would not reap the expected organizational performances due to the constraint of ownership, which is explicitly a Management constraint. As such, the present study investigated how EB practices affect operation efficiency of banks under two basic ownership categories namely; state-owned banks and public-owned banks. Within the state banks category, there exists number of sub ownership structures such as government, semi government and private ownership. Each operates in different environments those differentiated by management objectives, rules & regulations and strategies. Government banks are subject to excessive government involvement in decision making and managers/ employees have restricted span of operations compared to the public-owned banks. Additionally, undue political influences are also prevalent in state sector compressing the legitimate control by the management over the operational measures. This is hardly visible in public banks where the operations are essentially guided by nothing other than the organizational strategic direction. Hence, the main objective of this study was to assess the impact of EB practices, and Ownership on the Operational efficiency of commercial banks in Rathnapura District of Sri Lanka.

2. Review of literature

2.1 Electronic banking

Electronic banking is provision of banking products and services through electronic delivery channels (Nitsure, 2003). Numerous definitions on EB elaborate the use of ICT in conjunction with banking operations (Tian & Stewart, 2008). With the advances in technologies, in particular the networking and communication technologies, bankers have given the opportunity to transform their routine banking operations in to technologically-driven processes. Resultantly, banking industry today, experiencing a tremendous transformation (Simon et al., 2013; Tennakoon, 2014). Assessment of EB successes evidenced improved efficiency, customer satisfaction, lower operational cost etc. (Akhisar et al., 2015; Simon et al., 2013). EB's ability to deliver faster yet secure transactions have improved the customer satisfaction on top of branch banking (Kimani, 2015). EB overcomes most of the limitations associated with branch banking. For instance, longer cycle time, delayed communication, incompatible systems, and excessive documentation are often cited for causing inefficiencies in traditional branch banking (Yushuf & Bala, 2015). Unlike traditional banking which demands face-face meeting of customers, EB enables delivery of the services via online thus no can cut off the operational expenditure associated with branch banking to a greater extent (Chaffey et al., 2009; Yushuf & Bala, 2015; Akhisar et al., 2015; Simon et al., 2013).

2.2 Operational efficiency

Efficiency simply means how firms used its inputs or cost to gain the maximum outputs or gaining maximum output using minimum inputs. It is the ratio of inputs to outputs (Fernando & Nimal, 2014). In particular, the banking industry today is revolutionizing and experiencing a major transformation as a result of technological applications. Further, it can be described as the ability to deliver product and services without sacrificing quality of product & services (Allen & Rai, 1996). Shawk (2008) defined operational efficiency as what will be occur when right combination of people, technology and process enhance the value and productivity of business operations while declining the cost of daily operations to a sufficient amount. Efficiency is core of the economies. Operational efficiency leads the economic growth and stability of the financial systems of a country. However, profitability doesn't indicate the resources efficiency. In traditional approach, profit better dictates the performance but not efficiency. Efficiency is beyond the concept of profitability (Fernando & Nimal, 2014). Muthama (2014) indicated that operational efficiency can be measured through operating cost, customer base, general quality of service, customer loyalty, transaction processing time, paper work cost, phone call cost and employee's productivity. Abdullai and Micheni (2018) followed a three-dimensional model of operational efficiency namely; cost of operations, reliability of service and speed of service. Agboola (2006) considered cost, quality, reliability, flexibility, delivery and speed as the basic dimensions of operation efficiency. Hence, the present study measured operational efficiency using five dimensions, i.e. transaction processing time, operating cost, productivity of employees, customer loyalty, and reliability of service.

Transaction processing time - Transaction processing time defines the speed of the transactions through the EB. Speed is the key success factor of the EB service (Ndubisi, 2006). Prior researches have revealed that speed have a considerable impact on operational efficiency in banking sector (Abdullai & Micheni, 2018; Tennakoon & Manodara, 2017).

Operating cost - Web is more efficient way to banks for operating at lower operating cost. Online technology can deliver services to customers more economically than traditional methods. Low cost technological infrastructures reduce the operating cost. So, bank branches can deliver low cost & accurate electronic transactions for customers (Muthama, 2014; Adewoye & Omoregie, 1970). E-business has significantly affected employee productivity of banks in ways of recruitment of new employees, training employees, sharing information among employees and video conferencing (Tennakoon & Manodara, 2017).

Customer loyalty - Customer can access their accounts, accounts related details and download the account data with EB in any time weekends or late night. And also, EB maximizes their convenience to allowing transaction facilities in their door step for all the time. Then increase the customer loyalty about their bank (Muthama, 2014).

Reliability of service - There are many different ways of measuring operational efficiency. Among them reliability is a basic measurement of the operational efficiency (Agboola, 2006). It can be defined as the level of transaction security and promptness as well as it may contribute customers to trust. According to Yushuf and Bala (2015) success of EB services is depend on reliability and it is a key factor that customers must consider when using the EB services.

2.3 Electronic banking practices of banks

Electronic banking practices of banks denote all the banking transactions offered via the Internet. They are treated as critical success factors of modern banks (Akhisar et al., 2015; Weerasinghe et al., 2019). The variety of EB practices used by bankers depend on their strategic priorities. Among them ATM, IB and MB are the top most popular applications. They found to be the leading factors enhancing operational efficiency of almost all the banks regardless of their size and type (Muthama, 2014). They deliver lower operational expenses, lesser time for formal banking operations, speedier banking processes, lesser/no paper work, lower head count in service delivery, lesser/no agency cost in involving third party, etc. Eventually the relationship with customers is enhanced at an optimum operational cost (Kaptan, 2003; Too et al., 2016). For customers, digital banking allows fast transactions, greater availability (24 x 7) and extensive flexibility in banking over the physical branch banking. At the very end EB practices of banks are considered eco-friendly where their no or minimum use of natural resources (Mohapatra, 2012). EB has greatly enabled accessibility of services with automation. Thereby, customers can transact at any time with greater privacy and security services to customers which protected & security (Abdullai & Micheni, 2018).

Automated teller machines and operation efficiency - ATM is a primitive EB tool. It contributes significantly to the operations & financial results of banks (Too et al., 2016; Abdullai & Nyaoga, 2017). ATM enable customers to withdraw/ deposit money/ cheques, transfer funds pay utility bills and balance inquires etc. at any time (Kong et al., 2006). ATM have been adopted & still being adopted by banks across the globe. They offer considerable benefits to both banks and to the customers. Customer can enjoy banking services all the time in the day (Olatokun & Igbinedion, 2009). Cost of single transaction of ATM potentially less than the cost of transaction done by banker and also ATM can handle volumes of transactions per unit of time than an employee (Laderman, 1990).

Holden and Bannany (2004), Haynes and Thompson (2000), Abdullai and Nyaoga (2017) and Laderman (1990) have found similar results in relation to ATM and operation efficiency. Holden and Bannany (2004) reported that the number of ATM installed by bank has a positive relationship with performance of the bank. They emphasized the significant role played by ATM in increasing the Return on Assets (ROA) of the banks. According to Haynes and Thompson (2000), ATM can process daily routine transactions. It aids in reducing the banker’s workload resulting in lower demand for labour at the banks. Laderman in 1990 also concluded that ATM could reduce human resource cost of bankers and branch establishment cost of banks. Moreover, Ou, Hung, Yen, and Liu (2009) found that investments on ATM are associated with positive cost efficiency. In contrast, ATM were found to be not having any impact on the ROA in the context Japanese banks (Kondo, 2010). However, Batiz-Lazo and Barrie (2005) argued that, to achieve operating efficiency, number of ATM transactions must be increased.

Internet banking and operation efficiency - IB offers a wide range of banking services electronically through the bank's website. Originally, IB was mostly used by banks as an information delivery channel to promote their products and services. Along with the technological advancements, banks at present use IB as a service delivery platform of almost all the banking services. Customers primarily engage in balance inquires, payment of bills, transferring funds between accounts, printing statements, transactions relate to credit card and managing their investments and loan facilities (Kagan et al., 2005). Additionally, IB helps banks in enhancing their earning potentialities by means of improved Return on Equity (ROE) and asset quality (Okiro & Ndungu, 2013; Too et al., 2016).

Abdullai and Micheni (2018) found that IB has a positive significant effect on operational performance of commercial banks in Kenya. They concluded that managements of commercial banks should invest in IB as it positively influences operation performance in banks. Okiro and Ndunga (2013) found that adoption of IB has increased efficiency, effectiveness & productivity of banks.

All the commercial banks in Sri Lanka offer IB services to their customers. Yet, the capabilities and performance of each system vary depending on the several reasons mainly the strategic focus of the bank and adopted technology. On average, more than fifty percent of Sri Lankan commercial banks' customer base enjoy IB facilities (Fernando & Nimal, 2014). Thus, the knowledge on IB's impact on operation efficiency of banks in Sri Lankan context is primitive for any further development of digital banking sector.

Mobile banking and operation efficiency - MB can be described as the process of banking with the aid of mobile telecommunication devices; usually the smart phones and tablets (Anyasi & Otuba, 2009). MB is a branch of mobile commerce which is a subset of EB. Users are provided with instant access to usual banking services via their mobile devices. These services may include both financial and non-financial services such as account management, balance enquiry, electronic fund transfer, bill payment, PIN change and cheque book request, etc. (Shaikh & Karjaluoto, 2015). And also, MB raises the proficiency and assist in developing the business networks.

Bagudu, Khan, and Roslan (2017) and Too et al. (2016) found that MB has significantly and positively affect the financial performance of commercial banks in Nigeria. Furthermore, they concluded that MB ensures easy track of lenders, easy monitoring, quick transfer of funds, less processing time, e-wallet, easy payment of bills and much more. Kimani (2015) found that MB positively enhances operational efficiency of commercial banks in Kenya (Kato, et. al., 2014). However, Anyasi and Otuba (2009) argued that there are hundreds of millions of telephone owners who lives away from urban areas don't know the MB. Most of new mobile users live in cash economics without accessing MB. Although MB offers various kind of features, mobile owners failed to gain advantages of them.

At present, Sri Lankan banking sector is moving ahead with MB facility. Number of state and Public-owned banks have developed their self-care Apps over which the MB is practiced. The number of Sri Lankan mobile users gets doubled annually (Dandeniya, 2014). As such accounting the MB impact on operation efficiency is felt essential better understanding of the context.

2.4 Ownership of banks

Ownership of Sri Lankan commercial banks is primarily of two kinds, namely the government/ state ownership and public ownership (owned by shareholders). State-owned banks are usually under the direct control of central bank of Si Lanka and the cabinet of the parliament. Public-owned banks are incorporated as public limited companies which are generally the listed companies of the stock exchange. Based on the ownership, the management, governance and operational structure with their procedures of the two types largely vary from one another.

State-owned banks - Lower level of per-capita income, underdeveloped financial systems, poor protection of property rights as well as interventionist and inefficiency of government hinder the financial development of any country. State-owned banks suffer a lot when the country's economy fails in generating adequate national income. Consequently, State-owned banks happen to compensate for macro level financial crises led by inefficient economic policies of the country. Xu and Hu (2013) mentioned that decreased government ownership can improve banks performance. Fernando and Nimal (2014) and Micco, Panizza, and Yanez (2007) found that public banks are less efficient than private banks in developing countries. Some claimed that the political influencers led State-owned banks in utter risk of failure. Brown and Dinc (2005) suggested that governmental institutes face trouble situation before the election of government. State banks eventually become the arms of ineffective monetary policies beside the industry-based performance standards (Cecchetti & Krause, 2001).

Public-owned banks - Public-owned banks are treated as private businesses and typically managed by a board of directors thus are relatively free from external influences. Yet, they have to comply with the operational guidelines set by the central bank based on the monetary policy. However, these banks enjoy greater freedom in crafting their own strategic outfits and subsequent managerial and operational procedures for their banks. Shleifer (1998) argued that private ownership is often more preferable over public ownership. Here, Shleifer (1998) operationally defined public banks as government-owned banks where in the present study the same is denoted by state-owned banks. Moreover, Cecchetti and Krause (2001), Micco et al. (2007), Xu and Hu (2013), Fernando and Nimal (2014), and Porta, Lopez-de-Silanes, and Shleifer (2000) have criticized state banks for their inefficiencies mainly due to excessive influence of the government. Accordingly, public-owned banks deemed to be a preferred business model over state-owned banks due to its operational flexibility. Public ownership always motivated to earn profits so as to entertain the shareholders' interests. Operational efficiency is fundamental in optimizing profits. Hence, public banks are geared naturally towards operational excellence. State banks on the other hand still have to accommodate the financial and developmental policies of the government besides the best interests of operational efficiencies. They serve as one of the main arms of the government in implementing its monetary policies. Nevertheless, state banks have to maintain adequate profits to ensure survival and growth.

Technological advances drive many EB practices are of greater potential in reaping cost efficiencies. The managerial and administrative structure of the bank filters the real effect of technological driven EB practices on the operational efficiency. Ownership appears to impact the performance of banks which is not sufficiently addressed in the existing literature especially in the Sri Lankan banking context.

3. Methodology

Based on the reviewed literature, following conceptual model is developed (Figure 1).

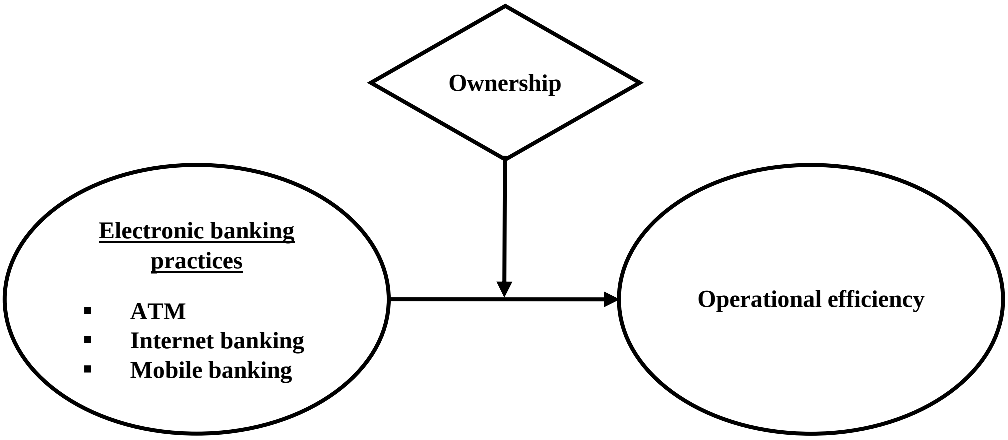

Figure 1 Conceptual model

Accordingly, the hypotheses of the study were;

H_1: Electronic banking practices significantly impact operation efficiency of commercial banks

H_2: Automated Teller Machines significantly impact operation efficiency of commercial banks

H_3: Internet banking significantly impacts operation efficiency of commercial banks

H_4: Mobile banking significantly impact operation efficiency of commercial banks

H_5: Ownership moderates the relationship between electronic banking practices and operating efficiency of commercial banks

The study followed the positivistic research tradition. The study characterized by deductive reasoning in which quantitative research approach was employed to test the hypotheses. Authors performed a field survey of banks in Rathnapura District of Sri Lanka as the research strategy. In Rathnapura district, there were around 85 bank branches. This includes both government banks and public banks. The unit of analysis was a bank whereas the branch manager/ an assistant branch manager/ a senior executive of the branch represents the bank branch while answering the questionnaire. Operational efficiency is best known to people who are really in the operation. As they are the ones who plan and control for the operational targets of the organizations. Additionally, they are well aware of the merits and demerits of the operation of the organization. Thus, the authors believed that the analysis fed with apt data to support the hypotheses. Resultantly, 255 respondents answered the questionnaire by assessing the variables under the measure in terms of institutional standpoint rather than an individual stand point. The questionnaires were hand delivered and collected by the research assistants within a week. As a result, authors succeed in securing 100 percent response rate, where for few cases, representatives of the branch managers and assistant branch managers were assigned to answer the questionnaire.

3.1 Electronic banking

The predictor variables are EB practices and Ownership while Operational efficiency is the observed variable. The operationalization of theses variables is shown in Table 1.

Table 1
Measures of key variables

Variable	Dimensions	Indicators
Electronic banking practices	Automated Teller Machines	Q6 - Most of our customers deposit their money on ATM
		Q8 - Sufficient number of customers using ATM for withdrawing their money
		Q7 - Most of customers never ask account balance or updated passbooks and always using ATM for it
	Internet banking	Q10 - Most of customers never ask account balance or updated passbooks and always using IB for it
		Q9 - Most of our customers paying bills through the IB
		Q11 - Sufficient number of customers use IB for fund transfer
	Mobile banking	Q13 - Interbank transfers mostly done through MB
		Q14 - Sufficient number of customers using MB for withdrawing their money
		Q12 - Most of customers never ask account balance or updated passbooks and always using MB for it
		Q15 - Significant number of customers use MB because it accommodates bill payment information inquiries

Ownership	State-owned	Q1 - Type of your organization
	Public-owned	
Operation efficiency	Transaction Processing time	Q17 - EB practices obviously decrease transaction processing time
	Operating cost	Q16 - EB practices (ATM, IB & MB) minimize the operation cost of the branch
	Reliability of service	Q19 - EB practices obviously enhance and assure the reliability of services
	Productivity of employees	Q18 - EB practices obviously enhance the productivity of employees
	Customer loyalty	Q20 - EB practices significantly aid in increasing the customer loyalty

Likert scale of 5 points measures the responses of EB practices and operational efficiency items. The scale ranges from one to 5 where "one" denoted the strongly disagree and "5" denotes the strongly agree. Item one questioned the type of the bank ownership; state-owned or public owned. The internal consistency of the instrument was assessed. All the indicators under each dimension showed accepted level of Cronbach Alpha values (> 0.8) accepted for social science studies (Nunally, 1978). Namely, ATM (0.881), IB (0.933), MB (0.890), and Operational efficiency (0.815).

Table 2 summaries selected demographic attributes of the respondents.

Table 2
Sample profile

Attribute	Level	N	Percent
Respondent's Position	Manager	82	32
	Senior executives	173	68
	Total	**255**	**100**
Respondent's Experience	1-10 years	102	40
	11-20 years	102	40
	21-30 years	43	17
	31-40 years	8	03
	Total	**255**	**100**
Respondent's Age	18-25 years	23	09
	26-35 years	82	32
	36-45 years	107	42
	46-55 years	43	17
	Total	**255**	**100**

The sample mainly consists of managers and operational level senior executives of the banks. Majority represented by the operational level senior executives. This can be considered a strength of the sample selection as the greater involvement in operational process enables respondents to better understand and interpret the variables under the investigation. Nearly 80 percent of the respondents hold a fair level of experience resulting reliable and accurate responses about the EB practices and operational efficiency of the banks. Additionally, wider share of the sample (42 percent) is in the age range of 36-45 years. It is an indirect indication of their present career stage; the mid-career. This is another property of sample that ensures the fitness of assembled data to test the hypotheses. The moderating variable; ownership of the bank is a categorical variable and consists of two levels namely; public-owned banks (1) and state-owned banks (0). 50.5 percent (n = 129) of the respondents in the sample belongs to state-owned banks while 49.5 percent (126) of respondents represents public-owned banks, to be specific the private banks as per its operational definition of the present study. Approximately, a balanced representation of both categories was evident in the sample enhancing the generalizability of the findings.

Data analysis employed both univariate and multivariate techniques. Descriptive statistics, Pearson product movement correlation analysis and multiple regression analysis performed the data analysis with the aid of SPSS version 20. Hypotheses testing were based on the results of the multiple regression analysis.

4. Results and discussion

Association between EB, and operational efficiency - Pearson product-movement correlation analysis was performed to evaluate the association between EB practices and operational efficiency.

Table 3
Results of correlation analysis

		ATM	IB	MB
Operational Efficiency	Pearson Correlation	0.245*	0.378*	0.305*
	Sig. (2-tailed)	0.002	0.036	0.007
	N	255	253	255

**. Correlation is significant at the 0.05 level (2-tailed).*

Use of ATM, IB, and MB significantly and positively associate with the improvement of operational efficiency of the banks. Technological advancements are best known for efficiency enhancement as a result of improved speed and non-repetitive nature of work flows. Although the strength of the associations reported here are weak, they still comply with the existing findings of the similar associations. Many, collectively and in isolation found that these three EB practices significantly relate with the operational efficiency of banks (Muthama, 2014). Specifically, Laderman (1990), Haynes and Thompson (2000), Holden and Bannany (2014), as well as Abdullai and Nyaoga (2017) have found similar results in relation to ATM and operation efficiency. IB was tested against the operational efficiency and found to be significantly uplifting the operational efficiency by Okiro and Ndunga (2013) and Abdullai and Micheni (2018). MB as the extended version of IB was reported to improve the overall performance of the banks in general and operational efficiency in particular (Too et al., 2016; Bagudu et al., 2017).

However, Ownership; the moderator in the present study was a novel introduction to the relationship between EB practices and operational efficiency of banks, thus was not pre-tested for its moderator effect. Nevertheless, ownership was found to be manipulating the performance of the banks where state-owned banks suffer much of the disadvantages over private ownership (Weerasinghe, et al., 2019; Shelifer, 1998; Cecchetti & Krouse, 2001; Brown & Dinc, 2005; Micco et al., 2007; Xu & Hu, 2013; Fernando & Nimal, 2014). The multiple regression analysis derived the statistics for predicting the operational efficiency based on the associated variables, are discussed next.

The model fitting indices indicate a sound regression model. Test for multicollinearity indicates (Table 5) that a very low level of multicollinearity was present (VIF = 1.419 for ATM, 2.001 for IB, 1.601 for MB and 1.533 for Interaction term). Durbin Watson statistic (Table 4) evidenced the absence of auto correlation (1.956 ≈ 2). Normality of dependent variable, Operational efficiency is assured using both graphical and numeric measures. Measures of symmetry and shape; skewness (Skew = 0.37 > 0.5) and Kurtosis (Kurt = 2. 78 ≈ 3) respectively evinced the normality of data. The interaction effect of independent variable (EB practices) and moderating variable (Ownership) represented the moderator's effect in the multiple regression analysis. Table 4 shows the results of the multiple regression analysis.

Table 4
Results of multiple regression analysis - goodness of fit of the model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin – Watson
1	0.395[a]	0.287	0.264	0.262	1.956

Table 4 shows the aggregate impact of all influencing variables on the operational efficiency. Coefficient of determination (R^2) tells us the explanative power of predictor variables to explain the variability of latent variable. In the fitted model, 28.7 percent of variance in operation efficiency is explained by EB practices (i.e. ATM, IB & MB) and the ownership. This model is significant at 95 percent confidence level (p = 0. 012 < 0.05, F = 3.813, df = 251). Beta coefficients of individual predictors establish their specific influence on the dependent variable.

Table 5 exhibits the coefficients of predictor variables. All the predictors are significant in describing the variation of operational efficiency. In particular, ATM (β = 0.258, p = 0.015), IB (β = 0.445, p = 0.013) and MB (β = 0.356, p = 0.022) capable of affecting the operational efficiency of banks. Importantly, ownership of banks proven to be moderating the relationship between EB practices and operational efficiency of the banks (β = 0.227, p = 0.038).

Table 5
Results of multiple regression analysis – coefficients

Coefficients							
Model	Unstandardized Coefficients		Standardized Coefficient	T	Sig	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	3.926	0.175		22.466	0.000		
ATM	0.127	0.051	0.258	2.480	0.015	0.705	1.419
IB	0.324	0.064	0.445	2.369	0.013	0.500	2.001
MB	0.264	0.062	0.356	2.321	0.022	0.625	1.601
EB*Ownership	-0.107	0.055	0.227	1.891	0.038	0.598	1.533

Formula one summaries the finding by means of regression equation.

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \ldots\ldots + \beta_nX_n + e \rightarrow \text{Formula 1}$$

Hence,

$$OE = 3.926 + 0.258ATM + 0.445IB + 0.356MB + 0.227\ (EB * Ownership) + e$$

The nominal value assigned for state-owned banks was zero while it was one for public-owned banks. The relationship between EB practices and operational efficiency is positive. The nominal value for the ownership variable of state-owned banks was zero. Thus, when produced as a moderating variable contributes nothing to the existing positive relationship. Yet, the operational efficiency of public-owned banks gets enhanced after adding the moderating effect. Accordingly, ownership can be recognised as moderating the relationship between EB practices and operational efficiency of commercial banks.

5. Conclusion

The objective of the study was to determine the impact of EB practices (ATM, IB, MB) and Ownership on the Operation efficiency of commercial banks. Based on the premises of TOC, it is assumed that the technological advances (i.e. EB practices) eliminate the constraints towards optimum performance while on the other hand ownership holds back the organizational potentialities thus acts as a constraint. As such, the research model of the study hypothesized that the impact of EB practices on operational efficiency is moderated by the nature of bank ownership. Findings supported to conclude that the EB practices positively and significantly impact the operation efficiency of banks. These findings are highly consistent with the findings of the previous studies too. The theoretical novelty of the study; the moderating effect of ownership on the main association found significant. Thus, the study accepted the ownership as a moderator which can manipulate the association between EB practices and operational efficiency.

Drawing on the TOC principles, ownership in the Sri Lankan commercial banking sector is confirmed as a restraining factor towards operational excellence supported by technological advances. The study carries two main theoretical implications. One is empirically establishing the association between EB practices and operational efficiency. The second identifies ownership of banks moderating the confirmed relationship. The practical implications of the study emphasized the negativity of the excessive influence of the government on the state-owned banks. Sample restricted to one administrative area (i.e. Rathnapura District) is considered the principle limitation of the study, which might cause limiting the generalizability of the outcomes. Further, the EB practices of the present study were limited to ATM, IB and MB where future studies are expected to address wider range of EB practices used by commercial banks.

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Impact of public education expenditure on economic growth in Sri Lanka: Evidence from econometrics analysis

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Abstract

This study examined the effect of government spending for education on economic growth in Sri Lanka for the period spanning from 1974 to 2018. The econometrics analysis includes Unit root, bound test of cointegration analysis and error correction. Unlike other previous studies, this study used basic disaggregate form of government expenditure on education; government expenditure on general education and government expenditure on higher education as major explanatory variables together with other macro-economic variables. The study findings include that government spending on higher education and economic growth in Sri Lanka is positively and significantly related while public expenditure on general education has a negative impact on economic growth. Short term causality test exits, there is evidence of short-run granger causality from government educational expenditure on higher education and general education to economic growth. Findings of the study reveal that in the long run, government educational expenditure on higher education, through its impact on human capital, significantly and positively influence economic growth. Thus, such spending on education should be encouraged in the public sector. Since the study identified different results from its disaggregated analysis of education on economic growth, government should pay more attention on the improvement of the productivity of the education sector to have greater impact on economic growth.

Keywords: *Bound testing, economic growth, human capital, public expenditure on education.*

1. Introduction

It is widely accepted that education is an important source of human capital formation of a country. In most of the studies expenditure on education was used as a proxy for human capital formation (Barro, 2001; Temple, 1999; Mankiw, 1992; Nonneman & Vandhoult, 1996). The importance of education can be further explored as it is often called as a merit good. This is due to the fact that through education worth providing to society is greater than worth providing to the individuals for a longer term. Expenditure on education is a long-term investment that could bring a high level of productivity of labour which in turn contributes positively to the growth of Gross Domestic Product (GDP). Not only the physical development, there are huge indirect benefits passed to the society in improving the level of education. This improves the various other aspects such as health, nutrition, sanitations and also discipline of the society. Therefore, expenditure on education produced externalities into the economy which could speed the development process of the nation (Sunde, 2017). As such, literature supports the hypothesis of this study between education expenditure and economic growth nexus as education is an important determinant of economic growth of a country and plays a vital role in promoting economic growth and development (Barro, 2001). Moreover, the benefits of education will not pass to the economy and society instantaneously and it requires going through a few education cycles and also the most adverse situation is the existence of educated unemployment which restricted the contribution of education to the growth of output in the economy.

Most of the countries in the world have recognized the importance of promoting education as a means of improving productivity and invest heavily in the education sector (Chandra, 2010). Therefore, countries in the world pay much attention to the education sector in their national policy development (Victor, 2015). In Sri Lanka government budget proposals have recognized education as the main expenditure category and allocate 9.75 percent from its total expenditure for the education sector during the period 2012-2018. This study aims to find out whether education expenditure has any significant impact on national output with the given prominence of the national budget over the last period under the government policy of free education.

There is a plethora of studies conducted on whether the investment of education can contribute significantly to the economic growth of a country. Most of the empirical studies identified a positive relationship between the education expenditure and economic growth (Ali, Abdul-Hakim & Abdullah, 2016; Sunde, 2017; Tomic, 2015; Mallick, Das, & Pradhan, 2016; Kakar, Khilji, & Khan 2011), but some other studies confirmed a negative association too (Baldwin & Borrelli, 2008; Bolkol, 2016; Devarajan, Swaroop, & Zou, 1996) and few studies questioned about the education growth nexus (Levine & Renault, 1992; Blis & Klenow, 2000; Ansari & Singh,1997). It seems country specific studies are limited in this nature. Further, time series country specific studies are potentially more important as such studies capture country specific factors, although the findings cannot be generalized to other countries (Dilrukshini, 2009). In this context, it’s vital to examine using the time series data, the contribution of the education sector to promote economic growth in Sri Lanka as the education provides by the government equally to all the children in the country. Even though government invests annually a sizable portion from the total budget on education the returns to investment in education significantly lower than those found for other developing economies (Ganegodage & Rambaldi, 2011). This urges a deeper analysis on education growth nexus in Sri Lanka.

The empirical evidence suggested by a large body of literature provides mixed and inconsistent results on education growth nexus. Therefore, this study aims to investigate the impact of public education expenditure on economic growth on empirical ground as a case study of Sri Lanka for the period 1974 to 2018. The paper argues that provision of more funds available for general and university education as a source of human capital development lead to the development of the growth of the economy and this study makes two main contributions to the empirical literature on education-growth nexus. Firstly, it examines the joint effect of expenditure on general education and university education on growth performance in Sri Lanka. Secondly, it applies the standard bound testing approach of cointegration methodology to investigate the human capital development on economic growth in Sri Lanka. As such, this paper provides new evidence by examining the influence of education expenditure as a main determinant of economic growth in Sri Lanka based on a large range of data set spanning from 1974 to 2018.

The paper is structured as follows. Section two briefly reviews the theoretical and empirical literature on nexus between education and economic growth. Section three provides a brief overview of the government expenditure on education during the study period; section four brings out the sources of data and methodology and model specification of the study, while section five presents the empirical evidences and discussion of results with respect to the impact of government expenditure on education and economic growth in Sri Lanka. The final section presents the conclusion and policy implications of the study.

The dialogue between economic growth and its determinants in particular its macroeconomic factors have paid much attention in the literature with the development of economic theory (Tilak, 2011). The next section deals with the extensive review of literature on dialogue between education expenditure and economic growth.

2. Review of literature

2.1 Theoretical literature

In the history of economic thought, since the era of Adams Smith different ideas were developed on economic growth and its determinants. According to the Keynes (1936), economic growth mainly depends on the government expenditure. According to this theory, government expenditure is an independent exogenous variable which affects to economic growth through a multiplier effect. Thus, economic growth occurred due to increasing government expenditure. Solow (1957) growth model provides the necessary foundation for the growth accounting but that model totally ignored the human capital as the most important factor in the determination of economic growth. This was highlighted with the development of the endogenous growth models pioneered by Romer (1990) and Lucas (1988). The growth literature turns to a new aspect with the pioneered work of Barro (1991). The new growth approach highlighted the social benefit of education which explains the long-term benefits of developing human capital of the nation (Sianesi & Reenen, 2003). Thus, in the modern economics, education as a primary component of human capital has been identified as the key determinants of economic growth.

2.2 Empirical literature

In the broad literature there are extensive studies that explored the impact of public investment on economic growth. These studies were cross sectional and country specific macro level studies produced inconsistent and controversial outcomes (Hussin, Muhamm, & Razik, 2012). However, in the case of Asian countries, there are limited studies carried out of this nature (Mallick et al., 2016). Further, most of the studies focused on the impact of human capital on economic growth. However, there are limited studies that focused on the relationship between public spending on education and economic growth. Among that most of the literature confirmed the positive association between public expenditure on education and economic growth.

Sunde (2017) examines the association between education expenditure and economic growth in Mauritius using ARDL bound testing approach and granger causality test for the period 1976-2016 to find out long run and short run relationship between the variables. This study found that there is a positive relationship between education expenditure and economic growth in the long run. Further, the study confirmed the short run unidirectional causality from education expenditure to economic growth. Similar result has been obtained by Ali et al. (2016) in their study on education expenditure and economic growth in Pakistan for the period 1980-2014 using cointegration approach. Further, similar results obtained by the study done by Mekdad, Dahmani and Louaj (2014) with the use of endogenous growth model for the period 1974-2012 for Algeria. In this model GDP per capita regressed against the set of explanatory variables namely public spending on education, gross domestic capital formation and labour force participation rate to form the Cobb Douglas production function.

A study by Mallick et al. (2016) analyzed the dynamics of expenditure on education and economic growth in selected 14 major Asian Countries including Sri Lanka by using balanced panel data from 1973-2012. The results of the cointegration confirmed the positive and significant long run relationship between education and growth in all the 14 Asian countries. The panel VECM presents unidirectional granger causality running from growth to expenditure on education both in the short run as well as long run. But, expenditure on education granger causes economic growth in the long run in all the countries. Hussin et al. (2012) investigated the education-growth nexus in Malaysian economy using time series data for the period 1970-2010 based on the estimation of the vector autoregression model. Findings revealed that economic growth positively cointegrated with fixed capital formation, labour force participation rate, and government expenditure on education. In addition, Kakar et al. (2011) also found that human capital plays a vital role in explaining economic growth in China.

Wang and Liu (2016) developed a panel data model to investigate the impact of education on economic growth, using time series secondary data covering 55 countries for the period 1960-2009. This study examines different educational levels such as primary, secondary and higher education on economic growth. The findings of the study concluded that the positive impact of higher education is significant but primary and secondary education does not have a significant impact on economic growth.

Khattak and Khan (2012) investigated primary and secondary education to economic growth in Pakistan during 1971-2008. The findings showed that only secondary education has a significant positive impact on economic growth in Pakistan. But, theoretical literature confirmed that investment in education has a long term impact on the accumulation of human capital and has a positive impact on long term growth. In line with this argument some studies confirmed the importance of the composition of education which forms the human capital to confirm the link between education and growth (Mekdad et al., 2014; Miller & Russek, 1997). Another similar study done in the USA by Baldwin and Borrelli (2008), examined the direct and indirect relationship between education spending and economic growth during 1988-2005. The results of the study confirmed the expenditure on primary and secondary education has a negative relationship with per capita income while expenditure on higher education has a significant positive relationship with per capita income in the USA. Similar results obtained by a research done in Turkish economy for the period 1970-2012 by Mercan and Sezer (2013). A research by Lin (2004) concluded that the higher education sector is vital and investment in the higher education sector promotes economic growth. This is supported by some other prior scholars (Liu, 2006; Huang, Jin, & Sun, 2009). Moreover, Pradhan (2009) examined the relationship between higher education and gross output by incorporating error correction models in India for the period 1951-2002 and found unidirectional causality between education and economic growth.

As mentioned above in the introduction, education is a merit good which provides more benefits to society in the longer term. However, some economists argued that expenditure on education is not an investment but just merely consumption. In line with that proposition, Devarajan et al. (1996), a study on 43 developing countries over 20 years concluded that excessive expenditure on education has a negative impact on countries' economic growth. There are other studies that reported no relationship between expenditure on education and economic growth. Levine and Renault (1992) reported that government expenditure on education is not robustly correlated with economic growth. Similar argument brought forward recently by Blis and Klenow (2000) about the link between investment in education and economic growth based on study among 52 countries for the period 1960-1990. He argued that it was too weak to conclude that education significantly contributed to economic growth. Further, studies pay attention to the short run and long run effects of expenditure on education on economic growth. Accordingly, a study done by Kakar et al. (2011) in the case of Pakistan, concluded that there is no significant relationship between education and short run economic growth but its impact in the long run is significant and positive.

There are limited studies conducted to analyze the impact of public expenditure for education on economic growth in Sri Lanka. Kesavarajah (2012) examined the validity of Wagner's law in Sri Lanka by using cointegration and error correction modeling technique covering the period from 1960 – 2010 based on time series data. The findings of the study confirmed the existence of a long run relationship between public expenditure and economic growth. This result is consistent with the findings of Dilrukshini (2009) and concluded the existence of long-term relationship between public expenditure and economic growth in Sri Lanka. Moreover, both studies rejected the validity of Wagner's Law, and found that there is no empirical support either for the Wagner's Law or Keynesian hypothesis, in the case of Sri Lanka.

Ganegodage and Rambaldi (2011) investigated education growth nexus for the period 1959-2008 using standard classical and endogenous growth model. Further, model framework enriched by adding physical capital, economic policy changes and the ethnic war due to their substantial importance. The impact of education is assessed through a quality-adjusted human capital stock live. The returns to investment in education are positive however, considerably below those found for different developing economies. In addition, Dilanee (2019) and Shaista, Abida and Butt (2010) confirmed the positive association between public expenditure on education and economic growth in Sri Lanka in the long run.

2.3 Trends in public expenditure on education in Sri Lanka

Education in Sri Lanka is state funded and offered free of charge at all levels: general and university level. Sri Lanka provides general education for 13 years under three cycles' namely primary, junior secondary and senior secondary level. Government has taken steps to promote the education sector after 1977 with economic reforms in Sri Lanka.

Figure 1 shows the trends in government expenditure on general education and higher education as a percentage of total government expenditure for the period 1974-2018. According to Figure 1, noticed slight fluctuations of total government expenditure on education in nominal terms throughout the period. The relevant figure has decreased from 11.8 percent in 1974 to 6.8 percent in 2018 and the period average was 9.1 percent of total government expenditure. The fluctuation in the total government expenditure on Education is mainly explained by the variations in the allocation of general education.

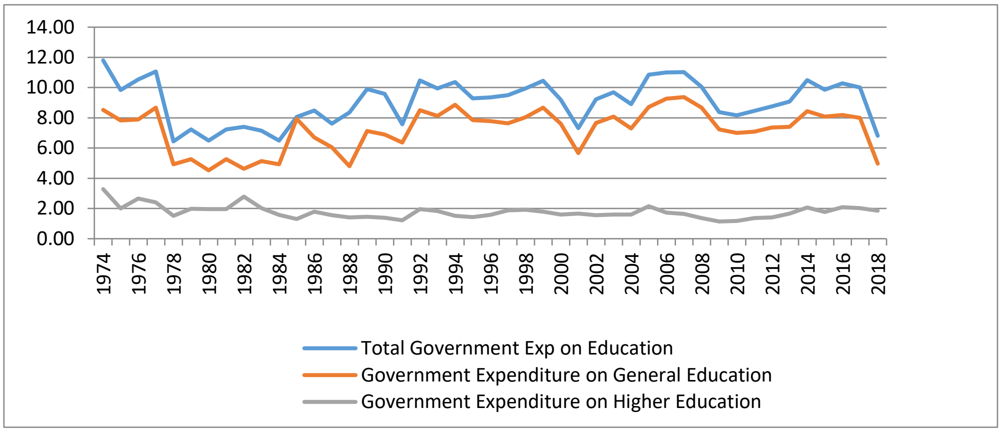

Figure 1 Government expenditure on education (as a % of total govt. expenditure)

Source: Central Bank annual report 2019.

The provision for the general education is significant in the total government expenditure and the reported average for the period was 7.2 percent of total government expenditure. It has been reported that the decrease in the allocation for higher education from the total government expenditure throughout the period. The relevant figure has been declined from 3.2 percent in 1974 to 1.8 percent in 2018 and the period average was 1.8 percent as a percentage of total government expenditure. Figure 2 below reflects Government education expenditure as a percentage of GDP for the period 1974-2018.

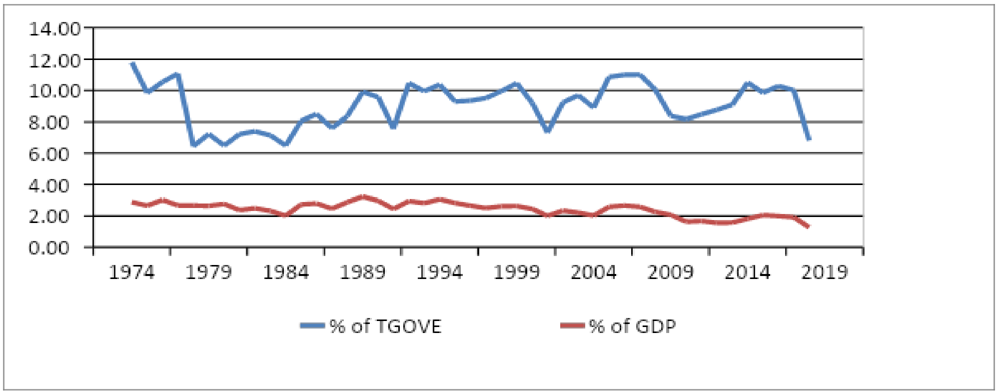

Figure 2 Government education expenditure as a % of GDP -1974-2018

Source: Central Bank annual report 2019.

The rate of total government expenditure as a percentage of GDP has declined during the period 1974-2018. The public spending on education was relatively high during the period 1977-1995 comparison with other periods. For instance, the average public spending on education during the period 1977-1987 was 2.5 percent of GDP whereas the reported figure further increased on average during the period 1988-1995 up to 2.9 percent of GDP. But there after the successive governments came into office unable to upsurge the trend but the figure has declined continuously. The period 1996-2004, it was 2.4 percent of GDP, from 2005-2010, it was 2.3 percent and finally from 2011-2018 period, it was 1.7 percent. The reported average figure for the period 1974-2018 was 2.4 percent of GDP.

3. Methodology

3.1 Sample and data source

The broad theoretical and empirical literature proclaims that the enhancement of human capital through education is an important determinant of economic growth (Pelinescn, 2014; Funke & Strulik, 2000; Bundell et al., 1999: Lucas, 1988). As such, in the present study identified public investment in education as an important determinant of economic growth when designing growth models.

The study mainly used secondary data as the study incorporated a macro approach. The annual time series data used for the analysis covers the period 1974 to 2018. The relevant data will be collected from Central Bank Reports. Different variables have been used in the literature to analyze the impact of public expenditure on education on economic growth. Further, the model is enriched by adding another two control variables namely, inflation rate and trade openness. The variables under consideration are GDP, gross domestic capital formation, labour force participation rate and public expenditure on education, inflation rate and trade openness variable. A brief description of the variables and justification of selecting such variables are summarized in Table 1.

3.2 Model specification

The analysis of this study was broadly carried out on the basis of deductive research methodology. The investigation was started with formulation of the relevant theoretical statement and tries to find out if the theory is falsified by the available information. Therefore, the progression of the analysis is based on the confrontation of theory with the empirical findings. Initially, the research explains the theoretical background and empirical studies on human capital and economic growth. Then, researchers looked at the pattern of government expenditure on education in Sri Lanka during the study period. This will be able to identify trends in the education system in Sri Lanka. Moreover, it will be helpful to identify public expenditure on education as a main explanatory variable of that model.

The model framework of this study is based on the augmented Cobb Douglas production function which explains the determinants of economic growth. Initial classical production function is given as (1).

$$Y = A.K^{\alpha}.\ L^{\beta} \rightarrow (1)$$

The development of endogenous growth literature added human capital the equation 1 is given as,

$$Y = A.K^{\alpha}.\ L^{\beta}.\ H^{\gamma} \rightarrow (2)$$

Where Y is output, A is Technological progress, K is capital, L is labour and H is human capital. In the present study human capital is measured by public expenditure on education which includes expenditure on general education and expenditure on University education. The log linear form of function which explains the growth determinants can be as follows (3) and the extensive model is reported in equation 4.

$$LnY = \alpha LnK + \beta LnL + \gamma LnH \rightarrow (3)$$

The updated empirical log linear function which explains the impact of expenditure on public education on economic growth is given by equation 4.

$$LnRGDP_t = \alpha_1 LnGDCF_t + \alpha_2 LnLFPR_t + \alpha_3 LnGEGE_t + \alpha_4 LnGEHE_t + \alpha_5 INFR_t + \alpha_6 LnFT_t + U_t \rightarrow (4)$$

Where Y is Gross Domestic Product (RGDP), K is the capital which is measured by gross domestic capital formation (RGDCF), L is the labour whose proxy is Labour Force Participation Rate (LFPR) and H is human capital whose proxies are formed based on major disaggregated form, Public Expenditure on General Education (GEGE) and Public Expenditure on Higher Education (GEHE). The present study rather than just relies on major growth variables including the human capital proxies, employs more macroeconomic variables that may have an impact on economic growth. Accordingly, study employs INFR is the inflation rate and FT represents trade openness variables. And finally, U_t is the random error term. All the figures are measured in real terms deflated using the implicit price index (base year 1996). They are all expressed in logarithm except inflation rate.

Table 1
Description of variable selection

Name of the variable	Abbreviation	Data source	Definition	Justification
Real GDP	RGDP	Central Bank Annual report	Annual average real GDP growth rate using GDP Deflator (1996=100)	Different measures of economic growth have been used in the literature (Victor, 2015). This study uses real GDP as a measure of economic growth
Public Expenditure on General education	GEGE	Central Bank Annual report	Total real government expenditure on general education which includes primary and secondary education as % of GDP	As a proxy for human capital (Khattak & Khan, 2012)
Public Expenditure on Higher education	GEHE	Central Bank Annual report	Total real government expenditure on Higher Education as 5 of GDP	As a proxy for human capital (Baldwin & Borrelli, 2008; Lin 2004; Pradhan, 2009)
Gross Domestic Capital Formation (investment)	GDCF	Central Bank Annual report	Gross Domestic Fixed capital formation as a % of GDP	As a proxy for physical capital (Mekdad et al., 2014)
Labour	LFPR	Central Bank Annual report	Economically active population as a % of Labour-force	As a proxy for labour (Hussin et al., 2012; Mekdad et al., 2014)
Foreign Trade	TFT	Central Bank Annual report	Total exports and Imports as a % of GDP	As a proxy for openness variables (Devarajan et al., 1996)
Inflation	INFR	Central Bank Annual report	Annual average % change in GDP Deflator	As a stability variable (Barro, 1997)

Source: Survey data.

3.3 Analytical tools and techniques

Since the study deals with time series data, a test for stationary is a very important precondition before proceeding to deeper analysis. In general, various macro-economic theories assumed a long run stable relationship between certain economic variables. This means that a set of macroeconomic variables cannot move away too far from each other, if there is a long run relationship among them (Rathnasiri, 2011). Therefore, prior to the estimation of the dynamic model, it is essential to determine the variable's stationary properties or order of integration using unit root test. The unit root test is generally based on either using Dickey- Fuller (DF) tests or Augmented Dicky Fuller (ADF) tests or the Phillips–Perron (PP) unit root tests test. In this study, ADF unit root test is used to check the stationary of the data. It uses a bound testing cointegration approach to find the long run infection of the public expenditure on education and economic growth and uses error correction techniques to verify the short run dynamics of the long run model.

4. Results and discussion

4.1 Descriptive statistics

Table 2 reports the descriptive statistics of the variables selected for the model. According to Table 2, Sri Lanka has maintained Rs. 10,524 average income at constant prices throughout the period. Moreover, minimum real income was Rs. 2,502 while the maximum real income was Rs. 28,462. Further, Table 2 shows that on average, the mean government expenditure on general education and higher education was 2.4 percent and 0.48 percent per annum respectively. It is also evident that attention given to the education sector is not impressive throughout the period. Further, the country is able to maintain 25.7 percent of investment rate, 55 percent of trade dependency ratio, and 45 percent of labour force participation rate and 9 percent inflation rate on average during the period 1974-2018. The time series standard deviation of gross domestic capital formation, foreign trade ratio, inflation rate and labour force participation rate are substantial for the period of 1974-2018. Also there is an asymmetry, Skewness values were mostly negative or close to zero and lower Jarqua–bera test indicates the normality of the distribution.

Table 2
Descriptive statistics

Variable	RGDP	GEGE	GEHE	GDCF	FT	INFR	LFPR
Mean	10523.77	2.422000	0.480453	25.76640	55.19059	9.927239	45.72444
Median	7681.280	2.510000	0.448467	25.73109	57.29371	8.799049	48.60000
Maximum	28461.55	3.230000	0.939156	39.05554	80.47409	26.66667	54.10000
Minimum	2502.211	1.270000	0.234156	14.44502	31.32139	0.656814	33.80000
Std. Dev.	7788.936	0.457104	0.156787	4.996689	13.68350	5.436360	6.682717
Skewness	1.040188	-0.601827	0.957258	-0.067174	-0.257322	0.871418	-0.576355
Kurtosis	2.825194	2.638200	3.737102	3.500305	1.844777	3.745820	1.774435
Jarque-Bera	8.172221	2.961907	7.891295	0.503165	2.998873	6.738228	5.307656
Probability	0.016804	0.227421	0.019339	0.777569	0.223256	0.034420	0.070381
Observations	45	45	45	45	45	45	45

Source: Based on survey data.

4.2 Unit root tests

The purpose of this study is to investigate the impact of public education expenditure on economic growth of Sri Lanka. As a first step in our data analysis is to see whether the series are stationary or non-stationary; thus, to ensure properties of data, unit root tests are used. The results of the ADF test are reported in Table 3. Accordingly, the test results are going to be summarized with an intercept, without intercept, with intercept and trend at their levels and first difference. The null hypothesis (H_0) is that the series Y_t is I (1). If the calculated t-value (ADF test value) is less than the critical value given in the table, then we cannot reject the null hypothesis that Y_t has a unit root. That means Y_t is a non-stationary time series.

According to the ADF test results in Table 3, the null hypothesis of a unit root at levels of all the variables cannot be rejected at 5 percent level. In other words, results clearly show that most of the variables such as LRGDP, LGDCF, LFT are non- stationary at levels except LGEGE, INFR and LGEHE.

Table 3
ADF unit root test results

Variable	Model	Level (t-stat)	First Difference (t-stat)	Decision
LRGDP	Intercept	0.447881	-6.036763***	I(1)
	Intercept and Trend	-1.431601	-5.981789***	
LGEGE	Intercept	-1.326150	-6.700361***	I(0)
	Intercept and Trend	-3.596102*	-6.661418***	
LGEHE	Intercept	-0.778451	-9.431010***	I(0)
	Intercept and Trend	-3.589056*	-9.587895***	
LGDCF	Intercept	-1.089739	-5.737264***	I(1)
	Intercept and Trend	-2.402293	-5.715070***	
LLFPR	Intercept	-1.398228	-5.859215***	I(1)
	Intercept and Trend	-1.739079	-5.821052***	
LFT	Intercept	-1.788263	-5.359684***	I(1)
	Intercept and Trend	-2.178712	-5.651380***	
INFR	Intercept	-5.802942***	-10.04564***	I(0)
	Intercept and Trend	-6.658765***	-10.04564***	

*Note: *, *** denotes significance at 5% and 1% level respectively.*

But, all the variables are stationary at first difference (see for more details, Appendix 1). That means there exists a mixture of I (1) and I (0) variables in the model. Thus, the most suitable method for estimation in these circumstances is the Autoregressive Distributed Lag Model (ARDL) cointegration technique proposed by Peseran et al. (2001).

4.3 Cointegration analysis

Given the results of the unit root test, then the study put forward a step to use the Cointegration procedure in order to test for the existence of a long run stable relationship between the dependent and independent variables. Unit root test shows that the order of variables are I (0) and I (1). Regardless of the order of integration a bound testing can be applied to find out the long run model. First, the study examined the maximum lag length based on lag length selection criteria and established 4 lag lengths as reported in Table 4. Further, inverse polynomial function of AR form depicts that the variables are stationary as the all variables are lying within the circle (see Figure 3).

Table 4
VAR lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-8.757516	NA	5.09e-09	0.768659	1.061220	0.875194
1	211.2269	354.1213	1.26e-12	-7.572044	-5.231556*	-6.719767
2	265.1176	68.34922	1.23e-12	-7.810617	-3.422200	-6.212597
3	345.2198	74.24105*	5.05e-13	-9.327796	-2.891452	-6.984035
4	455.6921	64.66672	1.20e-13*	-12.32645*	-3.842174	-9.236942*

** indicates lag order selected by the criterion.*
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

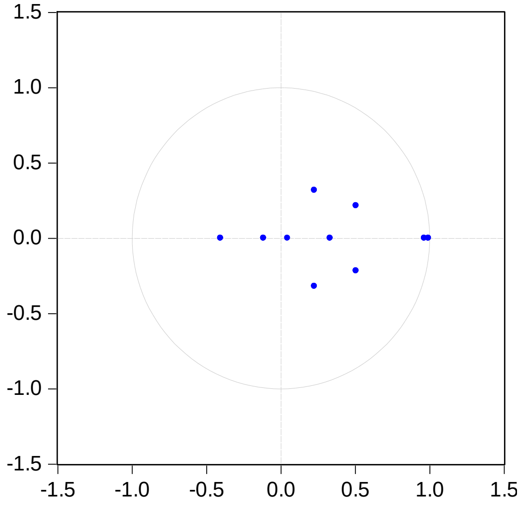

Figure 3 Inverse polynomial function

4.4 ARDL bound test

Table 5 summarizes the estimated results of F tests for the level of significance. The results revealed that F statistics is greater than the upper bound critical values. It reflects that there exists a long run relationship among the variables. Once the model confirms the long term relationship between education and growth, the next step in the ARDL approach is to determine the long run coefficients in the education-growth model.

The estimated results of the long term ARDL model and long term coefficients calculated by long run results based on the constant model are summarized in Table 6.

Table 5
Bound test results

Test statistic	Value	Significance level	Bound critical values			
F-Statistic	25.39114		I(0)	I(1)	I(0)	I(1)
Lag	4	10%		2.12		3.23
		5%		2.45		3.61
		2.5%		2.75		3.99
		1%		3.15		4.43

As shown in Table 6, all the explanatory variables have significant relationship with the real GDP except foreign trade to GDP. Government expenditure on general education as a percentage of GDP has a significant negative relationship with the real GDP in Sri Lanka. But, government higher education expenditure as a percentage of GDP has a significant positive relationship with the real GDP.

Table 6
ARDL long run results (selected model: ARDL (1, 5, 5, 5, 5, 5, 5)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGEGE	-1.100741	0.118882	-9.259089	0.0115
LGEHE	0.314833	0.079784	3.946080	0.0586
LGDCF	2.383534	0.084030	28.36516	0.0012
LLFPR	2.821005	0.140294	20.10780	0.0025
INFR	-0.051353	0.002455	-20.91876	0.0023
LFT	-0.136937	0.087851	-1.558751	0.2594
R-squared				0.999998
Adjusted R-squared				0.99965
S.E. of regression				0.003857
F-statistic				30114.01
Prob (F-statistic)				0.000033

Source: Based on survey data.

A 1 percent increase in public expenditure on general education reduces the economic growth in 1.1 percent whereas a 1 percent increase in public expenditure on higher education increases the economic growth by 0.31 percent rates. This implies that more investment in the higher education sector is more beneficial than the investment in general education in Sri Lanka. These findings are consistent with the results of some prior studies (Wang & Liu, 2016; Mekdad et al., 2014; Lee & Kim, 2009; Baldwin & Borrelli, 2008). One may say that the higher education sector is the main provider of the human capital in a country. Human capital is identified as the most important factor of economic growth (Riley, 2012). The growth effect of the development of human capital can be explained basically in two strands; influence on production through the labour productivity, so called level effect and the rate effect by contributing to competitive advantage through the innovation and diffusion of technology (Pelinescu, 2014; Romer, 1990). There is no doubt as confirmed in this study physical investment contributes greatly to economic growth but accumulation of knowledge through the investment in human capital particularly in the higher education sector moves the economy to a higher stage of growth in the long run.

The long term model shows that gross domestic capital formation is positively correlated and significant with real GDP confirming the theory. A 1% increases in investment increases the economic growth by 2.4 percent annually. This finding is consistent with Victor (2015) and Hussin et al. (2012) which found that capital investment has a positive relationship with economic growth. This is because private investment is recognized as the major source of promoting growth as suggested in the growth theories. Investment in physical assets promotes capital stock which increases the resource base of the country.

In the long run growth model, the proxy for the labour represented by labor force participation rate (LFPR) has a significant positive relationship with the growth in Sri Lanka. This is consistent with the previous findings Victor (2015) and Hussin et al. (2012). In the current study, as a proxy for labour, LFPR contribute well in the growth of the country. Higher LFPR promotes labour productivity in the long run and that will enhance profits of the organizations in which such firms can be reinvested in physical capital. Thus an increase in labour force participation rate will stimulate growth of a country.

The coefficient for the foreign trade as a percentage of GDP is insignificant and this indicates that this variable is not important for explaining the variation in the real GDP in the long run model. But, as a stability variable, inflation rate negatively related with the growth in the long run. High and persistent Inflation increases risk and uncertainty in business decisions and reduces investment in the long run. This finding is in line with the previous literature (Aslam & Lebbe, 2016; Mallik & Chowdhury 2001; Barro, 1997).

4.5 Short run dynamics of the model

Having identified the cointegration relationship between the variables in the model, the study performed the Vector Error Correction modeling (VECM). System model identified the error correction term as a value which corrects the disequilibrium of the system. It should have a negative sign and should also be significant. If the error correction term/speed of adjustment is a negative sign and significant it confirms the existence of a long term relationship between the variables in the growth model. In addition to the confirmation of the long run relationship, the short run dynamics of the model has been examined by estimating ECM as reported in Table 6. The log changes in the relevant variables represent short run elasticities while ECM term represents the speed of adjustment back to the long run relationship among the variables.

Table 6 indicates that the error correction term is negative and statistically significant. Thus, the results indicate the cointegration among the variables. The absolute value of the coefficient of the error correction term (i.e. is 0.61) implies that 61 percent of the disequilibrium in the real GDP is adjusted towards the equilibrium annually.

Table 7 denotes the short run dynamics of the error correction mechanism based on the long run model. The short run coefficients of the model indicate that immediate impact of the log difference variables and the subsequent year's impact are highly significant in all cases. The results show that there is a short run relationship among the variables, implying that highly significant short run reaction in real GDP to the variation of public expenditure of general education, public expenditure on higher education, gross domestic capital formation, inflation rate, labour force participation rate and foreign trade.

Table 7
Error correction results

Variable	Variable ID	Coefficient	Standard error	t-statistics	p-value
C	C1	4.527587	0.168136	26.92814	0.0014
D(LGEGE)	C2	-0.116067	0.005108	-22.72467	0.0019
D(LGEGE(-1))	C3	-0.471984	0.025354	-18.61581	0.0029
D(LGEGE(-2))	C4	-1.296238	0.041776	-31.02816	0.0010
D(LGEGE(-3))	C5	-0.718839	0.023869	-30.11622	0.0011
D(LGEGE(-4))	C6	0.131728	0.008323	15.82749	0.0040
D(LGEHE)	C7	0.351793	0.013171	26.71068	0.0014
D(LGEHE(-1))	C8	0.405440	0.023175	17.49500	0.0033
D(LGEHE(-2))	C9	0.798305	0.030274	26.36906	0.0014
D(LGEHE(-3))	C10	0.579698	0.019098	30.35353	0.0011
D(LGEHE(-4))	C11	0.026686	0.006124	4.357649	0.0488
D(LGDCF)	C12	-0.371442	0.029664	-12.52176	0.0063
D(LGDCF(-1))	C13	0.002818	0.006803	0.414248	0.7189
D(LGDCF(-2))	C14	0.084938	0.008488	10.00712	0.0098
D(LGDCF(-3))	C15	0.592805	0.015277	38.80329	0.0007
D(LGDCF(-4))	C16	-0.045331	0.008642	-5.245178	0.0345
D(LLFPR)	C17	-1.511408	0.050416	-29.97857	0.0011
D(LLFPR(-1))	C18	1.647162	0.067338	24.46107	0.0017
D(LLFPR(-2))	C19	1.464579	0.051769	28.29076	0.0012
D(LLFPR(-3))	C20	1.598867	0.050347	31.75666	0.0010
D(LLFPR(-4))	C21	-1.604984	0.061269	-26.19580	0.0015
D(INFR)	C22	0.015767	0.000406	38.82213	0.0007
D(INFR(-1))	C23	-0.029509	0.001276	-23.12532	0.0019
D(INFR(-2))	C24	-0.031300	0.001094	-28.60429	0.0012
D(INFR(-3))	C25	-0.033954	0.001150	-29.51605	0.0011
D(INFR(-4))	C26	-0.000661	0.000164	-4.042786	0.0561
D(LFT)	C27	0.510347	0.020868	24.45628	0.0017
D(LFT(-1))	C28	-0.674722	0.018410	-36.65038	0.0007
D(LFT(-2))	C29	0.618547	0.024106	25.65893	0.0015
D(LFT(-3))	C30	-0.156446	0.008196	-19.08883	0.0027
D(LFT(-4))	C31	0.173070	0.008565	20.20628	0.0024
CointEq(-1)*		-0.618603	0.023200	-26.66368	0.0014
R^2 0.999271; Adj. R^2 0.996446; Std. Err 0.001928; F-stat 353.7541(0.00); AIC -9.673783					

Source: Based on authors calculations.

The short run dynamics of the error correction model reveals that government expenditure on general education has a negative impact on real GDP. This finding is confirmed by Baldwin and Borrelli (2008) which identified a negative association between government expenditure on primary and secondary education expenditure on economic growth. However, the association between government expenditure on higher education and real GDP is positive in the short run. This finding is also in line with the previous literature where most of the studies confirmed the positive association between government expenditure on higher education and economic growth (Lin, 2004; Liu, 2006; Baldwin & Borrelli; 2008; Pradhan, 2009). Moreover, the gross domestic capital formation, labour force participation rate and Foreign trade as a percentage of GDP (in most cases) have positive impact on Real GDP in the short run but inflation has negative impact on real GDP in the short run.

4.6 Diagnostic tests

To test the robustness of the results obtained, the study used tests for autocorrelation, normality, heteroscedasticity, misspecification and stability test. The diagnostic test of the error correction model indicates that there is no evidence of serial correlation and heteroscedasticity. Further Jarque-Bera normality test indicates that the residuals are normally distributed. Ramsey Reset Test indicates an absence of general specification errors. The results of the CUSUM test for parameter stability indicate that the parameter instability is not found because the cumulative sum does not go outside the area between the two critical lines (see Table 8 and Figure.4).

Table 8
Diagnostic tests

Test Criteria	F- Statistics	Prob.
Breusch-Godfrey LM Test	2.368586	0.3668
Heteroskedasticity Test: ARCH	4.303145	0.0451
Jarque-Bera Test	3.812297	0.1435
Ramsey Reset Test	0.452169	0.6231

Source: Authors calculations.

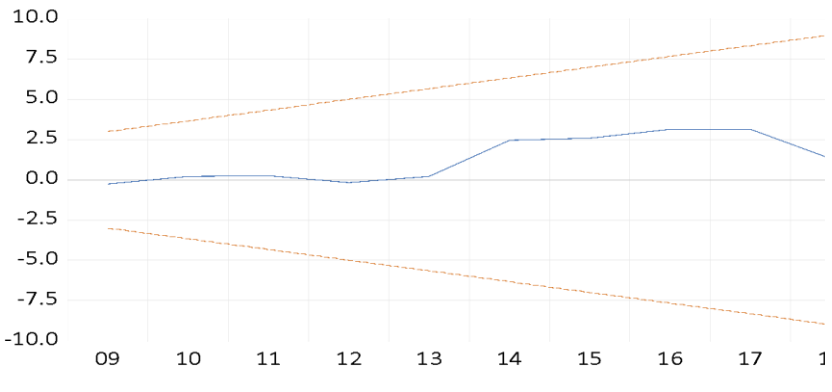

Figure 4 CUSUM test result

5. Conclusion and recommendations

This study has used a large data set spanning from 1974 to 2018, in order to assess the potential impact of government expenditure on education on economic growth of Sri Lanka. Moreover, study also investigated the impact of certain other macro variables on economic growth. The novelty of this paper is that instead of general form of government expenditure used in many studies previously, the current study incorporates main disaggregated form of government expenditure: government expenditure on general education and government expenditure on higher education as main explanatory variables to achieve intended objective of the study with other explanatory variables. As such, current study used a comprehensive model of economic growth. The bound testing ARDL model with ECM techniques has been used for the data analysis to find out the long run and short run relationship between education expenditure and economic growth in Sri Lanka. The ARDL Bound Tests has identified long-run relations among the variables. ECM is found that in the variation of economic growth both the human capital variables and other explanatory variables have significant causal effect.

This study revealed that a large body of literature has focused on the relationship between education expenditure and economic growth. These studies were cross sectional and country specific macro level studies produced inconsistent and controversial outcomes. Most of the previous empirical studies identified a positive relationship between government expenditure on education and economic growth in the long run but fewer studies identified negative associations on it. Moreover, the studies done on this nature were limited in the Sri Lankan context.

The findings of the study confirmed that public expenditure on higher education has a positive and significant relationship with economic growth, both in the short run and long run. But, the study revealed that public expenditure on general education has a negative relationship with economic growth, both in the short run and long run. Thus, current study identified different impacts of general education and higher education on economic growth through the main disaggregates form analysis. This means that the performance of a country in the development process is closely related with the effectiveness of the education system. Further, study confirmed that other macro variables such as private investment, labour have a positive impact on economic growth whereas inflation has a negative impact on economic growth.

The study would like to make the following recommendations based on the findings of the study. The findings of the study confirmed that the higher education sector in Sri Lanka is a very important source of promoting economic growth through producing human capital for the nation. So that the study highlights investment in the higher education sector is an essential determinant of economic growth in the long term. Government spending on higher education is one of the investments which could generate skilled labour and their productivity would again result in economic growth. So that government expenditure on education would create human capital which in turns make innovations and enhance technological development in the longer term. Thus, the government upsurge the expenditure on higher education in order to get more benefits to the nation in the long term but at the same time monitoring mechanisms should be established to ensure effective utilization of such funds for the intended projects.

The results of the bound testing and error correction analysis reflect that government expenditure on general education has a negative impact on economic growth in Sri Lanka both in the short run and long run. The analysis of data revealed that the government has spent 7.2 percent on average on general education as a percentage of total government expenditure during the period of study. The one side of this picture reflects mismatch between general education system and the real sector in the economy. Thus, this mismatch should be addressed by the policy makers by introducing appropriate education reforms to improve the relevance of the general education sector with more growth orientation. The other side of the negative impact on economic growth may be due to the excessive investment in general education and associated lower productivity. Therefore, it is required to improve the productivity of general education to have a great impact on economic growth in the longer term. According to the study done by Ranasinghe, Arunathilake, and Dunusinghe (2016) on the investment in general education in Sri Lanka, has focused on the fund allocation, fund utilization and human resource competencies in the general education sector. According to them "human resources are the most important element in schools; hence, necessary steps should be taken to improve the quality of human resources not only for the teaching purpose but also for the implementation of development plans".

This study emphasized the quantity side of education rather than quality of education. By considering the importance of education in the economic growth of Sri Lanka, other factors such as quality of education should be given prompt attention by the government.

6. Future line of research

For future research, examining the transmission mechanism of how government current and capital spending on education translate to higher productivity and economic growth can be further explored. In this context, identifying more disaggregated forms of current and capital expenditure is vital for a fruitful research.

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The impact of budget deficit on private investment in Sri Lanka

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Abstract

There has been considerable controversy about the possible crowding-out effect of government expenditure and budget deficits on private sector investments. Economists argue that the expansionary fiscal policy may increase the market interest rates and lower the investment of an economy which creates a crowding out effect on the national income. But, it is also interpreted as the increase in the budget deficit will encourage business opportunities and will increase in private investment. This study aims to identify the impact of government budget deficit on private investments in the Sri Lankan context and solve the theoretical debate in the literature. Multiple linear regression model is employed using time series data from 1990 to 2015. The results show that there is a positive relationship between budget deficit and private investment in Sri Lanka. Accordingly, this study concludes that the absence of the crowding-out effect in Sri Lanka.

Keywords: *Budget deficit, crowding out effect, private investment, Sri Lanka.*

1. Introduction

The primary objective of any government is to achieve the macroeconomic goals such as sustainable economic growth, low and acceptable level of unemployment, internal stability, and external stability. Governments try to achieve these goals by using fiscal policy, monetary policy and trade policies. Fiscal policy examines the government spending and revenue to monitor and influence the economy through reducing unemployment rates, stabilizing business cycles, controlling inflation and interest rates.

When the government spending exceeds its revenue, it is said to be a budget deficit (Arjomand, Emami & Salimi, 2016). This deficit can be financed by issuing currencies, running down foreign exchange reserves, borrowing from abroad, and borrowing from domestic as well. The deficit financing methods directly affect the resource allocation and macroeconomic activities. Issuing domestic debt instruments is one of the forms of financing the budget deficit. When the government borrowing increases, the available financial facilities to the private sector will decrease and it will put pressure on interest rates (Apere, 2014). As a result of this fiscal deficit, national savings will drastically reduce and thus the domestic investment. The fiscal deficit creates macroeconomic imbalances and an expansionary fiscal policy naturally leads to a contraction of the private sector which reflects in a decrease in private investment and consumption (Mankiw, 2009).

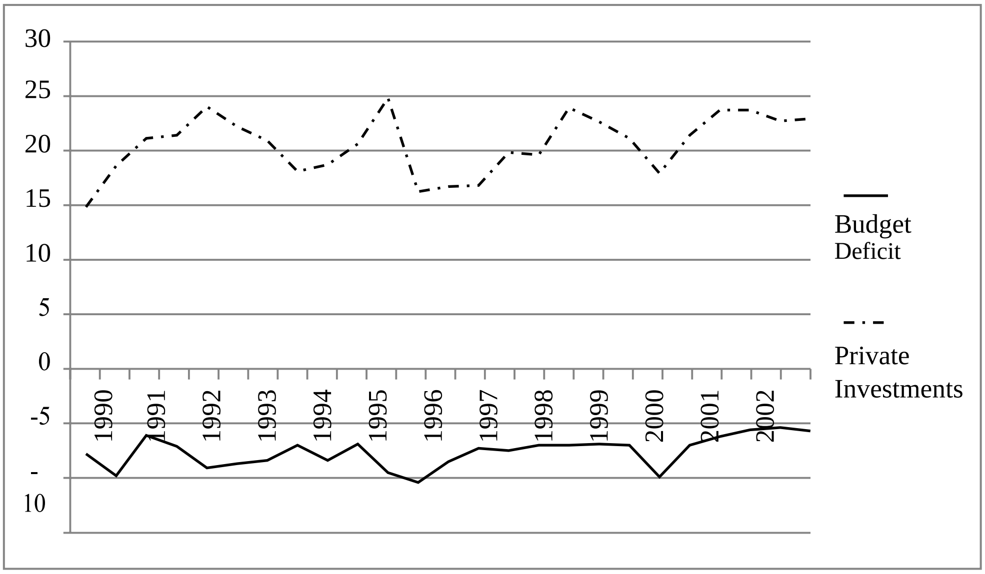

Figure 1 Budget deficit and private investment in Sri Lanka

Source: Author's calculation based on Central Bank of Sri Lanka (CBSL) data (2015).

Figure 1 shows the trend of government budget deficit and private investment from 1990 to 2015 in Sri Lanka. Private investment in Sri Lanka has a growing trend during the period of 1990 to 2000. In the year 2000, it reached a peak of 24 percent of GDP. After that, there is a moderate decline between 2001 and 2005. Private Investment has experienced a little fluctuation by the year 2010 then it has maintained the same level up to 2015.

According to CBSL (2015), there was a considerable deviation in fiscal deficit during the past few years. It has increased up to 7.4 percent in 2015 from 5.4 percent in the year 2014 as a percent of GDP. This is basically due to the declining trend of government revenue. Total government revenue has declined from 12 percent to 13.1 percent of the GDP. Furthermore, it has been mentioned that the increase in fiscal deficit had been affected by the unfavorable weather condition prevailed that period. Therefore, the annual report of CBSL (2015) has been mentioned that the government introduced tax reforms and broadened the tax base. Tax exemptions were rearranged and try to administer recurrent and capital expenditure. The government was trying to reduce fiscal deficit to 4.4 percent and government debt to 72.0 percent of GDP maintaining a considerable amount of economic growth in 2015. During that period government borrowing from the banking sector to finance the deficit was increased dramatically (CBSL, 2015).

To finance the budgetary deficit government is using public debt by minimizing risk and possible cost. CBSL tries to maintain an optimal mix of domestic and foreign debt and to reduce the maturity differences. For that purpose, treasury bonds worth Rs.295.8 billion have been issued by the government in 2015 (CBSL, 2015).

Private investment in an integral part of the development of an economy and it is affected by budget deficit directly. But there is a controversial issue related to private investment and fiscal deficit. Some researchers have argued that when budget deficit increases, it will cover up through borrowing funds from externally and internally as well. So this increase in government expenditure which is fulfilled by borrowing from capital markets (Analizi, 2011) creates an interest hike and it may increase borrowers"' cost of capital. Ultimately this will hinder private sector investments. Theoretically, this phenomenon has been explained as the "Crowding out effect". It is when the government demands funds from the financial market to cover the budget deficit; the increase in the market interest rate creates a situation in which the private sector reduces borrowings as the cost of barrowings is high (Mankiw, 2009).

But another perspective relating to this is that if the government spending increases to invest in better infrastructure facilities or health and education, it stimulates private investment (Thilanka & Sri Ranjith, 2018). Also, the Keynsian approach suggests that if the government increases its expenditures to increase capital investment such as infrastructure facilities or education it will have an upward pressure on private investment (Thilanka & Sri Ranjith, 2018). Since that it suggests a positive correlation between private investment and fiscal deficit. Hence we can identify two basic approaches relating to the budget deficit and private investment; The Keynesian approach emphasizes the crowding-in effect of government spending and the classical and neoclassical approach which emphasizes the crowding-out effect of government spending.

Table 1
Theoretical debate in summary

Negative relationship between budget deficit and private investments	Positive relationship between budget deficit and private investments	No relationship between budget deficit and private investments
Carrasco (1998)	Apare (2014)	Alani (2006)
Huntley (2014)	Ahmed, Miller, and Miller (1999)	Raju and Mukherjee (2010)
Abirami and Panda (2015)		Doç and Kustepeli (2005)

Since there is a conflict with the theory as two explanations are available to explain the that suggests higher budget deficit perhaps would increase the private investment or decrease private investment, the main objective of this research is to test whether there is any significant relationship between budget deficit and private investment in Sri Lanka. Further, it tries to investigate which kind of relationship exists between budget deficit and private investment. The rest of this paper is structured as follows. Section 2 presents the review of the literature on private investments and budget deficit. The methodology is presented in Section 3 while analysis and findings are presented in Section 4. The conclusion section is presented in Section 5.

2. Review of literature

The relationship between public debt and private investment has been discussed with different perspectives under different schools. According to the Keynesian view, a crowding-in effect takes place in private investment as a result of government spending. Under the Neoclassical view a budget deficit creates upward pressure on interest rates and thereby crowds out private investment (Thilanka & Sri Ranjith, 2018). The Ricardian Equivalence view argued that there will be no crowding out effect that takes place in private investment as a result of increasing government debt (Carrasco, 1998). Further, it says the increase in loan demand by the government will offset with the higher savings as the public will encourage to invest more in government bonds. Therefore, the interest rate remains unchanged which leads to an unchanged private investment (Arjomand, 2016).

Several researches have been conducted relating to this area and some previous arguments have been revived. Most of time this argument has been described in the context of the standard IS-LM framework. According to this framework, the IS curve represents the locus of points in which the real sector of the economy while the LM curve represents a similar locus point for which demand for money equals to supply of money. Though IS-LM model has distinct limitations, it acts as a useful device in highlighting the issues in the crowding out controversy (Mankiw, 2009).

Crowding out generally refers to the economic effects of expansionary fiscal policy. If an increase in government expenditure, financed either by increasing tax revenue or obtaining domestic debt by issuing debt instruments to the general public, it will fail to stimulate total economic activity. In such a situation, the private sector is said to be crowded out by government actions.

Keynes (1936) suggested that government spending does not crowd out private investment in his book "The General Theory of Employment, Interest, and Money". But he has provided some opposite arguments also in his book. Throughout his theory, Keynes has much concerned about expectations and confidence. Though there was a small budget deficit in those days, that government spending could adversely affect the confidence of the private sector and this led to reduction in the private investments.

When examining the empirical literature, several studies have investigated the relationship between fiscal policy and private investment. Carrasco (1998) in the study of "Crowding-Out Government Spending" used empirical analysis by using aggregate investment, budget deficit, inflation, the rate of corporate profits and index of selling prices and retail trade as the variables. He also found that the Neo-Classical view, an increase in budget deficit will crowd out private investment and negatively affect living standards in the USA (Carrasco, 1998).

A study done by Huntley (2014) has analyzed the long-term effect of changes in federal fiscal policy including the effects of changes in federal budget deficit on aggregate output and income. The results conclude that for each dollar's increase in the federal deficit, the effect on investment ranges from a decrease of 15 cents to a decrease of 50 cents, with a central estimate of a decrease of 33 cents.

Traum and Yang (2015) explored whether government debt crowds out private investment in the United State economy using an estimated New Keynesian model with detailed fiscal specifications and accounting for monetary and fiscal policy interaction. Structural DSGE approach has been employed for the study. The results explain that the crowding out effect in the short run depends on the policy shocks triggering debt expansions. Further, higher debt can crowd investments for cutting capital tax rates or increasing government investment. Most fiscal instruments are used to respond to debt systematically and when the debt to out-put ratio rises, the federal government mainly decreases its consumption and increases income taxes. But there is a controversial issue that no systematic relationship between the real interest rate and investment. At longer, discretionary financing is important for the negative investment response to debt.

A study by Alani (2006) has taken into consideration, the relationship between public sector investment and private sector investment by using government expenditure financed by the government bonds in Japan by using the data for the period of 1998 to 2006. The results of this study emphasize that these variables do not affect to the interest rates because they are insensitive to government expenditures and depend on the international financial markets due to the globalization and integration among financial markets and further it has been mentioned that there is a positive relationship between public sector investment and private sector investment and also fiscal deficit which financed by bonds, crowding out is not inevitable.

Raju and Mukherjee (2010) used a VAR model in analyzing the long-run relationship between the fiscal deficits, the crowding out of private investment, and net exports for the Indian economy by using data for the period of 1980 to 2009. In this study, they have used unit root test and cointegration techniques that allow for endogenously determined structural breaks. The finding of this study supports neither crowding out nor crowding in the hypothesis between government spending and private investment. Further, it represents Ricardian Equivalence theory on public debt, it does not matter whether a government finances its spending with debt or tax increase, the effect on the total level of demand in an economy will be the same.

A recent study done by Abirami and Panda (2015) examined the effect of fiscal deficit on private sector investment in India by using the time series data for the period 1981 to 2012. ADF test has been used in testing the stationarity of the variables and Johanson maximum likelihood approach is applied to verify the co-integration or to identify the long term equilibrium relationship between private investment and other variables. VEC method is employed to identify the short-run dynamics. The variables are GDP, fiscal deficit, private investment and interest rate. All the variables were collected from the Reserve Bank India and IMF Database, as well as all variables, have been converted into natural log. The results of the study reveal that fiscal deficit crowds out private sector investment in India in the long run though the speed of adjustment of private investment to equilibrium is low. Further, it has been mentioned that to encourage private investment, fiscal prudence of the government is important and further reducing the budget deficit by lowering government expenditure will help to promote private sector investment.

Fayed (2012) examined the relationship between government borrowing and private credit in Egypt. A cointegration approach is used to investigate the relationship. The results conclude that government borrowing from domestic banks leads to a more than one to one crowding out of private credit. But the government borrowing from the banking sector is not the only reason for crowding out effect. The increase of banks' holdings of treasury bills and other securities reflect the banks' willingness to invest in low risk but high return investments. Further, it explains that there is a statistically significant negative effect of government borrowing on private credit. So, when government borrowing from the banking sector increases it causes to decrease in credit to the private sector and reduces private investment as well.

Shetta and Kamaly (2014) observed a growing budget deficit and the heavy reliance on debt financing from the banking sector in Egypt. This study has used the VAR model by using quarterly data for four decades and the ADF test in testing unit root problem. Quarterly data for the period of 1970 to 2009 have been used in the analysis. This article has suggested that government borrowing crowds out private investment through its dampening effect on private credit and further effect of a government borrowing shock is contractionary with regard to the overall banking sector credit (Shetta & Kamaly, 2014). The crowding out was found to be more than one to one effect. Further, the study suggests that lending to the government has a positive impact on banks' profitability. When the government issues more debt instruments to finance fiscal deficit, banks try to have less risky but high return instruments.

A study by Doç and Kustepeli (2005) in Turkey examined the effectiveness of fiscal spending on private investment in the Keynesian model. The Recardian Equilence theorem argues that increases in deficit financing would leave the private investment unchanged. Johansen cointegration test results verify both Keynesian and Neoclassical views in Turkey. It means increases in government spending are found to crowd in private investment while increases in government deficit are found to crowd it out. The variables are private investment, real interest rate, government spending and GDP for the period of 1967 to 2003.

Njuru (2012) has used semi-annual time series data from the period of 1964 to 2010 to investigate the relationship between fiscal policy implications on the private investment in Kenya. It has regressed private investment against output, income tax, VAT, excise duty, import tax, government expenditure, budget deficit and domestic debt. This study has used OLS method in regressing the model and ADF and Philips Perron tests in determining stationarity. The validity of the model has been tested by using white-noise error term. Johansen co-integration test and Granjer two-step methods are the ways of testing long run co-integration and VAR model for error correction. This study has found that there is a direct impact of fiscal policy on private investment in Kenya. But further he says that Government debt, Taxes and Government expenditure can both positively or negatively affect the private investment in the short run and long run as well.

Apere (2014) has investigated the impact of public debt on private investment by using time series data from 1981 to 2012 in Nigeria. He has regressed private investment on external debt, domestic debt, private consumption expenditure using the instrumental variable technique. Data for this study were drawn from the central bank of Nigeria and annual reports. This research has found that domestic debt has a linear positive relationship to the private investment and external debt has U- shaped effect while private consumption expenditure negatively effects on the private investment (Apere, 2014).

A study done by Ahmed et al. (1999) used to examine the effects of government expenditure on private investment using fixed and random effect methods by using the effects of tax and debt financing expenditure for the full sample and also for subsamples of developing and developed countries. Government expenditure, educational expenditure, health expenditure to GDP, social security expenditure to GDP, transportation expenditure to GDP and investment have been used as the variables for the regression analysis. The results suggest that all other government expenditure crowd out investment while only transport and communication expenditure, crowds in investment in developing countries. Further the openness has a significantly positive effect on investment in developing countries only. For developed countries, openness does not significantly effect on investment. The transport and communication expenditure has a crowding in effect only in the developing countries.

According to Thilanka and Sri Ranjith (2018), a positive relationship has been identified between public debt and private investment and it confirms the crowding-in effect of public debt on private investment in the Sri Lankan context. Further, the findings are justified using the Keynesian theory and as the study emphasized the positive relationship between public debt and private investment can be a result of promoting private investments with the utilization of public debt on development projects.

The positive relationship between private investment and budget deficit in Sri Lanka is further supported by Priyadarshanee and Dayaratna-Banda (2013). Accordingly, private investment has increased as a result of fiscal expansions which validate the absence of the crowding-out effect. The study was done by Cooray (2019) also confirms the absence of a crowding-out effect with public borrowing through domestic sources in Sri Lanka. The study further suggests that the government can rely on domestic sources in financing without limiting private investment in the economy.

Kodithuwakku, Jayawardana, Jayawardhana, Muhandiramge and Dulani (2016) came up with a contradictory finding that budget deficit does not affect on the private investment based on their study on factors affecting private investment in Sri Lanka. Though budget deficit is positively associated with private investments in Sri Lanka, there is no significant impact from budget deficit to private investment in Sri Lanka.

To conclude the literature analysis, it has been found that there can be a positive as well as a negative relationship between budget deficit and private investment while some studies have found that there is no significant impact from budget deficit on private investment.

3. Methodology

The primary objective of this study is to investigate the relationship between budget deficit and private investment in Sri Lanka. In achieving this purpose, variables have been carefully selected through the literature survey. Accordingly, the identified variables are budget deficit, private investment, inflation rate, real interest rate, external debt, household consumption expenditure and government consumption expenditure.

3.1 Conceptual framework

The conceptual framework of the study is presented in Figure 1.

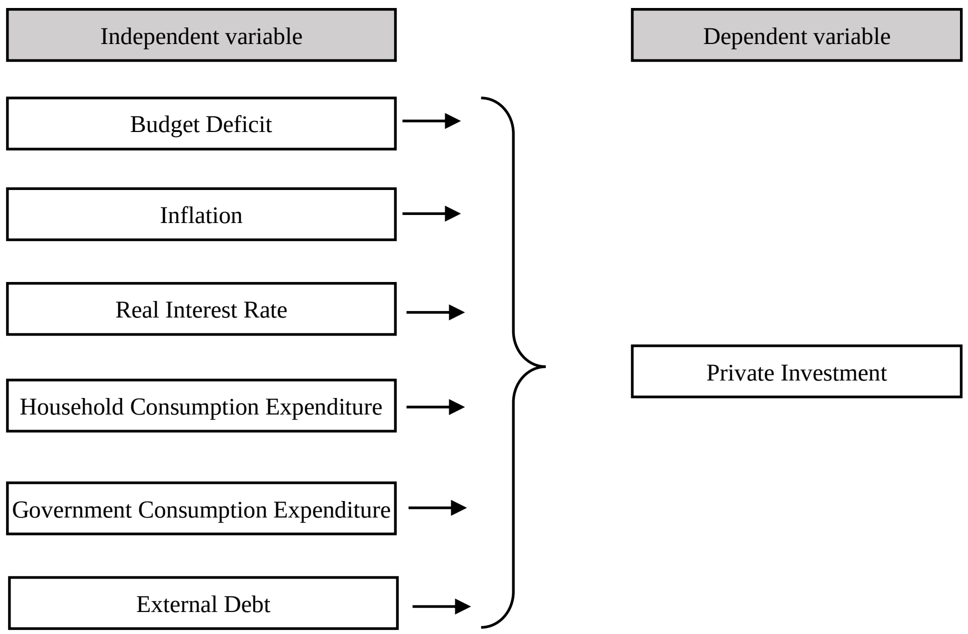

Figure 1 Conceptual framework

3.2 Data collection

Secondary data collected from Word Bank statistics were used for the variables in identifying the relationship between private investment and budget deficit. The study period of this research is from 1990 to 2015. Further, annual time series data were used for the analysis.

Private Investment (PI): This research mainly examines the impact of fiscal deficit on private investment. Hence, the dependent variable of this study is Private investment in Sri Lanka. Private investment can be measured by using different measurements. Private investment is the capital accumulated by the private sectors for productive purposes (Njuru, 2012). It can be calculated by deducting government investment (GI) from the gross fixed capital formation (GFCF). In this study, gross fixed capital formation by the private sector is considered as the private investment in Sri Lanka. Hence, private investment is proxied by, "PI = GFCF – GI". Change in private investment is indicated by the percentage change in gross fixed capital formation by the private sector. More specifically, gross fixed capital formation by the private sector has been used as a percentage of GDP.

Budget Deficit (BD): If the government expenditure exceeds government revenue, the gap is called the fiscal deficit (Njuru, 2012). Government expenditure consists of both recurrent and capital expenditures. This study has used the budget deficit as a percentage of the GDP to indicate fiscal deficit (Njuru, 2012).

Real Interest Rate (INT): There is a direct relationship between interest rate and private investment (Hemachandra, 2009). Three-month Treasury Bill rate was used to indicate the real interest rate.

Inflation (INF): The Colombo Consumer Price Index (CCPI) has been identified as a suitable measurement to indicate the inflation rate (Issn, 2013). Hence, the percentage change in CCPI (base year 2002) would proxy the inflation.

Household Consumption Expenditure (HCE): Household consumption expenditure consists of expenditure incurred by the resident household on goods and services that are used for the satisfaction of needs or wants (OECD, 2017). Household consumption expenditure as a percentage of the GDP is used to measure the household consumption expenditure (Apere, 2014).

Government Consumption Expenditure (GCE): In this study GCE as a percentage of GDP has been used as the indicate government consumption expenditure (Mahmoudzadeh, 2013).

External Debt (ED): External debt as a percentage of the GDP is used to capture external debt in this study (Apere, 2014).

3.3 Regression model

A multiple regression analysis has been employed to estimate the results. The model of the study is given in Equation 01.

$$PI = f\,(BD, INT, INF, HCE, GCE, ED) \rightarrow \text{Equation 01}$$

$$PIit = \beta_0 + \beta_1 BD_{it} + \beta_2 INT_{it} + \beta_3 INF_{it} + \beta_4 HCE_{it} + \beta_5 GCE_{it} + \beta_6 ED_{it}$$

Where,

PI_{it} = Private investment as a percentage of GDP

BD_{it} = Budget deficit as a percentage of GDP

INT_{it} = Three month treasury bill

INF_{it} = Colombo consumer price index

HCE_{it} = Household consumption expenditure as a percentage of GDP

GCE_{it} = Government consumption expenditure as a percentage GDP

Ed_{it} = External debt as a percentage of GDP

β_0 = Constant

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ and β_6 are the coefficients

4. Analysis and findings

The analysis is done using trend analysis and statistical analysis. Trend analysis is discussed in 4.1 while the statistical analysis is given in 4.2.

4.1 Trend analysis

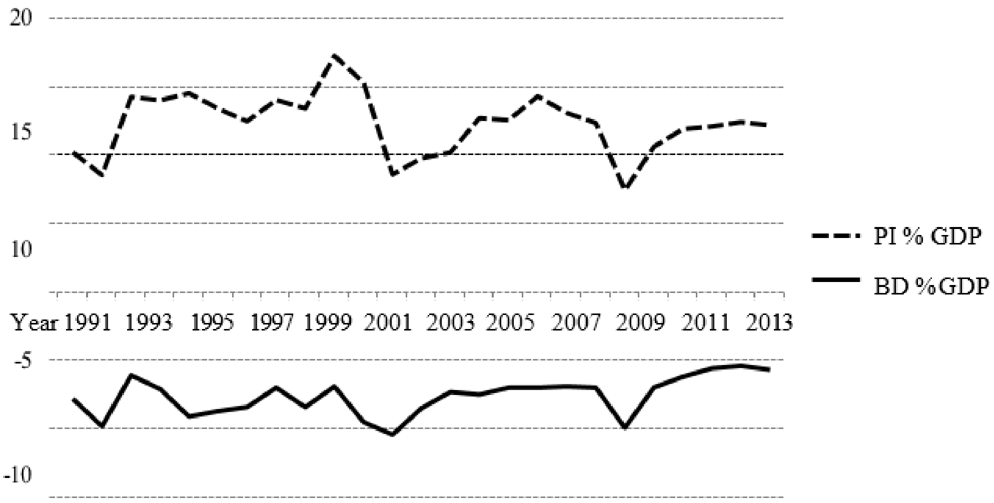

Figure 3 Private investment and budget deficit

Source: Compiled by author by using World Bank statistics.

Figure 3 shows the relationship between private investment and budget deficit. It represents a slight similar trend between the two variables. In 2000 and 2009 there are huge fiscal deficit and private investment also had less amounts in those years following budget deficit.

4.2 Analysis

Since this study is entirely based on the time series data stationarity was tested using ADF test. The test results are presented in Table 2. According to the results, the data set is free from the unit root problem suggesting it is stationary at the identified levels. The budget deficit, interest rate and inflation were stationary at the level. Private investment, household consumption expenditure and government consumption expenditure became stationary at first difference.

Table 2
Observed results of the augmented dickey fuller test

Variables	Stationary level	t-Statistic	Probability
PI	1st Deference	-4.0324	0.0019**
BD	Level	-3.1017	0.0399**
INT	Level	-5.3582	0.0002*
INF	Level	-4.3053	0.0027**
ED	Level	-5.0971	0.0005*
HCE	1st Deference	-4.0489	0.0068**
GCE	1st Deference	-5.3136	0.0003*

*Note: *, **, *** denotes rejection of the hypothesis at 10%, 5% and 1%*
Source: Compiled by author by using World Bank statistics.

Table 3
Diagnostic and specification tests for co-integration

Test Objective	Statistical Test	Test Statistic	Probability
Heteroskedasticity	White-Heteroskedasticity Test	7.4202	0.2837
Serial Correlation	Breuch-Grodfry Serial Correlation LM Test	4.9981	0.0822
Stability	Ramsey RESET Test	2.0902	0.0686
Normality	Histogram-Normality Test (Jarque-Bera)	1.2077	0.5467

Source: Compiled by author by using World Bank statistics.

The test results of diagnostic and specification tests are summarized in Table 3. According to the White-Heteroskedasticity test results, it suggests that there is no heteroskedasticity is the selected data set. Breuch-Grodfry serial correlation LM test was employed to test serial correlation. based on the test results, there is no serial correlation exists in the data set. In testing the normality of the study, Histogram-Normality Test has been used. The results conclude that the fitted model is normally distributed at 5 percent significance level. Based on the test results of the Ramsey RESET Test, we can conclude that the estimated model is stable at 5 percent significance level.

Table 4
Correlation matrix

	PI	BD	INT	INF	HCE	GCE	ED
PI	1	0.4007	0.2861	-0.2892	-0.313	-0.1429	-0.3699
BD	0.4007	1	-0.1059	-0.0992	0.3902	-0.287	-0.3433
INT	0.2861	-0.1059	1	-0.5399	0.1506	-0.345	0.289
INF	-0.2892	-0.0992	-0.5399	1	0.379	0.2528	0.1219
HCE	-0.313	-0.3902	0.1506	0.379	1	-0.3353	0.7595
GCE	-0.1429	-0.287	-0.345	0.2528	0.3353	1	-0.3826
ED	-0.3699	-0.3433	0.289	0.1219	0.7595	-0.3826	1

According to the correlation matrix presented in Table 4, Household consumption expenditure as a percent of GDP and external debt as a percent of GDP shows a strong correlation whereas the other independent variables show comparatively a weak correlation with each other independent variables. Accordingly, we can conclude that the model is free from the multicollinearity problem.

The results of the estimated equation are presented in Table 5. According to the final estimated results, the regression line can be given as follows.

$$PI = 7.045144 + 1.085639BD - 0.233303INF$$

The overall suitability of the model is given by F-statistic. Accordingly, the estimated model is fitted at 5 percent level of significance. The R-square value of the model is 0.52 which means 52 percent of the variation in the dependent variable is explained by the variation of the independent variables captured in the model. Therefore, the model can be considered as a suitable model.

Table 5
Results of the determinant equation

Variables	Coefficient	Probability
BD	1.085693	0.0055**
INF	-0.233303	0.0470**
INT	-0.083592	0.4653
ED	0.080362	0.1387
D(HCE)	0.216694	0.4149
D(GCE)	0.198393	0.4226
C	7.045144	0.0894
Adjusted R^2	0.52	
Prob (F-Statistics)	0.046	

*Note: *, **, *** denotes rejection of the hypothesis at 10%, 5% and 1%*
Source: Compiled by author by using World Bank statistics.

Based on the model results, only two dependent variables are significant while other independent variables are not significant. The significant variables are the budget deficit and inflation where both variables are significant at 5 percent level of significance. Hence, we can conclude that there is a significant positive relationship between private investment and budget deficit while there is a negative significant relationship between private investment and inflation.

The budget deficit has a positive relationship with private investments which means, a change in the budget deficit will change the private investment in the same direction. Accordingly, this concludes the absence of the crowding-out effect in the Sri Lankan context. Ahmed et al. (1999), Doç and Kustepeli (2005), Alani (2006) and Apere (2014) have observed the same empirical findings through their studies. Priyadarshanee and Dayaratna-Banda (2013), Thilanka and Sri Ranjith (2018) and Cooray (2019) also confirmed this finding through their studies under the Sri Lankan context.

Inflation and private investment have a negative significant relationship which suggests that a change in inflation would change private investments in the opposite direction in Sri Lanka. An increase in the inflation rate of Sri Lanka will withdraw the investors and their investment while a decrease in inflation will encourage private investments within Sri Lanka.

5. Conclusion

This study aims to examine the effect of budget deficit on private investment in Sri Lanka to empirically investigate and resolve the theoretical debate of crowing-out and crowding-in effect of the budget deficit. The ordinary least square estimates were employed in deriving the model using data of 26 years from 1990 to 2015. In addition to the private investments, the model captured inflation rate, real interest rate, external debt, household consumption expenditure and government consumption expenditure taken as control variables. The model results suggest that the budget deficit impact on private investments positively whereas the only inflation rate (control variable) has negatively affected private investments. Accordingly, the expansion in the budget deficit will boost private investments. Hence, the study concludes the absence of a crowding-out effect in Sri Lanka.

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