

Impact of CEO Characteristics on Capital Structure: Evidence from a Frontier Market

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ABSTRACT

Manuscript type: Research paper

Research aims: This study examines the impact of CEO characteristics on the capital structure of non-financial listed companies in Sri Lanka

Design/methodology/approach: This study employs multiple regression selecting a sample based on a data set from a panel of 123 mainboard listed companies which covers all the non-financial sectors of the Colombo Stock Exchange for an eight-year period from 2012 to 2019.

Research findings: This study finds a significant positive relationship between male CEOs and capital structure. It suggests that male CEOs tend to employ more debt within the capital structure due to their aggressive nature and overconfidence. Similarly, this study finds a significant positive relationship between CEO's age and capital structure. The evidence provides that as they age, CEOs tend to have more experience, better risk management capabilities, and enhanced business sense to take proper financing decisions at the right time with more debt financing.

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Theoretical contribution/originality: Since there is no research conducted on CEO characteristics and capital structure in the Sri Lankan context, this study has made a significant contribution to the local literature and mitigates the gap in the frontier market literature.

Practitioner/policy implications: The findings are helpful for the organisations when appointing key decision-makers to run the organisation and make strategic choices based on formulating corporate policies among debt and equity.

Research limitation: The study has been limited to six CEO characteristics; there are other factors such as risk appetite levels that may have implications and the study has not focused on any impact towards real financing decisions.

Keywords: CEO Characteristics, Capital Structure, Frontier Market, Non-Finance Companies, Sri Lanka, Upper Echelon Theory.

JEL Classification: G32

1. Introduction

Firms need funding through debt and equity to venture into new growth opportunities as well as to operate day to day activities. Capital structure elaborates on how the organisation has funded its assets through a simple ratio of debt-to-equity components (Atkinson et al., 2003; Pandey, 2010). To maximise the firm's wealth and achieve success, the decision makers such as Chief Executive Officers (CEOs) need to take effective strategic choices in terms of leverage. Companies in the modern day are affected largely by factors such as technology, competition, economy, and financial crisis in the external environment. Hence, firms must plan their capital structures carefully by taking these risks into account (Berger et al., 1997). Making an inappropriate mix of finances employed in the firm might seriously affect the performance and survival of the business enterprise.

CEOs make capital structure decisions on the grounds of their cognitive capacity after analysing all the related information. The CEO's cognitive base is unique to each person, which has been shaped by individual characteristics (Hambrick & Mason, 1984). Hence, identifying the impact that is evident from the CEO characteristics on capital structure is a necessity and vital to have a complete picture about determinants of capital structure (Abeywardene & Weerakoon, 2015). Within the capital structure domain, determinants of capital structure are a vital concept where different researchers have done

a number of studies on this topic, yet conclusions are contradictory as none have been universally accepted.

Titman and Wessels (1988), Ajanthan (2013), Sibindi (2016) and Kumar et al. (2017) studied firm-specific observable factors which have made an impact on capital structure, and they have concluded that some of the observable determinants such as firm size, profitability, liquidity, tangibility, and growth opportunities have an impact. But there is a significant unobservable component effect on capital structure which has not been thoroughly analysed by the researchers and only few studies are evident (Matemilola et al., 2013). The unobservable effect can be explained as the effect which has not been observed under the observable components. These unobservable components include factors such as organisational structure, top managers' characteristics, and managerial quality (Wooldridge, 2002). Abeywardene and Weerakoon (2015) explored the importance of the unobservable effect in the capital structure by identifying the determinants of capital structure of Sri Lankan companies and found that the unobservable effect has a higher proportion in the capital structure.

The top managerial characteristics are significant and unobservable (Berger et al., 1997). As the literature suggests, it predominantly refers to CEOs as the top-level managers who have the most influence and decision-making power in the organisation's strategic choices, whether it be debt or equity (Wang et al., 2010). Much of the empirical evidence suggests that top level manager specific characteristics significantly influence the firms' financing decisions (Graham & Havelly, 2001). Daily and Johnson (1997) explained that powerful top-level managers directly influence capital structure decisions of the firm. Hence, it is considered that unobservable components are also important as a capital structure determinant. As CEOs have been identified as the key decision maker related to capital structure decision making, it is vital to understand the personal characteristics of CEOs which make an impact on the capital structure.

The majority of prior studies have been carried out in developed countries to investigate the relationship between capital structure and CEO characteristics (Berger et al., 1997; Graham & Harvey, 2001; Wang et al., 2014) while very few studies have been carried out in emerging and frontier markets (Chen et al., 2014, Barno, 2017; Alqatamin, 2018) on this research topic. Developed markets are different from frontier markets in terms of their economic

status, financial literacy levels, cultural values, and demographic background; hence, the outcomes derived from studies in the developed markets cannot be generalisable to frontier markets such as Sri Lanka (Bekaert & Harvey, 2002). Frontier markets such as Sri Lanka with diverse cultural norms and backgrounds directly affect the person's behaviour and attitudes. Hence, the CEO's behaviour levels are significantly shaped by those factors when making corporate decisions.

There is a lack of studies that examine unobservable CEO characteristics and capital structure in Sri Lanka. Hence, this research study aims to analyse the impact of various unobservable CEO characteristics such as age, gender, education, ownership, duality, and tenure on the capital structure of Sri Lankan listed non-financial companies. The research objectives of this study are to examine the impact of unobservable CEO characteristics on the capital structure of non-financial listed firms on the Colombo Stock Exchange and to assess the level or nature of the relationship between unobservable CEO characteristics and the capital structure.

This study is substantially significant in different ways. Firstly, this study attempts to fill the gap and dearth of research in the Sri Lankan context that can be observed in local literature. There is no research conducted on unobservable CEO characteristics and capital structure in the Sri Lankan context, while proving that the validity of the upper echelon theory by applying it to a frontier market such as Sri Lanka. Secondly, identification of unobservable CEOs' characteristics and managerial decision making in association with firm level observable determinants is significantly important. Discovering these details are helpful towards the organisation when they appoint key decision makers to run the organisation and make strategic choices between debt and equity. Thirdly, the investors and the financial market participants or analysts can predict future capital funding sources or methods of the organization in a new dimension based on the unobservable CEO's characteristics. Furthermore, this study helps in building policies to govern institutions and policymakers or regulators can gain deeper understanding on the effects of top manager's characteristics and implement policy initiatives to balance out CEOs' decision making power.

The remaining paper is organised as follows. Section 2 reviews the relevant literature and the underpinning theories. Section 3 discusses the research methodology used, and Section 4 reports the findings. Section 5 concludes the paper by discussing the findings,

its implications towards theory and practice; and providing the suggestions for future research.

2. Literature Review

2.1 *Decision Making Power of the CEO*

The decision making power of the CEO includes authoritative as well as legal power to lead and control the whole organisation to achieve its desired objectives and goals (Busenbark et al., 2016). The CEOs' main goal linked to their responsibilities and duty is to maximise the value of the entity. Furthermore, the CEO, who is making key strategic financing decisions, is the most influential person on the Board of Directors when it comes to capital structure decisions (Wang et al., 2010).

2.2 *Capital Structure*

Capital structure is how a firm finances its overall operations and growth by using various sources of funds and the proportionate relationship between debt and equity (Atkinson et al., 2003; Pandey, 2010). Also, capital structure is a combination of lenders' funds and shareholders' funds (Akhtar & Oliver, 2009), which are considered financial resources of a firm in utilising the funds for investment and operations (Kumar et al., 2017). Margaritis and Psillaki (2010) stated that capital structure is a mixture of debt and equity capital where debt comprises long-term loans such as debentures and equity include paid-up share capital, share premium, reserves and retained earnings. They argued that it is important to find an optimal capital structure to maximise the value of the firm. Initially, Myers (1984) revealed the optimal capital structure concept and expressed that all entities are focused on achieving the optimal capital structure. According to Weston and Brigham (1992), the optimal capital is the one that maximises the market value of the firm's outstanding shares. Graham and Harvey (2001) suggested that firms are required to identify their optimal capital structure and attempt to reach and keep it.

Capital structure theories provide systematic guidance and background on the decision dimension in corporate finance. Theories for capital structure commenced with the eminent research paper of Modigliani and Miller (1958). Since then, various capital structure theories have been established based on tax benefits on debt,

asymmetric information, and agency cost (Abor, 2008). Myers (1977) studied several factors affecting capital structure to establish its determinants. Weerakoon Banda (2016) demonstrated that despite theoretical growth over the past years, no theoretical provision is provided on establishing the optimal amount of debt or equity to be employed by an entity. These capital structure theories are relevant to the present study with the background of CEOs taking these theories into account when making decisions towards capital structure (Berger et al., 1997).

2.3 *Upper Echelon Theory*

The upper echelon theory describes and proves how top decisions makers' characteristics impact organisational performance and survival. The psychological background of decision making is based on the top decision maker's cognitive base and personal values, which can be measured through observable upper echelon demographic characteristics (Hambrick & Mason, 1984). Furthermore, the cognitive base of the top decision makers will reflect in the organisation's strategic choices. The outcome of these organisational strategic choices will make an impact on the company as organisational outcomes of strategic choices as well as performance are partially predicted by the decision maker's characteristics. Hambrick and Mason (1984) also mentioned that psychological dimensions are exceedingly difficult and complex to measure and hence, observable demographic indicators will serve as more reliable and efficient proxies. This study focuses on the upper echelon theory by outlining observable characteristics (i.e., CEO's age, CEO's education, CEO's tenure and CEO's duality complement to other career experiences, CEO's gender complement to socio-economic roots and CEO's ownership complement to financial position) to identify its relationship with the financial leverage which is one of the strategic choices in the upper echelon theory.

The firm's strategic choices are expected to be influenced by the age of an individual (Hambrick & Mason, 1984). Age influences any person's beliefs, attitudes, and perspectives (Richard & Shelor, 2002). Hence, younger CEOs are more confident and willing to take risks while older CEOs have more conservative behaviours (Bertrand & Scholar, 2003; Wang et al., 2016). According to Hambrick and Mason (1984), the CEOs' education level matters and there is an indirect impact on the strategic choices by a well-educated CEO. The educational background of a CEO will influence their information

search and analysis ability (Hambrick & Mason, 1984). As explained by Wally and Baum (1994), the formal education of a CEO is a proxy for their cognitive ability which helps to understand and process information more quickly and accurately in making appropriate business decisions.

The number of years of experience a CEO possesses, the broader his understanding and knowledge to run the business (Cai & Sevilir, 2012). Prior experience as a CEO can impact the capital structure choice (Hambrick & Fukutomi, 1991) and act more rationally (Wang et al., 2014). According to Finkelstein and D'Aveni (1994), when the same person holds both the position of the CEO and the Chairman of the Board, it will lead to ineffectiveness within the Board while separation of both positions may create a potential rivalry between both parties. Howton et al. (2001) explained that CEOs' need to conduct operations of the organisation by implementing strategic decisions while the Chairman of the Board needs to ratify and monitor the CEO's strategic decisions.

Gender is a socially accepted range of characteristics differentiating men and women. According to Francoeur et al. (2008), attitudes towards the risk of a person and behaviour will be shaped by gender, which influences the firm capital structure. Additionally, Huang and Kisgen (2013) revealed that as described by the upper echelon theory, females are more risk averse and have conservative behaviours while males have risk tolerance and overconfident attitudes. Hence, these influence the capital structure choices. According to Jensen & Meckling (1976), equity share ownership of CEOs has an impact on capital structure choices since CEOs behave more rationally to maximise shareholder wealth as they are also benefiting directly and indirectly. Berger et al. (1997) further supported this argument as they explained that CEOs will implement more cautious and rational actions to obtain financial incentives when they hold equity ownership.

2.4 Agency Theory

This is a theory that focuses on different dimensions of corporate financing decisions (Jensen & Mackling, 1976). According to Jensen and Mackling (1976), this theory defined the relationship between agents and principals where principals such as shareholders have given authority towards agents such as managers to make decisions on behalf of them. Myers (2001) explained that conflicts occur between shareholders and managers due to disagreements on

strategic decisions and these conflicts create costs for the organization. Further, these conflicts of interests are a key determinant of capital structure. As explained by Harris and Raviv (1990), managers and shareholders have different interests. Managers prefer to choose to continue the firm's business while shareholders prefer liquidation. Additionally, managers prefer to invest all accumulated funds in new ventures even if it is better to distribute dividends towards shareholders (Stulz, 1990).

2.5 *CEO Characteristics and Capital Structure*

Chua et al. (2021) investigated the impact of CEOs' education and experience on the dynamic capital structure using a sample of 100 Indonesian firms. They revealed that CEOs' education and experience are significant variables which have a positive relationship with capital structure. Similarly, Naseem et al. (2019) analysed the mediating effect of capital structure on CEO characteristics and firm performance using 179 Pakistani companies from 2009 to 2015. The study revealed that the CEOs' age, male CEOs, and the education of CEOs have a significant positive relationship with leverage whereas CEOs' tenure and CEOs' duality have a negative relationship with leverage.

Chen et al., (2014) analysed the impact of CEO characteristics on the capital structure by examining the CEOs' age, CEOs' compensation and CEOs' equity holding through logistic regression taking into consideration the firm's age, firm size, profitability, and growth as controlled variables. They further revealed that CEOs' age was a significant variable and that the female CEOs opt for leveraged capital structures. Wang et al. (2014) investigated CEOs' traits, corporate performance, and financial leverage by examining the CEOs' compensation, CEOs' gender, CEOs' age, CEOs' duality, and CEOs' directorship. Further firm size and growth opportunities were identified as firm characteristics. The analysis was conducted on 729 American firms listed on the different US stock exchanges from 2001 to 2010. The study revealed that CEOs' age, CEOs' duality and the longer tenure of CEOs has a significant negative relationship with leverage.

Furthermore, Berger et al. (1997) investigated managerial entrenchment and capital structure decisions using a sample of 434 American industrial firms listed on the different US stock exchanges from 1984 to 1991. It revealed that the CEOs' stock ownership is significant and positively related with capital structure. Also, the

CEOs' tenure was identified as a significant variable having a negative relationship with capital structure.

Based on the overall literature review, it is evident that the CEO characteristics as an unobservable component of the determinant of capital structure has a significant impact and the upper echelon theory gives the background understanding about the relationship with capital structure based on the empirical studies conducted in various developed, emerging and frontier markets. Consequently, the literature review shows that most of the previous studies have investigated the impact or relationship between the CEO characteristics and capital structure in different countries. Although there have been extensive studies covering this topic in developed markets and some frontier markets, there is a dearth of studies on this topic related to the South Asian region, particularly Sri Lanka. However, there is no specific research that has been conducted in the Sri Lankan context of CEO characteristics and capital structure. Therefore, as outlined previously, the purpose of this research is to bridge the gap identified in the literature and to investigate the impact or relationship between various CEO characteristics on the capital structure of Sri Lankan listed non-financial companies.

According to Niederle and Vesterlund (2007), capital structure decisions are affected by CEOs' age difference where younger CEOs are more confident and have a passion to strike performance in a competitive business environment than older CEOs. But this is not purely due to the risk aversion of each CEO. Older CEOs have conservative behaviours due to their past experiences (Bertrand & Scholar, 2003; Frank & Goyal, 2007), while younger CEOs are more radical due to their expectations of the future. Similarly, the study conducted by Serfling (2014) showed that the CEOs' age is linked to debt financing behaviour and there is a negative relationship between CEOs' age and capital structure as older CEOs tend to take less risk based on past experiences while younger CEOs are more inclined towards future success by facing more challenges. Chen et al. (2014) further supported this argument. Hence, younger CEOs lean more towards debt financing and older CEOs relatively avoid debt financing. Based on the majority of findings, it was proven that capital structure and CEOs' age have a negative relationship. Based on the above arguments, the following hypothesis has been developed.

H₁: CEOs' age has a negative relationship with the company's capital structure.

Huang & Kisgen (2013) showed that CEOs' gender influences debt financing behaviour and there is a positive relationship between CEOs' gender and capital structure as male CEOs will be more inclined to debt financing than the female CEOs. Graham et al., (2013) further supported this finding, where companies managed by female CEOs employed less debt in their capital structure. Furthermore, Frank and Goyal (2007) and Faccio et al. (2016) revealed that female CEOs have inherent conservative behaviours. Hence, female CEOs prefer equity financing and employ less debt financing than male CEOs. Based on the findings, they proved that capital structure and CEOs' gender have a positive relationship. Based on the above arguments, the following hypothesis has been developed.

H₂: Male CEOs have a positive relationship with the company's capital structure.

Wang et al. (2014) revealed that there is a significant and negative relationship between capital structure and CEOs' tenure. This is due to CEOs who have a long tenure are equipped with more knowledge and understanding of the business and financial markets and hence, tend to avoid unwanted risk taking and prefer less debt financing. According to Cai and Sevilir (2012), CEOs who have a long tenure in the organization would have significant understanding and knowledge to run the business. Hence, experience matters for a CEO. Bergh (2001) further supported this conclusion. Based on the above arguments, the following hypothesis has been developed.

H₃: CEOs' tenure has a negative relationship with the company's capital structure.

Finkle (1998) and Andrews and Welbourne (2000) revealed that CEOs with a finance education background tend to employ more debts in the capital structure as CEOs who have a business or finance related education have thorough knowledge on the financial concepts and apply learned theory into practice to achieve desired objectives. Hence, they concluded that there is a significant positive relationship between CEOs' education and the company's capital structure. Furthermore, this argument is supported by Custódio and Metzger (2014). They proved that CEOs with a finance background employ more debt in the capital structure and are inclined to more leveraged based decisions after analysing 4277 different CEOs' education from

1993 to 2007. Based on the above arguments, the following hypothesis has been developed.

H₄: CEOs' business or finance education has a positive relationship with the company's capital structure.

Jensen & Meckling (1976) showed that the firm's value is impacted by capital structure choices made by CEOs who hold equity ownership. Hence, when the CEOs have stock ownership in the firm, they tend to employ more debt financing to maximize the firm's value. Furthermore, Stulz (1988) explained that CEOs who have equity ownership will increase the firm's leverage to consolidate their voting control. Also, these findings are consistent with the concept of CEO financial incentives such as employee share option schemes being linked to shareholder wealth maximization. Hence, CEOs will tend to employ more debt financing in the capital structure to maximize the firm value. This argument was further supported by the research done by Berger et al. (1997) who revealed that there is a significant positive relationship between CEOs' ownership and capital structure. Based on the above arguments, the following hypothesis has been developed.

H₅: CEOs' ownership has a positive relationship with the company's capital structure.

CEOs' duality within the company will lead to more debt employed in the capital structure (Abor, 2007; Vaklifard et al., 2011; Gill et al., 2012). As per the study conducted by Sewpersadh (2019), it was revealed that the presence of CEOs' duality will lead to them being highly debt geared. Furthermore, this argument was supported by Wellalage and Lock (2012) and Purag et al. (2016) where it was found that there is significantly positive relationship between CEOs' duality and capital structure. Based on the above arguments, the following hypothesis has been developed.

H₆: CEOs' duality has a positive relationship with the company's capital structure.

3. Methodology

3.1 Data and Sample Selection

Secondary data was gathered by referring to annual reports of non-financial companies listed on the Colombo Stock Exchange

from 2012 to 2019. This research adhered to probability sampling where the multistage cluster sampling technique has been used. The listing boards in the Colombo Stock Exchange were identified as the first level of clusters. Companies listed on the main board are the companies which comply with listing rules and have better transparency on corporate actions. Furthermore, there are several industry sectors under the main board; considered as the second level clusters. Except for all financial sectors, the study has randomly selected 100 per cent of the sample from all the non-financial sectors of the main board which in turn covered a sample of 123 main board listed non-financial companies out of the 289 companies that were listed in the Colombo Stock Exchange.

The sample for this study was 123 main board listed non-financial companies out of 289 listed companies on the Colombo Stock Exchange. The selected sample covered all the non-financial sectors of the Colombo Stock Exchange. Banking, finance, insurance, and investment trusts sectors were excluded since these companies have compulsory capital requirement to comply to. Hence, the determinants of leverage of these companies are likely to be different from the rest of the non-financial sectors. Furthermore, firms which having negative book equity were excluded since that could lead to negative leverage. Secondary data were extracted from the financial statements of the selected listed non-financial companies on the Colombo Stock Exchange for the years 2012 to 2019 as the annual reports were freely available only for these years.

3.2 Measurement and Operationalisation of Variables

According to the comprehensive literature review conducted by the researcher, with reference to most accepted models identified, a conceptual framework has been developed. CEOs' age, CEOs' duality, CEOs' gender, CEOs' tenure, CEOs' ownership and CEOs' education have been identified as the key independent variables that would have a clear impact on capital structure. In view of the prior literature, firm size, growth opportunities, firm age and profitability can be identified as firm specific variables. Researchers have conducted different forms of research to prove the significance of these variables that make an impact on the capital structure. Titman and Wessels (1988), Gu et al. (2007) and Frank and Goyal (2009) explained in their research that the capital structure choice is influenced by firm size, growth potential, the value of assets and profitability capacity. Sibindi (2016) and Kumar et al. (2017) found out

that the growth opportunities, profitability, firm age, and firm size are the most significant firm specific capital structure determinants. Hence, the present study has focused on evaluating the growth opportunities, profitability, firm age, and firm size. Table 1 indicates the measurement and operationalisation of variables.

Table 1: Measurement and Operationalisation of Variables

Variables	Measurement	Prior literature	Symbols
Debt ratio (Leverage)	Total debt / total assets	Berger et al. (1997), Wang et al. (2014)	DEBT RATIO
CEOs' age	Difference between CEOs' date of birth and years of the study period	Chen et al. (2014), Wang et al. (2014)	CEOAGE
CEO's duality	Dummy variable "0" for combined and "1" for separate leadership	Vakilifard et al. (2011)	CEO DUAL
CEOs' gender	Dummy variable "0" for female and "1" for male	Skalpe (2007), Yu et al. (2010), Yim (2013)	CEOGEN
CEO's tenure	Number of years in the CEO position	Abor (2007), Wang et al. (2014)	CEOTEN
CEOs' ownership	Proportion of total shares owned by CEO / total number of shares	Berger et al. (1997), Latif et al. (2016)	CEOOWN
CEOs' educational background	Dummy variable "0" for non-accounting, business, and financial background and "1" for accounting, business, and financial background	Andrews and Welbourne (2000), Colombelli (2015)	CEOEDU
Firm size	Natural logarithm of total assets	Chen et al. (2014), Boateng and Huang (2017)	FIRMSIZE
Growth opportunities	(Book value of debts + market value of equity) / book value of total assets	Graham et al. (2013), Boateng and Huang (2017)	GROWTH
Firm age	Number of years in the business	Chen et al. (2014)	FIRMAGE
Profitability	Profit before interest and tax / total assets	Boateng and Huang (2017)	PROFIT

All the relevant data were manually collected from the 2012 to 2019 from available annual reports.

3.3 Model Specification

The following econometric model was applied to test the hypotheses.

$$DEBT\ RATIO_{it} = \beta_0 + \beta_1 CEOAGE_{it} + \beta_2 CEO DUAL_{it} + \beta_3 CEO GEN_{it} + \beta_4 CEO TEN_{it} + \beta_5 CEO OWN_{it} + \beta_6 CEO EDU_{it} + \beta_7 FIRMSIZE_{it} + \beta_8 GROWTH_{it} + \beta_9 FIRMAGE_{it} + \beta_{10} PROFIT_{it} + \varepsilon_{it}$$

4. Results and Discussion

4.1 Descriptive Statistics

The descriptive statistics describe the basic features of the variables of the sample. Descriptive statistics are shown based on 908 observations covering 123 main board listed non-financial companies on the Colombo Stock Exchange for the years 2012 to 2019. As depicted in Table 2, the mean value of debt ratio for the sample was 16.1 per cent ranging from 0.00 per cent to 90.14 per cent. The figure implies that nearly 16.1 per cent of total assets are financed by debt capital. The average CEOs' age was 55 years whereas some CEOs were in the 35 to 40 range and some CEOs were more than 70. If the CEO was also a director, then with the approval of shareholders that person can function after the age of 70. The table shows that nearly 80 per cent of the companies segregated the CEO role from the Board chairmanship in the Sri Lankan non-financial listed firms and nearly 98 per cent of the CEOs were male. Also, the average tenure of a CEO was around 9 years where few of the CEOs did not have any prior experience as a CEO, whilst the highest tenure was 35 years of experience. Some of the CEOs had a shareholding in the companies at an average of 3.44 per cent whilst the majority had no stake of ownership in their company with the highest at 70.3 per cent. The table also shows that 60 per cent of the CEOs came from business, accounting, and finance backgrounds. Firm size was measured through the log of total assets

and finally, the average firm age of the sample firms was 40 years, and the mean percentage firm profitability of the sample firms were reported as 9.19 per cent.

Table 2: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
Debt Ratio	0.1610	0.1704	0	0.9014
CEOs' age	55.5099	6.1685	35	77
CEOs' duality	0.7995	0.4005	0	1
CEOs' gender	0.9823	0.1316	0	1
CEOs' tenure	9.3403	6.8794	0	35
CEOs' ownership	0.0344	0.1072	0	0.7030
CEOs' education	0.6035	0.4894	0	1
Firm size	21.9846	1.4670	14.0788	27.6247
Growth opportunities	1.3090	1.4131	0.10423	14.6280
Firm age	40.2896	24.0932	8	153
Profitability	0.0919	0.1235	-0.5209	0.9740

4.2 Correlation

The significance of the correlation between the variables was assessed at the 5 per cent significance level and detailed results of the analysis are reported in Table 3. The table shows that CEOs' age, CEOs' gender and firm size variables were significant at the 5 per cent level and those variables had a positive relationship with the firm debt ratio. CEOs' education, growth opportunities and profitability variables were significant at the 5 per cent level as well but those variables had a negative relationship with the firm debt ratio. CEOs' age showed a significant and positive association with the debt ratio whereas CEOs' education showed a significant and negative association with debt ratio. Other CEO characteristics and control variables had no significant association with the debt ratio.

Table 3: Correlation Matrix

	Debt ratio	CEOs' age	CEOs' duality	CEOs' gender	CEOs' tenure	CEOs' ownership	CEOs' education	Firm size	Growth	Firm age	Profit
Debt ratio	1										
CEOs' age	0.103**	1									
CEOs' duality	-0.004	(0.270)**	1								
CEOs' gender	0.081**	0.046	-0.025	1							
CEOs' tenure	0.031	0.302**	(0.146)**	(0.171)**	1						
CEOs' ownership	0.004	0.038	-0.041	(0.396)**	0.223**	1					
CEOs' education	(0.174)**	(0.304)**	(0.117)**	(0.074)**	(0.162)**	-0.010	1				
Firm size	0.181**	0.067**	0.090**	-0.029	0.036	(0.150)**	-0.058	1			
Growth	(0.079)**	(0.159)**	0.038	0.049	-0.052	-0.017	0.106**	0.085**	1		
Firm age	-0.038	0.072**	0.001	(0.122)**	0.159**	0.177**	0.106**	0.090	0.200**	1	
Profit	(0.126)**	(0.107)**	0.073**	0.056	-0.030	-0.048	0.067**	0.135**	0.453**	0.050	1

Note: **5 per cent significance

The Jarque Bera test was conducted to evaluate whether the data set residuals were normally distributed. Based on the results, it was proven that the residuals were normally distributed. Heteroscedasticity occurs when the standard errors of a variable are not constant over time. The Breusch Pagan test was conducted to evaluate whether the variables' standard errors are constant which proved that the standard errors were not constant over time and heteroscedasticity exists. This is a violation of the assumption and subsequently corrected through robust standard errors. Multicollinearity occurs when there is a high correlation among the independent variables. The variance inflation factor (VIF) test was conducted to evaluate whether there is any existence of high correlation among the independent variables. The results proved that the independent variables have not correlated with each other. Hence, no multicollinearity exists. Autocorrelation arises when there is a correlation among the values of similar variables across different observations in the data. The Durbin Watson test was conducted to evaluate whether there is a correlation between the values of the same variables across different observations in the data. Based on the performed Durbin Watson test, the correlation between the values of the same variables across different observations in the data was observed and hence, the Prais-Winsten test was performed to eliminate the autocorrelation.

Due to panel data which consist of the time series element, the unit root test was required for testing stationarity in panel data. However, if the panel data has exceedingly small t , i.e., data for a small number of periods (i.e., below 10 periods), stationarity testing is not an essential pre-requisite. Since this data set consists of an 8 year time series data, it is considered that the data did not consist unit roots and was stationarity at levels. Furthermore, for each variable, the unit root test was conducted through the Im-Persaran-Shin test since it was an unbalanced panel data set.

After conducting all the above tests, pooled regression was employed ensuring the validity of the data. The pooled regression analysis is not free from the joint effect of variables and regression analysis carries some sort of fixed effect. Hence, it was wise to use either fixed or random effect model regression analysis since the pooled regression analysis is not the accurate technique to analyse panel data sets (Bell et al., 2019).

The Hausman test was conducted as a test for model misspecification. Hausman test is used to differentiate random effects

and fixed effects in panel data analysis as well as selects the best model output from the fixed effects and random effects. As Table 4 depicts, the data set variance had a χ^2 of 0.1377, which is higher than 0.05 which proves that the difference in coefficients was not systematic and null hypotheses can be accepted. Hence, the random effect outcomes for the analysis is accepted.

Table 4: The Hausman Test

Variable	Coefficient (b) fe	Coefficient (B) re	(b-B) Differences	Sqrt (diag (V_b-V_B)) S.E.
CEOs' age	0.0054	0.0033	0.0020	0.0009
CEOs' duality	0.0221	0.0242	-0.0020	0.0237
CEOs' gender	0.2646	0.1919	0.0726	0.0587
CEOs' tenure	-0.0033	-0.0015	-0.0017	0.0008
CEOs' ownership	0.0976	0.1182	-0.0205	0.0478
CEO's education	0.0259	0.0056	0.0202	0.0846
Firm size	0.0333	0.0260	0.0072	0.0074
Growth opportunity	0.0069	0.0049	0.0020	0.0017
Firm age	-0.0011	-0.0004	-0.0007	0.0010
Profitability	-0.2264	-0.2288	0.0023	0.0140

Test H_0 : difference in coefficients is not systematic

$$\chi^2(10) = (b-B)' [(V_b - V_B)^{-1}] (b-B)$$

$$= 14.85$$

$$\text{Prob} > \chi^2 = 0.1377$$

4.3 Random Effect Model

Random effect is where the effects include random disturbances. The errors are uncorrelated with regressors and hence, a common intercept for all companies was assumed. The result is as follows:

Table 5: Random Effect Model

Variables	Coefficient	Standard errors	Z	P>[t]P
CEOs' age	0.0033	0.0012	2.63	0.009**
CEOs' duality	0.0242	0.0229	1.06	0.291
CEOs' gender	0.1919	0.0577	3.33	0.001**
CEOs' tenure	-0.0015	0.0011	-1.30	0.193
CEOs' ownership	0.1182	0.6948	1.70	0.089
CEOs' education	0.0056	0.0148	0.38	0.702
Firm size	0.0260	0.0063	4.10	0.000**
Growth opportunity	0.0049	0.0038	1.29	0.196
Firm age	-0.0003	0.0004	-0.77	0.443
Profitability	-0.2288	0.0422	-5.42	0.000**
Constant	-0.7714	0.1600	-4.82	0.000
R-squared				
within	0.0747			
between	0.0642			
overall	0.0645			
Corr (u I,x _b)	0.0			
Prob>F	0.0000			

Note: **5 per cent significance

4.4 Results Analysis and Discussion

Based on the random effect regression outcome, the R squared (within) was 0.0747 which meant that 7.47 per cent of the variations within the variables were explained by the model. R squared (between) was 0.0642 which meant that 6.42 per cent of the variations between the variables were explained by the model. Having R² (overall) value of 0.0645 indicated that independent variables of the model had the ability to explain the 6.45 per cent variation of the dependent variable. Therefore, it can be concluded that this regression model was reasonably fit for the data.

Since the p value was 0.0000, and the model was significant at 0.05 level, the assumption that the linear relationship between the independent and dependent variables was not violated and the overall model was significant; and CEOs' age, CEOs' duality, CEOs' gender, CEOs' education, CEOs' tenure, firm size, firm age, growth opportunities and profitability all jointly influenced capital structure among non-financial companies listed on the Colombo Stock Exchange.

The random effect model regression results were used to assess the hypotheses. CEOs' age showed a significant positive relationship with capital structure at the 5 per cent significance level, indicating CEOs' age has a positive impact upon a Sri Lankan companies' debt levels where older CEOs tend to employ more debt in the capital structure. This is because when the CEOs age, they tend to have more experience, better risk management capabilities and enhanced business sense to make proper financing decisions at the right time with debt financing. Hence, they are willing to take risks and try to employ more debt when they older. Wang et al. (2014) has further proved that the relationship between CEOs' age and medium-term and long-term debt financing is positive. The coefficient of the CEOs' duality variable is statistically insignificant at 5 per cent and hence, there is no systematic relationship with the level of debt ratio and CEOs' duality has no impact on the capital structure as a CEO characteristic.

CEOs' gender (male CEO) variable reveals that it is positively related with the debt ratio at the 5 per cent significance level, indicating CEOs' gender has a positive impact upon the Sri Lankan companies' debt levels. Female CEOs have inherent conservative behaviours. Hence, female CEOs prefer equity financing and employ less debt financing than male CEOs. Graham et al. (2013) further proved this significant and positive relationship, where companies managed by female CEOs employed less debt in their capital structure. This finding is consistent with Alqatamin (2018) and Huang and Kisgen (2013), where they found that there is a significant and positive relationship between CEOs' gender and capital structure in listed companies in Jordan. Since males are more confident than female counterparts, they will deploy more debt and incur better returns. Accordingly, the results are consistent with the literature. Furthermore, this study found that the CEOs' tenure variable is statistically insignificant at 5 per cent and hence, there is no systematic relationship between CEOs' tenure and debt ratio,

indicating CEOs' tenure has no impact on leverage determinants for the company. The CEOs' ownership variable is statistically insignificant at 5 per cent significance level, indicating the presence of CEO ownership has no significant impact on determining a Sri Lankan firm's capital structure. Furthermore, CEOs' business or finance education variable is statistically insignificant at 5 per cent and hence, proves there is no systematic relationship with capital structure and indicates that the CEOs' business, accounting, and finance educational background does not matter to the Sri Lankan listed non-financial companies when making capital structure decisions.

In view of the control variables, the following interpretation can be described. Firm size positively related with debt ratio at the 5 per cent significance level, indicating firm size has a positive impact on Sri Lankan companies' debt levels, where bigger firms attract the larger number of debts. This is due to the reason that when the firm has a large asset base, the firm can borrow more money from the market and it also reflects the capacity to absorb debt as lenders are willing to lend money to copious amounts of assets rich firms. Chen et al. (2014) proved a similar outcome where they found that there is a significant and positive relationship between firm size and debt ratio. Furthermore, this study found that the growth opportunities variable is statistically insignificant at 5 per cent and hence, there is no systematic relationship between company growth opportunities and debt ratio, indicating growth opportunities have no impact on leverage determinants for the company.

The firm age variable was insignificant at 5 per cent significance level and hence, there is no systematic relationship with debt ratio, indicating firm age has no impact on leverage of Sri Lankan non-financial listed companies. Finally, profitability showed a negative relationship with capital structure at the 5 per cent significance level, indicating that the higher profitable companies tend to employ lesser debt in the capital structure. This is because when the company has higher profits, they have adequate funds for their future requirements and the company is in the company value maximization pace with generations of higher profits. This is constant with Boateng and Huang (2017) where they found that there is a significant and negative relationship between profitability and debt ratio among Chinese firms. A similar outcome was proven by Rajan and Zingales (1995).

Table 6 provides the results of the hypotheses testing. It shows that the only hypothesis that was supported by the outcomes of the

study is H_3 , where it was proven that there is a positive relationship between male CEOs and debt ratio. The random effect regression has identified a significant positive relationship between these two variables at the 5 per cent significance level. Furthermore, the study has provided empirical evidence that there is a significant positive relationship between CEOs' age and debt ratio (H_1), yet the relationship outcome was not aligned with the developed hypothesis where the developed hypothesis tried to prove a negative relationship between CEOs' age and debt ratio. Hence, H_1 was not supported due to contradicting outcomes. All other developed hypotheses were not supported at the 5 per cent significance level of the random effect regression.

When looking at the data analysis, the CEOs' age is significantly and positively related with capital structure (i.e., debt ratio). This is where the older CEOs tend to employ more debt within the capital structure. This is contradicting to the designed hypothesis, where a negative relationship was predicted. The actual outcome had a different result as the sample results explained that a majority of the CEOs are more than 45 years of age and at that age, they have more experience, better risk management capabilities and advanced business sense to make proper financing decisions at the right time with debt financing to have an optimal level of capital structure. With the current context of Sri Lankan career paths, it will take a longer time to become a CEO in a reputed listed company. Usually, when a person becomes a CEO, that person might have minimum 20 years of experience in the business world. This experience matters a lot when making decisions as the older CEOs have analysed the proper big picture and have quantified the real impact to employ more debt in their respective capital structures. Hence, with age, CEOs will employ more debt in their capital structure as proven from the sample.

5. Conclusion

As per the research outcome, factors such as CEOs' age and CEOs' gender have a significant positive relationship with the capital structure. Meanwhile, CEOs are the most influential key decision-makers on capital structure decisions. It is vital to take effective decisions on capital structure and evidently, these decisions are moulded by the unobservable CEO characteristics. Hence, as an unobservable element, the CEO characteristics make an impact on the capital structure and can be concluded as a determinant of

capital structure. Similarly, it can be elaborated that the unobservable components are also important as capital structure determinants. On the other hand, this study has proven that the CEOs' gender, which is an unobservable component of the upper echelon theory, has a similar outcome among developed, emerging and frontier markets.

Table 6: Results of Hypothesis Testing

Hypothesis	Result	Conclusion	Tool
H ₁ CEOs' age has a negative relationship with the company's capital structure.	0.009	Significant - not supported	Random effect
H ₂ CEOs' duality has a positive relationship with the company's capital structure.	0.291	Not significant - not supported	Random effect
H ₃ Male CEOs have a positive relationship with the company's capital structure.	0.001	Significant - supported	Random effect
H ₄ CEOs' tenure has a negative relationship with the company's capital structure.	0.193	Not significant - not supported	Random effect
H ₅ CEOs' ownership has a positive relationship with the company's capital structure.	0.089	Not significant - not supported	Random effect
H ₆ CEOs' business or finance education has a positive relationship with the company's capital structure.	0.702	Not significant - not supported	Random effect

Furthermore, there is a relationship between CEO characteristics and capital structure on the grounds of the agency theory. As the theory outlines, the managers should act in the best interest of shareholders as well as the managers and shareholders have different objectives and conflict of interests leads to agency costs (Jensen & Mackling, 1976). The primary objective of the managers should be wealth maximisation of the company through enhancing the

value. The value can be enhanced through optimal capital structure decisions (Myers, 2001). As the study reveals, CEOs as the most influential decision makers on the capital structure, should make effective decisions on the grounds of being the best interests of the shareholders. It is required by the shareholders to appoint CEOs who make decisions in line with shareholder objectives and this study revealed significant variables such as CEOs' age and CEOs' gender can make an impact on the capital structure.

As explained above, it is recommended to the organisation to appoint male CEOs if the shareholders need to have an aggressive strategy within the firm and to have a more optimal level of debt in the capital structure, which will in turn enhance the shareholder value to benefit shareholders at large.

5.1 Limitations of the Research

The current study does have limitations that point to possible productive further research openings. This research experienced the following limitations. The sample size was limited to the main board listed non-financial companies on the Colombo Stock Exchange. Therefore, the research findings will be not 100 per cent realistic to obtain a true and fair picture of the research subject. This study has only been limited to six CEO characteristics which have an impact on the capital structure based on the research model established under the conceptual framework, but there are other factors such as CEOs' risk appetite levels which may have significant implications on the capital structure that has not been discussed. In addition, the study focused only on the CEO characteristics impact on the capital structure outcomes and has not purely captured the impact on real financing decisions such as debt issuance and equity IPO issuance. Since cultural differences and institutional contexts are prevailing within the countries, it will limit the generalisation of results to other developing and developed countries.

5.2 Suggestions for Future Research

As per the outcome of the findings and the limitation of the study, the following areas can be suggested for further research. It is suggested to expand the sample size and conduct the research for all non-financial companies listed among various stock exchanges in developed and frontier markets to achieve international comparability. Only six CEO characteristic factors impact on the capital structure was considered

in this study. The same research can be conducted by considering other CEO characteristics with modifying the model to get more accurate outcomes. Similar research should be conducted to analyse the CEO characteristics impact on the real financing decisions such as debt issuance and equity IPO issuance.

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