



Capital Structure's Impact on Profitability:
Evidence from Telecommunications
Companies listed in London Stock Exchange
2013 to 2018



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Preface

This dissertation has been written by Mohamed Gelle, as a part of the fulfilment required for the Master of Business Administration program.

The topic for this dissertation was approved by my supervisor Mr Jia Miao, for the objective of researching capital structure's impact on profitability in the British telecommunications sector. This dissertation represents the result of my research during the dissertation phase.

To my honourable supervisor and lecturer Mr. Jia Miao, I am very grateful to you. This research would have been impossible to complete without your extended moral support, valuable guidance and altruistic help, during the whole period of this research. Your valuable lectures and counselling throughout the time I have been studying MBA and your guidance has enabled me to follow the right track in successfully completing this dissertation report.

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Abstract

This research aims to find capital structure's impact on profitability of British telecommunications firms listed on the London Stock Exchange (LSE). In order to conduct the empirical study this research has used a panel data which was taken from the financial statements available in annual reports of six (6) selected British telecommunications companies listed on the London Stock Exchange for the period of 2013 – 2018.

The study made use of two different dependent variables as a measure of profitability, i.e. return on assets (ROA) and return on equity (ROE). The capital structure variables used were namely short-term debt to total asset (STD), long-term debt to total asset (LTD) and Debt to asset ratio (DA) applied as independent variables. Moreover, size and sales growth were used as control variables in this study. The leverage ratios (STD, LTD, DA) in this study has been implemented separately to avoid multicollinearity problem, thus, a total of six regression models have been studied. Moreover, descriptive statistics, correlations and Ordinary Least Square (OLS) model were used for the data analysis.

The empirical results in this study show all three independent capital structure (STD, LTD, DA) variables have a relationship that is not significant with profitability measured by ROA and ROE. In all the three independent variables, the null hypotheses that there is a no significant relationship between capital structure (STD, LTD, DA) and profitability measured by ROA and ROE had been retained and the alternative hypothesis had been rejected at a 5% significance level. However, although the relationship is insignificant, STD and profitability measured by ROA have a positive relationship, whereas, LTD and DA have an insignificant and negative relationship with profitability measured by ROA. Hence, we can conclude that there is no statistically significant relationship between capital and profitability measured by ROA. On the other hand, there was an insignificant negative relationship between all the capital structure (STD, LTD and DA) variables and ROE. Hence, we can conclude that, a negative and statistically insignificant relationship exists between capital structure and profitability (ROE) for the British telecommunications firms listed in the London Stock Exchange. The results of the study recommend that the managers of British telecommunications companies must be careful with regards to their decision on the quantity of debt to use in their project finance decisions, as debt affects their performance negatively. It further suggests for managers to preferably finance their projects from internal sources rather than using debt, as debt affects their profitability negatively.

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List of Abbreviations

EPS	Earnings Per Share
GSE	Ghana Stock Exchange
HOSE	Ho Chi Minh City Stock Exchange
LSE	London Stock Exchange
LTD	Long-term Debt to total assets
NYSE	New York Stock Exchange
OLS	Ordinary Least Squares
PM	Profit Margin
REO	Return on Equity
ROA	Return on Asset
ROCE	Return on Capital Employed
SG	Sale of Goods
SME	Small Medium-sized Enterprises
STD	Short-term Debt to total assets
TD	Total debt to Total assets
TDE	Total debt to Equity
TSE	Tehran Stock Exchange
UK	United Kingdom
US	United States
VIF	Variance Inflation Factor

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Chapter 1: Introduction

1.1 Introduction

This first chapter is an overview of how the research is designed. It is an introduction of the research background, statement of problem and research objectives etc.

1.2 Research Background

Capital structure is the choice that firms make to fund their business operations through different sources of finance such as equity, securities and debts. Capital structure is about the relative amounts of debt and equity financing. Debt financing mainly includes financial leasing, bank borrowing, and issues of bonds in the bond market. Equity comprises mainly of retained earnings and issues of additional shares in the stock market (Broyles, 2003). A well accepted theories in the corporate financial literature indicates that the choice of capital structure that a company opts for in order to finance its business operations has impact on its profitability (Das, 2013). Hence, capital structure plays a key role in the strategic and financial decision making of firms.

According to Broyles (2003), there are at least two reasons that can be attributed to the importance of capital structure. First reason is, there are different costs for debt and equity, which include differences between equity required rates of return and interest rates. They further include differences in tax treatments, securities' flotation costs, and in costs associated with financial risk. The second reason that can be attributed to the importance of capital structure is that the degree to which a firm borrows affects its financial risk. Interest payments represent an additional fixed expense which increases net income and of earnings volatility per share. This increased risk level raises the interest payable with regards to bond issues (Broyles, 2003).

Therefore, considering the significance of capital structure it can be argued that the appropriate selection and utilisation of capital structure is one of the main elements of the financial strategy of the firm and that corporate financial managers must pay due attention and care when determining the capital structure of the firm.

The relation between the capital structure of a company and profitability is one that has received considerable attention in the finance literature. Hence, as stated by Velnampy & Nireesh (2012) a study of capital structure's impact on profitability will help us to understand the potential company performance and issues of capital structure (Velnampy & Nireesh, 2012).

1.3 Statement of the Problem

According to Ofcom (2019), over the past couple of years, the British telecommunications sector has been consistently growing. The sector had seen improved profits and major expansions. In 2018 only, the British telecommunications sector had generated a £3.3 billion in operator-reported revenues, making the sector an important contributor to the overall economy besides being a critical sector for the national the infrastructure of the United Kingdom (UK) (Ofcom, 2019). Occasionally, businesses launch new projects or products, such as the 5G project in the telecommunications sector. Thus, a study of the relation between capital structure and profitability is important in order to understand whether the capital structure employed by the British telecommunications companies have facilitated their profitability and growth.

1.4 Research Objectives

The overall aim of this research is to examine the relationship between the capital structure and profitability of six major British telecom companies listed in the London Stock exchange (LSE). The study will focus on examining the relation between capital structure and profitability of those companies in the past (6) six-year period from 2013 to 2018. The objectives of this research will further include:

- a. To examine the relationship between short-term debt to total assets and firm's profitability measured by ROA and ROE
- b. To examine the relationship between long-term debt to total assets and firm's profitability measured by ROA and ROE
- c. To examine the relationship between debt to total assets and firm's profitability measure by ROA and ROE

1.5 Research Significance

The relation of capital structure with profitability is vital to organisations, since profitability is crucial for firms to survive and remain competitive in the market. It is, thus, very important to examine the relation between company's capital structure and profitability in order to make optimum choices regarding capital structure. This research aimed at identifying the relation of capital structure with profitability specifically using the panel data of six major British telecommunications companies listed on the LSE. The result of this study is significant to both managers and shareholders as it will help managers in the British telecommunications sector to make a sound optimal capital structure decision. It will also help shareholders to recognise the way the firm's capital structure affects its profitability.

Chapter 2: Literature review

2.1 Introduction

This chapter includes the theoretical framework used for this research. The objective of the chapter is to explain and justify the theoretical framework adapted to critically analyse the empirical evidence of the literatures available to see the findings of others with regards to profitability and capital structure.

The literature review aims to review the theories of capital structure and their implications, with the objective of studying and applying those theories to the capital structure of telecommunications companies listed in the London Stock Exchange to observe the variation in capital structure and returns on share of those companies i.e. to see if there is connection between the capital structure and profitability of those companies.

2.2 Theoretical Framework.

There are diverse theories with relation to selecting the capital structure of a firm. The main theories are namely Modigliani and Miller theory, trade-off theory, Pecking order theory, agency cost theory and market timing theory, etc. Over the years, numerous research scholars have sought empirical evidence to support these theories.

2.2.1 Modigliani and Merton Miller's (1958) Theory of "Irrelevance"

This theory was one of the first generally accepted capital structure theory, and was published in 1958, i.e. the theorem of Modigliani and Miller's (1958) known as "irrelevance theory of capital structure" (Sorin & Luigi, 2009). It is generally believed that from early on when the theory of capital structure was published by Modigliani and Miller (1958), the corporate capital structure theory has been a study of interest to finance economists (Sorin & Luigi, 2009).

This theory had two irrelevant propositions of capital structure and assumed that the total cost of capital remains the same irrespective of the firm's debt strategy. That is to say, under perfect capital market conditions and in the absence of bankruptcy costs, taxation and asymmetric information, the company's market value is not influenced by how it is financed (Sorin & Luigi, 2009). The first proposition is named the "irrelevance proposition", and the second one relates to the impact of capital structure on the equity cost. Brandea et al (2001), state that according to the first suggestion, a company's market value is constant irrespective of whether the company's capital consists of equity or debt, or a combination of both (Brandea, 2011). Whereas, Modigliani and Miller's second proposition states that a firm's capital structure has

no impact on its weighted average cost of capital (WACC) i.e., equity cost is a linear function of the debt-equity ratio (Brendea, 2011).

Following the criticism caused by the theory of irrelevance, Modigliani and Miller (1963) revised their theory and included taxes by taking into consideration the effect of tax shield on interest payments. Their model indicated that the value of the firm increases with more debt due to the tax shield and later on Miller (1977) included corporate and personal tax in the consideration of financing decisions (Sorin & Luigi, 2009). The criticism of this theory led to the emergence of new models of theory such as trade-off, pecking order, agency cost and market timing theory.

2.2.2 Trade-off Theory of Capital Structure

As a consequence of the debate over Modigliani and Miller's theory of irrelevance, several authors have developed the trade-off theory. Kraus & Litzenberger (1973) provided the initial statement of the theory, which considers trade-offs between debt tax shield benefits and financial distress costs (Kumar, et al., 2017). Later on, (Bradley, et al., 1984) presented the static trade-off theory which argues that firms' optimal capital structure is determined by trading off the interest tax shields of debt and the costs of financial distress. Several others such as (Kane, et al., 1984) presented the dynamic trade-off theory which argues that a company shows adjustment behaviour to the target debt ratio, hence, the appropriate financial decision depends on the financing margin that the firm anticipated in the next period (Kane, et al., 1984).

2.2.3 Pecking-order Theory of Capital Structure

Myers & Majluf (1984) presented the concept of "information asymmetry" which led to distinct preference of firms with regards to the financing of their investment. Based on the information asymmetry concept company managers prefer internal funds to debt and debt to equity, as they usually have more information about the results, risks, prospects and future outlook of the firm than external users such as creditors and investors which makes external financing more expensive (Myers & Majluf, 1984).

2.2.4 Agency Cost Theory

Although all other theories suggest that the interests of managers correspond to those of the shareholders, (Jensen & Meckling, 1976) found that managers have different interests which are different from those of shareholders. They argue that in a corporation, shareholders are principals and managers are agents. The shareholders want the company to be managed by managers in a way that maximises the value of the shareholders. In contrast, the managers may

want the company to be managed in a way that increases the power or wealth of the managers themselves, even if it that reduces the company's market value. Hence, the cost resulted by these divergent interests is called agency costs. Agency costs occur because of the relationships between managers of the firm and shareholders and also due to the relationship between debt-holders and shareholders (Jensen & Meckling, 1976).

2.2.5 Market Timing Theory

According to Baker & Wurgler (2002) the market timing theory of capital structure suggests that companies time their equity issues by selling new stocks when the stock price is considered to be overvalued and buy back their own shares when there is undervaluation. As a result, stock price fluctuations affect the company's capital structures (Baker & Wurgler, 2002). Additionally, Baker & Wurgler (2002) argue that the market timing of equity issuances has a enduring effect on capital structure. For instance, according to their findings, low leverage companies are those that raised funds when their market valuations were high, as measured by market-to-book ratio, while on the other hand, high leverage companies are those that raised funds when their market valuations were low (Baker & Wurgler, 2002). In contrast, others such as (Hovakimian, 2006; Kayhan & Titman, 2007) have rejected the hypothesis that the market value fluctuations of equity have enduring impact on the capital structure.

2.3 Empirical studies

Capital structure is of a great important for companies, as the source of funding that a firm opts for could have an impact on its profitability. The concept of capital structure can be defined as a mixture of equity and debt which makes the firm's overall capital. The objective of firms is to maximise the wealth of shareholders. Firms are valued based on their investments in the past and future. Thus, choosing the appropriate capital structure is crucial for firms to finance these investments. Hence, the amount of debt to equity is a crucial decision that company managers have to make, since their decision of capital structure may have an effect on the firm's profitability.

According to Brealey and Myers (2003), the choice of capital structure is essentially a marketing problem. The irrelevance theory of (Modigliani & Miller, 1958) gave boost to the theoretical frame work as they presented the theory of irrelevance, where they argued that capital structure is unrelated to firm's value. They (Modigliani & Miller, 1963) said that the company's market value is positively related to the volume of long-term debt the company utilises in its capital structure. On the contrary, (Brander & Lewis, 1986) and (Maksimovic,

1988) observed that the aim of companies is to increase shareholder wealth and demonstrate that by influencing the company's competitive behaviour and strategies the market structure impacts capital structure (Brander & Lewis, 1986; Maksimovic, 1988).

The analysis of relation between capital structure and profitability was subject of discussion over the past few decades. As stated by Booth et al. (2001), capital structure is economic development function that mainly includes capital market development, economic growth and inflation rate, etc (Booth, et al., 2001). However, empirical evidence has shown that capital structure was first empirically analysed using the panel data of markets in developed countries such as USA, the UK and other markets in developed countries. For example, Titman and Wessels, (1988) and Friend and Lang, (1988) use data from U.S companies, whereas, Marsh (1982) and Bennett and Donnelly (1993) use data from UK firms. Rajan and Zingales (1995) used panel data from G7 countries. Furthermore, the empirical evidence shows that researchers started investigating capital structure and profitability of markets in emerging and developing countries at a later stage. For example, Huang and Song (2002) used panel data from China and Booth et al., (2001) used data from developing countries.

Empirical review of the literatures available have demonstrated that capital structure is related to the company's profitability, although some found the relationship to be significant and others found it to be insignificant. Majority of studies available show that by using the firm's profitability ratios such as return on asset (ROA) and return on equity (ROE) as a dependent variable and leverage ratios such as short-term debt to total asset (STD), long-term debt to total asset (LTD) and debt to asset (DA) as an independent variables, economists and researchers attempted to examine whether the relation of capital structure and the company's profitability is a positive or negative relationship. Generally, majority of these previous researches concluded that capital structure affects negatively on the profitability of firm. However, it should be noted that most empirical studies of firm's capital structure and profitability were carried out on industrial firms. Hence, it might be that there are other factors that impact the profitability of non-industrial firms such as service companies, which are not engaged in manufacturing (Gill, et al., 2011).

2.3.1 Positive Impact of Capital Structure on Profitability

Abor (2005) studied the relation of capital structure and profitability of listed companies on the Ghana Stock Exchange (GSE) during a five-year period (Abor, 2005). Using a panel regression model, he related capital structure with profitability and the results indicate a positive and

significant relationship between short-term debt to total assets ratio and return on equity (ROE) (Abor, 2005). Nevertheless, the results demonstrated that the relationship between the long-term debt to total assets ratio and ROE was negative. As for the relation between return rates and total debt, the outcome showed the total debt to total assets ratio and return on equity have a positive relationship which is significant (Abor, 2005). Abor's findings conclude that profitable firms rely on extreme debt as their principal option of financing. Hence, we can say that increased short-term debt is correlated with increased profitability for Ghanaian listed companies, and vice versa. The findings also mean that for listed Ghanaian firms' short-term debt is relatively cheap and thus its use is correlated with increased profitability. However, it is worth noting that higher debt levels increase the probability of bankruptcy costs, since too much debt increases the risk that the company may not be able to produce revenues that are sufficient to pay back interest and loans.

Seeking to extend Abor's (2005) findings regarding the effects of capital structure on profitability, Gill, et al, (2011) had examined the impact of capital structure on profitability in US manufacturing and service companies. Their study included a sample of 272 US companies listed on the New York Stock Exchange (NYSE) for a three years period from 2005 – 2007 (Gill, et al., 2011). Hence, by using correlations and regression analysis their research found that short-term debt to total assets (STD) has a positive relationship with profitability (ROE) and total debt to total assets (DA) has a positive relation with profitability (REO), which confirms Abor's (2005) findings of short-term debt to total asset. However, in contrast to Abor's (2005) findings Gill, et al, (2011) finds that there is a positive relationship between long-term debt to total assets (LTD) and profitability (ROE) (Gill, et al., 2011). Similar to the findings of Abor's (2005), the findings of Gill, et al, (2011) concludes that firms rely on extreme debt as their main financing options. However, relying on debt is a risky strategy for businesses, because if the debt of the firm is too high it is more likely to have a capital structure which is very hostile, leading to higher risks to investors and firm itself, such as lower interest or in the worst case scenario even bankruptcy (Vuong, et al., 2017).

Yegon et al., (2014) empirically studied the relation between capital structure and Kenya's banking industry profitability, by using a panel data derived from the financial statements of listed companies on the Nairobi Stock Exchange for a nine-year period from 2004 to 2012. Using ROE as a profitability measure the study found that there is a positive relationship between the short-term debt and profitability which is statistically significant and a negative relationship between long term debt and profitability, which is statistically significant, whereas,

total debt as a whole was found to be unrelated to the performance of the firm (Yegon, et al., 2014).

In another study, to determine the relationship between profitability and leverage, Amjed (2011) investigated Pakistan's listed textile firms. Data was obtained from financial statements of 100 listed textile companies listed on Pakistan's Karachi Stock Exchange from 1999 to 2004. The profitability measures used by the study was ROE, and the leverage ratios used were short-term debt to total assets, long-term debt to total assets and total debt to total assets (Amjed, 2011). The findings of the study demonstrated that the ratio of short-term debt had a significant and positive correlation with ROE, which meant that the use of more short-term debt could increase profits. However, the ratio of long-term debt was significant with opposite effects; whereas, Long-term debt increased costs, indicating that the higher the long-term debt, the lower the profitability. Moreover, the study did not find any significant relationship between the ratio of total debt to total assets and ROE (Amjed, 2011).

Nikoo (2015) examined capital structure's impact on performance in the banking sector in the stock exchange Tehran. The study was conducted using financial statements of Iranian banks for the period 2009-2014. To the effect of capital structure on the bank efficiency the study used profitability measure such as return on assets (ROA), return on equity (ROE) and earnings per share. The research results demonstrated that capital structure (debt to equity ratio) has positive impact on bank performance. The impact was significantly positive (Nikoo, 20145).

Others such as (Petersen & Rajan, 1994; Taub, 1975) have all found that capital structure has a positive relationship on profitability or financial performance of the firm.

These studies prove the fact that the decision of capital structure is important for any business organization. The decision is important because businesses need to maximise returns for their investment, and also due to the impact such a decision has on the ability of the firm to deal with the competition on the market it operates.

2.3.2 Negative impact of Capital Structure on Profitability

Generally, majority of the empirical studies conducted with regards to the relationship between capital structure and profitability show that there is a negative relationship between capital structure and profitability. For instance, Saeedi and Mahmoodi (2011) examined capital structure's impact on firm performance by using a panel data sample of 320 listed companies on Tehran Stock Exchange (TSE) over the period of 2002 - 2009. Using ROA, ROE, EPS and Tobin's Q as dependent variables and three capital structure measures STD, LTD and TD as an

independent variable, the results revealed that there is a negative relationship between capital structure and ROA. Moreover, there is no significant relationship between ROE and capital structure. Although, the results indicated that firm performance, when measured by EPS and Tobin's Q has a positive and significant association with capital structure (Saeedi & Mahmoodi, 2011). These findings indicate that different measures of performance can be affected by financial leverage in different ways. Hence, it is important to use different measure of performance when trying to learn how capital structure affects profitability.

Nguyen and Nguyen (2015) also used panel data collected from 147 listed companies on Ho Chi Minh City Stock Exchange (HOSE) during the period of 2006 to 2014. Using the data from selected firms they examined what impact capital structure has on firms' performance. By using ROA, ROE and Tobin's Q as indicators for financial performance, they reported a negative influence between performance and capital structure (Nguyen & Nguyen, 2015). Nevertheless, it is important to note that in this study the effect of either the long-term or short-term debt ratio on firm performance did not differ.

Similarly, Zeitun and Tian (2007) used a panel data sample representing 167 Jordanian companies during 1989 to 2003 to investigate the effect that capital structure had on corporate performance. The study used ROA, ROE and Tobin's Q to evaluate the performance of the firms. The results showed that all the capital structure variables such as STD, LTD and total debt had a significantly negative impact on the firm's performance, except that STD has a positive relationship with Tobin's Q (Zeitun & Tian, 2007).

Another important contribution was made by Ebaid (2009), who conducted a study to examine the effect of capital structure option on the company performance in Egypt. In his study, ROA, ROE and gross profit margin were used as performance measure. Whereas, Capital structure ratios used were short-term debt to asset ratio, long-term debt to asset ratio, and total debt to total assets (Ebaid, 2009). The study results revealed that when financial performance was measured by ROA, there is a negatively significant influence of short-term debt STD and total debt, but no significant relationship was found between long-term debt and ROA. Secondly, the study finds that there is no significant influence of debt (STD, LTD, and TD) on financial performance measured by both of ROE and GM. Hence, these results of the study revealed that capital structure has little to no impact on the company's performance (Ebaid, 2009).

By investigating capital structure's effect on the profitability of the Amman Stock Exchange listed industrial companies during the six-year period 2004 to 2009, Shubita & Alsawalhah

(2012) sought to extend Abor's (2005), and Gill, et al., (2011) findings regarding the effect of capital structure on profitability. Their study consisted of a sample of 39 companies and they applied correlations and multiple regression analysis and measured performance by using ROE. The results demonstrated that there is negative relation between debt and profitability (ROE) which is significant. These findings suggest that a rise in debt level is correlated with a decrease in profitability; thus, the higher the debt, the lower the company's profitability (Shubita & Alsawalhah, 2012). Their study is consistent with Abor's (2005) finding, which stated that long-term debt to total asset is negatively correlated with ROE.

In another empirical study, Soumadi and Hayajneh (2012) investigated capital structure's impact on the performance of the Jordanian public companies that are listed in Amman Stock Exchange. Using a model of multiple regression represented by ordinary least squares (OLS) as a method to examine capital structure's impact on the performance by applying on 76 firms (53 industrial firms and 23 service corporations) for the period of 2001-2006, the outcome demonstrated that capital structure is negatively related with the company performance (Soumadi & Hayajneh, 2012).

Another important contribution was made by Mohammadzadeha et al. (2013) who in their study examined the association between capital structure and the profitability of Iranian pharmaceutical companies. The study used a sample data from top thirty Iranian pharmaceutical companies for the period of 2001-2010. The profitability measures used in this study were, the net margin profit and debt to asset ratio and capital structure, respectively. Whereas, sales growth was used as a control variable. Results demonstrated that capital structure and profitability have significantly negative relationship which indicates that internal financing has led to more profitability for the pharmaceutical companies and that they established a Pecking Order Theory (Mohammadzadeha, et al., 2013).

Several studies show that capital structure is statistically not a major determinant of profitability. However, they argue that it is inevitable for managers to consider the level of debt they use as it might have a negative impact on their performance. For instance, using a sample of Jordanian manufacturing firms in Jordan Al-Taani (2013), empirically examined capital structure's effect on company performance across different industries. His study used financial statements of 45 Amman Stock Exchange listed manufacturing firms for a five years period from 2005 to 2009. Additionally, it applied multiple regression analysis on performance measure variables ROA and Profit Margin (PM). Whereas, capital structure variables used

were STD, LTD Total debt to Equity (TDE). The study results demonstrate that there is a negative and insignificant relationship between STD, LTD, and ROA and PM is a negative and insignificant; while TDE is positively related with ROA and negatively related with PM. STD relationship is significant using ROA while LTD is significant using PM. Hence, the study concludes that capital structure is not statistically a major determinant of firm performance (Al-Taani, 2013).

Similarly, Sivalingam & Kengatharan (2018) more recently studied the relation between capital structure and performance of ten in Sri Lankan commercial banks. ROA and ROE were used as performance measures. The leverage ratios were represented by the ratios of short-term debt, long-term debt and total debt to total assets. The analysis used Fixed Effect Model and Random Effect Model. The outcomes two models presented that the ratio of total debt to total assets were negatively and closely related to ROA and ROE of in Sri Lankan commercial banks, and the ratios of short-term and long-term debt to total assets are not statistically significant related to ROA and ROE. The deposit growth was significant statistically and positively related to ROA and ROE. Bank size did not have a statistically significant relationship with ROA, ROE (Sivalingam & Kengatharan, 2018). However, the results of this study are mixed in terms of significance, since some capital structure variables such as LTD, STD are not significant with relation to profitability, whereas, total debt is significant.

In summary, these empirical studies evidently show that, the majority of literatures available find a negative impact of capital structure on profitability but at the same time they find it that it is crucial for the management to consider the level of debt they use. Yet, although it is mostly agreed that capital structure plays a role in the financing decisions of a firm's investments and there are numerous theories that explain the capital structure of companies there is no universally agreed and concrete theory of debt to equity choice and as to whether the relation between capital structure and profitability is positive or negative.

2.3.3 Capital Structure's Impact on the Profitability of Firms in the United Kingdom

Considering the contradicting findings of capital structure's impact on profitability in different industries and countries around the globe, it is interesting to see the studies done in the United Kingdom with regards to capital structure and its impact on profitability.

There are limited studies done on capital structure's impact on profitability in the listed companies of United Kingdom or British firms in general. Nevertheless, the most notable and extensive research on capital structure's impact on the profitability of companies in the United

Kingdom was done by Vuong, et al., (2017) who had empirically examined the capital structure's impact on financial performance of firms in the United Kingdom (UK). Their study is conducted by using the data of 739 large and very large companies in the United Kingdom, which were listed on London Stock Exchange between the years of 2006 to 2015. The dependent variables used by their study were performance measures, including ROE, ROA, EPS and Tobin's Q. The outcome of the study demonstrated that in most of the sectors studied long-term liabilities have negative relationship with firms' financial performance, which was measured by ROA, ROE and Tobin's Q, whereas these variables have no significant impact on short-term debts. The performance on other hand, when measured by EPS has no relationship with firm's leverage (Vuong, et al., 2017). This indicates that using different measures of performance to test the impact of capital structure can produce different results irrespective of the country, as similar impact was found by Saeedi and Mahmoodi (2011), who demonstrated that using different performance measures had different effects on financial leverage, although their study was based on Iranian firms.

In another study, Abeywardhana (2015) examined the relationship between capital structure and the profitability of nonfinancial SMEs in the UK for the period of 1998-2008. The study used Two Stage Least Squares, (2SLS) model and the results demonstrated that capital structure has a significantly negative effect on profitability of SMEs in the UK. In this study, firm size was found to be a key factor in determining United Kingdom's SMEs profitability, particularly profitability was negatively impacted by long-term debt to total assets, which indicates that SMEs in the UK are not in favour of using more equity because of the fear that they might lose control (Abeywardhana, 2015).

Overall, we can conclude from these studies conducted in the UK that capital structure has a negative impact on the profitability of companies in the United Kingdom and that using different profitability measures might produce different impacts which could be totally the opposite.

Hence, a research is necessary about the relation between capital structure and profitability of British telecommunications companies as there are contradictions among the existing findings of whether capital structure has a significant, insignificant, positive or negative relationship with profitability. Thus, this study will attempt to examine the relationship between capital structure and profitability of British communications companies listed in the London Stock Exchange.

Chapter 3: Research Methodology

3.1 Introduction

The purpose of this research is to find out the relation between capital structure and profitability. Hence, to achieve the objective of this research, a total of five major British telecommunications companies listed on the London Stock Exchange for a period of six years 2013-2018 will be studied. This chapter seeks to explain the procedures that have been undertaken to achieve the objective of the research and to produce the final result, such as the firms and variables included in the research, the distribution patterns of the data and the applied statistical techniques in studying the relationship between capital structure and profitability.

3.2 Research Design

According to Creswell (2018) quantitative, qualitative and mixed methods approach are three types of research approaches to business and social research. Although, there are strengths and limitations to each approach, Creswell (2018) argues that specific approaches are more appropriate for certain types of research problems (Creswell & Creswell, 2018). Hence, taking the nature of the research problem, the audience and the personal experience of the researcher into account is vital while selecting a research approach.

For this study, the appropriate approach was found to be quantitative, after taking into consideration the research problem and objective along with the philosophy of the different research approaches and the quantitative nature of the data collected. Therefore, to meet the objectives of this study, research design adopted was explanatory and used a secondary quantitative research approach to examine the stated objective.

3.3 Source of Data and Collection Methods

Considering the research design, and in order to achieve the aims of this study, this research utilises secondary data from the audited and published financial statements of five British telecommunications companies listed in the London Stock Exchange.

According to Adams, et al., (2014), “secondary data have its own advantages. Compared to primary data, secondary data gives higher quality data”, because it contains a large representative sample which is well beyond the resources that are available to an individual researcher, in addition it also has a good feasibility for examining longitudinal data and looking for trends (Adams, et al., 2014). Secondary data, therefore, generally provides a source of data that is both permanent and available in a way that is fairly easy to verify by others and improves the data reliability, thereby ensuring the quality of data.

Consequently, the data for the selected firm's capital structure variable and profitability measurement variables was extracted from the annual financial statements of the selected companies. Moreover, in order to avoid the risk of data quality distortion, the data were obtained from the audited financial statements in particular the income statement and balance sheet. The study included six British telecommunications companies listed in the London Stock Exchange for period of six years 2013 – 2018. Accordingly, this study used panel data of telecommunications companies listed in the London Stock Exchange for 6 years 2013 – 2018.

3.3.1 Panel Data

For this research, a panel data of six British telecommunications companies for a six-year period 2013 to 2018 was used. According to Hsiao (2014) “a panel has the benefit of providing more detailed data, as it contains both the cross-sectional information, which captures individual variability, and the time-series information, that captures dynamic natures of the data” (Hsiao, 2014).

Therefore, to achieve the study's goals, this study used panel data procedures to estimate capital structure's effect of on company profitability. Baltagi (2005) states that “Panel data procedures are considered to be much better than other methods as they incorporate the cross sectional and time series nature of data sets, which enlarges the sample size and advances inferences” (Baltagi, 2005). For various reasons, panel data is is considered to be better than single time series. For instance, Baltagi (2005) states that “panel data helps to control an individual heterogeneity (unobserved firm specific effects), unlike time-series or cross-sectional which helps to reduce bias in the results” (Baltagi, 2005). Also “the possibility of the estimation within estimator allows explanatory variables (Capital structure ratios) to related to individual firm effects. Hence, the within estimator is the best linear unbiased estimator” (Baltagi, 2005).

Panel data has the advantage of providing more informative data, since it consists of both the cross-sectional information, which captures individual variability, and the time-series information, capturing dynamic characteristics of the data, thereby, ensuring greater variability, greater degrees of freedom, better efficiency, and less collinearity between variables (Hsiao, 2014).

To accomplish the research objectives, a balance panel data is used to study the impact of capital structure on firm's profitability. This has been chosen because in balanced panel data the same time periods are available for all cross-section units.

3.4 Sampling Design

The population of the study consists of five British telecommunications companies listed in the London Stock Exchange. For this study, the companies selected were those with complete data sets for a minimum of six consecutive years. Therefore, the study has a minimum reference period of six years, which is the period of 2013 to 2018. The study uses balance sheets, income statements, and calculated financial ratios of the companies in the sample to evaluate the effect of capital structure on the profitability of those companies.

3.5 Data Analysis Method

To accomplish the aims the study, panel data of five British telecommunications companies for six years 2013 - 2018 was used. This was chosen because according to Hsiao (2014) “panel data has the advantage of giving more informative data as it consists of both the cross-sectional information, which captures individual variability, and the time-series information, that captures dynamic natures of the data, thus, ensuring more variability, more degrees of freedom, more efficiency, and less collinearity among variables” (Hsiao, 2014).

The collected panel data will be analysed using the descriptive statistics and multiple regressions. In the analysis of the descriptive statistics, the mean, standard deviation, maximum and minimum values were used to analyse the trends of the data.

3.6 Regression Analysis

Regression analysis is a conceptually a straightforward method for examining functional relationships between variables. It is one of the statistical tools most widely used as it provides simple methods for establishing a functional relationship between variables (Yan & Su., 2009).

According to Yan & Su (2009), “Regression analysis is the method of discovering the relationship between one or more response variables (also called dependent variables, explained variables, predicted variables, or regressands, usually denoted by y) and the predictors (also called independent variables, explanatory variables, control variables, or regressors, usually denoted by $X_1, X_2 \dots X_p$)” (Yan & Su., 2009). Linear regression requires that model is linear in regression parameters (Yan & Su., 2009).

There are three types of regression. The first is the simple linear regression. The simple linear regression is for modelling the linear relationship between two variables. One of them is the dependent variable y and another is the independent variable x (Yan & Su., 2009). The second

form of regression is the multiple linear regression which is a linear regression model with one dependent variable and more than one independent variables (Yan & Su., 2009).

The multiple linear regression assumes that the response variable is a linear function of the model parameters and there are more than one independent variables in the model (Yan & Su., 2009). The simplest multiple linear regression model for two or more variables is as follows:

$$Y = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \epsilon_{it} \quad (1)$$

Where y is dependent variable, $\beta_0, \beta_1, \beta_2$ and β_3 regression coefficients, and X_1, X_2 and X_3 are independent variables in the model and ϵ is an error term.

Yan & Su (2009) states that “Simple linear regression is to investigate the linear relationship between one dependent variable and one independent variable, while the multiple linear regression focuses on the linear relationship between one dependent variable and more than one independent variables” (Yan & Su., 2009). “The multiple linear regression involves more issues than the simple linear regression such as collinearity, variance inflation, graphical display of regression diagnosis, and detection of regression outlier and influential observation (Yan & Su., 2009). The third type of regression is nonlinear regression, which assumes that the relationship between dependent variable and independent variables is not linear in regression parameters” (Yan & Su., 2009).

For this research there is at least one dependent variable and several independent variables, hence, multiple linear regression analysis is the appropriate type of regression analysis that was used.

3.6.1 Multiple Linear Regression Analysis

According to Yan & Su (2009) the general purpose of multiple linear regression is to seek for the linear relationship between a dependent variable and several independent variables (Yan & Su., 2009). Multiple regression allows researchers to examine the effect of more than one independent variables on response at the same time (Yan & Su., 2009). In this research we will be examining the relationship between dependent variable i.e. profitability ratio and several independent variables i.e. leverage ratios.

Estimator

Ordinary Least Squares (OLS)

Wooldridge (2016) states that “Ordinary Least Squares (OLS) method is popularly used to estimate the parameter of a Multiple linear regression model (Wooldridge, 2016). OLS estimators minimise the sum of the squared errors (a difference between observed values and predicted values)” (Wooldridge, 2016). While OLS is computationally feasible and an unbiased estimator that can be easily used.

Assumption

Multicollinearity (or perfect collinearity).

According to Stock & Watson (2015), in simple linear regression model, there is only one independent variable and hence, by default, this assumption will hold true. However, in the case of multiple linear regression models, there are more than one independent variable (Stock & Watson, 2015). The OLS assumption of no multi-collinearity says that there should be no linear relationship between the independent variables. Multicollinearity occurs when the independent variables are too highly correlated with each other (Stock & Watson, 2015).

Multicollinearity test

A commonly used indicator for multicollinearity is Variance Inflation Factor (VIF). It is computed as the coefficient of determination or R^2 in the linear model (Wooldridge, 2016). According Wooldridge (2016), “the variance inflation factor of the linear regression is defined as $VIF = 1/(1 - R^2)$. With $VIF > 5$ there is an indication that multicollinearity may be present; with $VIF > 10$ there is certainly multicollinearity among the variables” (Wooldridge, 2016)

3.7 Variable Description

In this research, profitability is used as dependent variable which is calculated as the ratios of return on assets and return on equity. This was similarly used by Abor (2005) and Gill, et al (2011) in previous studies. It is a broad indicator of firm’s performance because it provides information as to how well a company is using their resources of funds to produce profits.

3.7.1 Dependent Variable

Although previous studies show that there are different methods that can be used to measure profitability, in this particular study the used profitability ratios are return on asset (ROA) and return on equity (ROE) which are used as determinants of the profitability of the studied firms.

Return on assets (ROA) is a measure of profit per pound of assets. It was used by Saeedi and Mahmoodi (2011), Vuong, et al., (2017) and Nguyen and Nguyen (2015) to study the relationship between profitability and capital structure. It is calculated as follows:

$$\text{Return on Asset (ROA)} = \frac{\text{Net Income}}{\text{Total Assets}}$$

Return on equity (ROE) is a measure of how the stockholders fared during the year. It was similarly used by Abor (2005), Gill, et al (2011) and Shubita & Alsawalhah (2012) in previous studies. It is measured as follows:

$$\text{Return on Equity (ROE)} = \frac{\text{Net Income}}{\text{Total Equity}}$$

3.7.2 Independent Variable

The independent variables used by this study includes total debt to total assets, short-term debt to total assets and long-term debt to total assets. As shown by previous studies, the mentioned ratios used as an independent variable can present different results of either positive or negative link between profitability and capital structure. This is evident from Abor's (2005) findings which reveal that there is a significantly positive relation between the ratio of short-term debt to total assets and total debt to total assets, whereas, the results found a negative relationship between the ratio of long-term debt to total assets. Therefore, it is important to measure these independent variables to see impact of capital structure on profitability and to reach a conclusive result.

Previous studies had used similar variables. For example (Abor, 2005; Gill, et al., 2011; Yegon, et al., 2014) had all used ROE as a profitability measure and STD, LTD and DA as a leverage ratios; others such as (Sivalingam & Kengatharan, 2018) had used ROA and ROE as a profitability measure and STD, LTD and DA as a leverage ratios. These variables are defined and measured as follows:

1. Debt to Asset ratio: It indicates the proportion of the company's assets that are being financed with debt, rather than equity. It is calculated as follows:

$$\text{Debt to Asset ratio (DA)} = \frac{\text{Total debt}}{\text{Total Assets}}$$

2. Short-term debt ratio: It represents the share of the company's assets that are financed by debt which is due to be paid back within one year. It is calculated as follows:

$$\text{Short-term debt ratio (STD)} = \frac{\text{Short-term debt}}{\text{Total Assets}}$$

3. Long-term debt ratio: It measures the portion of the company's total assets which is financed from long term debt which must be paid back more than a year. It is calculated as follows:

$$\text{Long-term debt ratio (LTD)} = \frac{\text{Long-term debt}}{\text{Total Assets}}$$

3.7.3 Control Variables

Previous studies suggest that growth and firm size have mostly been used as key control variables, since these are variables which may also impact the profitability of companies. For instance, Frank and Goyal (2003) argued that large companies usually benefit from economies of scale which can also influence the results and statistical inferences (Frank & Goyal, 2003).

Size of the firm and Sales Growth were found to have a positive impact on ROE (Abor, 2005). Similarly, Campello (2006) found a positive impact of Sales Growth as well on firm's performance (Campello, 2006). Additionally, Abeywardhana (2015) found that firm size was a key factor in determining United Kingdom's SMEs profitability (Abeywardhana, 2015).

Various empirical findings argue that there is a significantly positive relationship between debt and firm size such (Bennett & Donnelly, 1993; Gatchev, et al., 2009; Abor, 2005). The findings of other researchers such as (Vuong, et al., 2017; Chakraborty, 2010) also indicate that firm size might have influence in the profitability of firms since smaller firms have fewer favourable capability compared to larger ones.

With regards to growth, Michaelas et al. (1999) argues that there is a positive correlation between level of debt and future growth especially with short term debt (Michaelas, et al., 1999). This was supported by the findings of (Jordan, et al., 1998). In addition, Campello (2006) finds that there is a positive impact of sales growth on firm's performance (Campello, 2006). Therefore, this study includes size and growth as two control variables to achieve the objective of this study.

Firm size and growth rate of sales have been calculated as follows:

Firm size: It is measured as the Natural Logarithm of sales: $NLog(Sales_{it})$

Growth of Sales: It is measures by: $\frac{\text{sales}_t - \text{sales}_{t-1}}{\text{sales}_{t-1}}$

3.8 Conceptualisation

The following is the conceptual model formulated to answer the research question in this study.

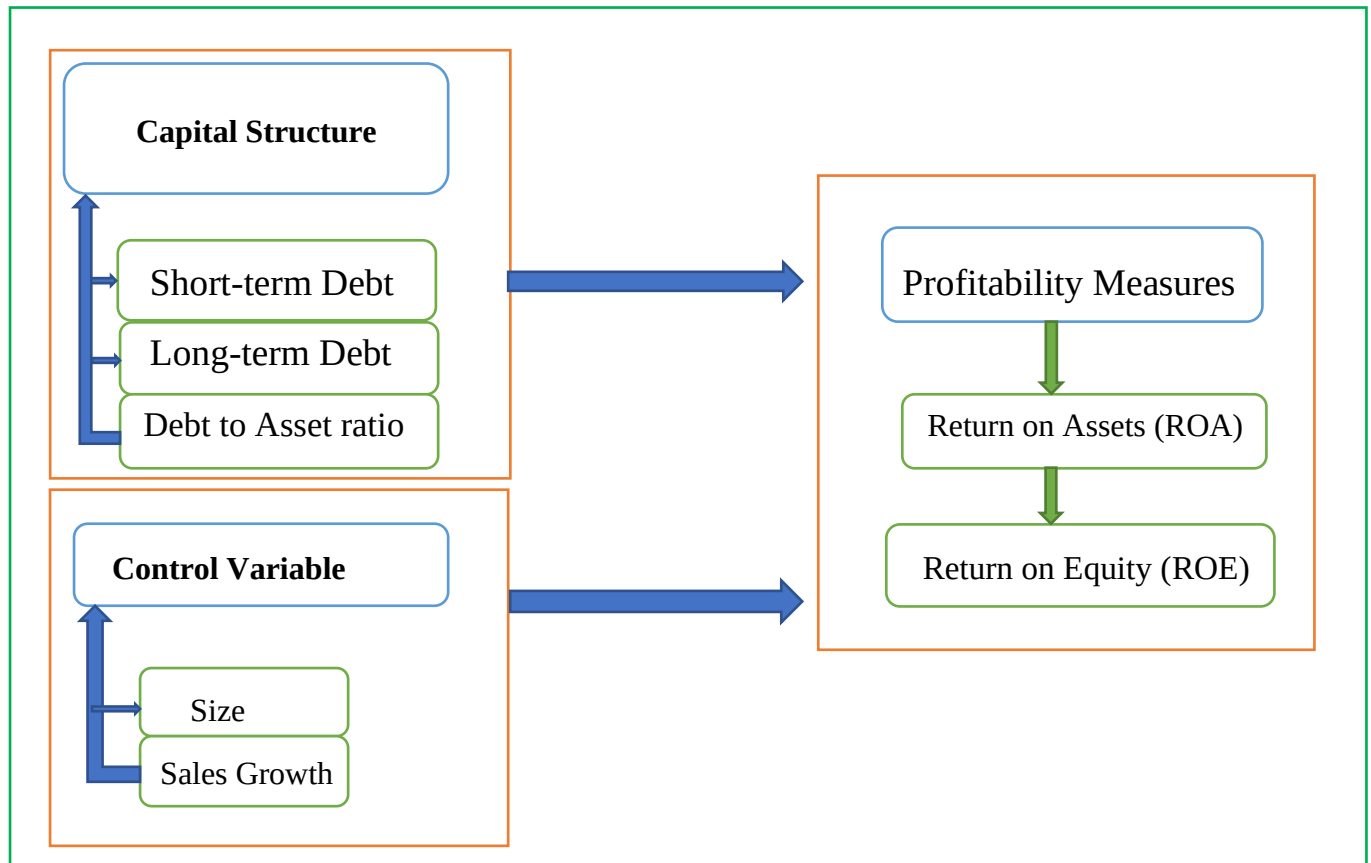


Figure 1: Conceptual Model

3.9 Research Hypothesis Development

This study aims to examine the relationship between capital structure and profitability. The literature reviewed in the earlier chapter of this study has shown us that there are contradictions among the existing findings of whether capital structure has a significant, insignificant, positive or negative relationship with profitability. Hence, the following overall null hypothesis and alternative hypothesis can be proposed:

H₀: Capital structure has no significant impact on profitability

H_A: Capital Structure has a significant impact on profitability

3.9.1 Short-term Debt and Profitability Hypothesis

The outcome of the previous empirical studies between short-term debt and profitability did not agree on whether there is a negative or positive relationship between short-term debt and profitability. This is evident from the findings of (Abor, 2005; Gill, et al., 2011; Yegon, et al., 2014) which reports a positive and significant relationship between short-term debt and profitability; (Al-Taani, 2013) reports that short-term debt has a negative but insignificant relationship with profitability, whereas, (Zeitun & Tian, 2007) finds that short-term debt has a significantly negative relationship with profitability. Hence, based on these contradicting findings, the following first hypothesis can be proposed:

H₀ (1): There is no significant relationship between short-term debt to total assets and profitability measured by ROA & ROE

H₁ (1): There is significant relationship between short-term debt to total assets and profitability measured by ROA & ROE

3.9.2 Long-term Debt and Profitability Hypothesis

The pecking order theory argues that more profitable firms generally prefer to use internal funds to debt. thus, there is a negative relationship between leverage and profitability (Myers & Majluf, 1984). However, agency cost theory argues that leverage will minimise agency cost, hence, there is a positive relationship between leverage and profitability (Jensen & Meckling, 1976). On the other hand, the empirical findings demonstrate a conflicting finding as well between long-term liability and profitability. (Abor, 2005; Yegon, et al., 2014; Zeitun & Tian, 2007) all find that LTD has a significant and negative impact on profitability; (Al-Taani, 2013) also finds a negative relationship but insignificant; whereas, (Gill, et al., 2011) find a positive impact. Therefore, these contradicting findings led us to the following second hypothesis:

H₀ (2): There is no significant relationship between long-term debt to total assets and profitability measured by ROA & ROE

H₁ (2): There is significant relationship between long-term debt to total assets and profitability measured by ROA & ROE

3.9.3 Total Debt and Profitability Hypothesis

Previous empirical studies could not agree on whether total debt has a positive or negative relationship with profitability measured by ROA and ROE. For instance, (Yegon, et al., 2014)

found no significant relationship between debt ratio and profitability; (Gill, et al., 2011) finds that debt to total asset has a positive relationship with profitability; whereas, (Abor, 2005; Zeitun & Tian, 2007) find that debt to total asset has a negative relationship with profitability. Thus, based on these conflicting findings the following third hypothesis can be proposed to achieve the aim of this study.

H₀ (3): There is no significant relationship between debt to total asset and firm's profitability measured by ROA & ROE

H₁ (3): There is significant relationship between debt to total asset and firm's profitability measured by ROA & ROE

3.10 Model Specification

To accomplish the research objectives and understand the relationship between capital structure and profitability, this study had used a multiple regression analysis on cross-sectional time-series data, specifically a balanced panel data. Balanced panel data is used to study the impact of capital structure on firm's profitability because in balanced panel data the same time periods are available for all cross-section units, hence, it has been chosen as this study will be observing all the selected companies for the same six time periods, which is 6 years (2014-2019). Hence, this study has adopted similar regression model used by Abor (2005) and Sivalingam & Kengatharan (2018) in their studies on the relationship between capital structure and profitability. The regression model representing the dependent and independent variables is as follows:

$$ROA_{i,t} = \beta_0 + \beta_1 STD_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 SG_{i,t} + \epsilon_{i,t} \quad (1)$$

$$ROA_{i,t} = \beta_0 + \beta_1 LTD_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 SG_{i,t} + \epsilon_{i,t} \quad (2)$$

$$ROA_{i,t} = \beta_0 + \beta_1 DA_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 SG_{i,t} + \epsilon_{i,t} \quad (3)$$

$$ROE_{i,t} = \beta_0 + \beta_1 STD_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 SG_{i,t} + \epsilon_{i,t} \quad (4)$$

$$ROE_{i,t} = \beta_0 + \beta_1 LTD_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 SG_{i,t} + \epsilon_{i,t} \quad (5)$$

$$ROE_{i,t} = \beta_0 + \beta_1 DA_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 SG_{i,t} + \epsilon_{i,t} \quad (6)$$

Where:

β_0 is constant of the regression equation

β_1 , β_2 and β_3 is coefficients of debt ratios, company size and sales growth

$ROA_{i,t}$ is net income divided by total assets for firm i in time t ;

$ROE_{i,t}$ is net income divided by total equity for firm i in time t ;

$STD_{i,t}$ represents short-term debt divided by total assets for firm i in time t ;

$LTD_{i,t}$ represents long-term debt by total asset for firm i in time t ;

$DA_{i,t}$ represents total debt divided by total assets for firm i in time t ;

$Size_{i,t}$ is the log of sales for firm i in time t ;

$SG_{i,t}$ is sales growth for firm i in time t ;

$\epsilon_{i,t}$ is the error term

Based on the above regression model ROA, ROE (profitability ratios) are dependent variables of the various equations. The independent variables or explanatory variables are STD, LTD and DA (capital structure ratios) and they are used in different regressions. Whereas, Size and Sales Growth are control variables.

Table 1: List of Variables used in this dissertation and their measurements		
Variable	Proxy Variable	Measurement
Independent Variable	Debt to Asset ratio (DA)	Total debt / Total Asset
	Short-term debt ratio (STD)	Short-term debt / Total Asset
	Long- term debt ratio (LTD)	Long-term debt / Total Asset
Control Variables	Size	Ln (Total Sales)
	Sales Growth	Sales(t) – Sales(t-1) / Sales(t-1)
Dependent Variables	Return on Asset ratio	Net income / Total Assets
	Return on Equity ratio	Net income / Total Equity

Chapter 4: Results and Discussion

4.1 Introduction

This chapter consists of the results and analysis of the findings and a discussion of results. The chapter is divided into four main sections. The first section presents a summary of the descriptive statistics of the dependent and independent variables used in this study. The second section of this chapter focuses on the regression results and includes the correlation matrix which examines if there is a correlation among variables. It will also examine if there is a multicollinearity problem. The third part of this chapter presents the findings and discussion of the results.

4.2 Descriptive Statistics

Table 2: Descriptive Statistics of Profitability and Capital Structure

	<i>ROA</i>	<i>ROE</i>	<i>DA</i>	<i>STD</i>	<i>LTD</i>	<i>SIZE</i>	<i>Sales Growth</i>
Mean	0.0631	-0.0495	0.2851	0.0437	0.2414	17.3969	0.1091
Standard Error	0.0141	0.2469	0.0202	0.0066	0.0205	0.3041	0.0356
Median	0.0605	0.1354	0.2935	0.0443	0.2320	17.4044	0.0368
Standard Deviation	0.0849	1.4811	0.1214	0.0396	0.1227	1.8247	0.2136
Kurtosis	18.3418	18.9721	0.4929	1.1717	0.2938	-0.2493	15.3266
Skewness	3.6217	-3.9029	-0.3216	0.9284	0.2616	-0.0140	3.4303
Minimum	-0.0600	-7.4351	0.0000	0.0000	0.0000	14.3181	-0.0729
Maximum	0.4877	2.6423	0.5573	0.1673	0.5573	20.4912	1.1393

Source: *Author's own computations. This table presents the summary statistics for the total data sample for the period 2013-2018.*

Table 2 summarises the descriptive statistics of the independent and dependent variables for six British telecommunications companies listed on the London Stock Exchange for the period of 2013 – 2018. The descriptive statistics of the variables are namely mean, median, maximum, minimum, and standard deviation etc. The profitability ratios measured by ROA and ROE, have an average of 0.0631 and -0.0495 and a median of 0.0605 and 0.1354 respectively (Table 2). This indicates that British telecommunications companies had a very poor return or

performance during the sample period of the study 2013 – 2018. This means that the sampled firms earned a return of 6.3% of total assets. Whereas the ROE reveals an average negative return (loss) of -4.95% of total equity. This reflects a poor performance and indicates that investors are losing, rather than gaining value. Generally, this means a very bad sign for managers and investors because investors avoid putting their capital into a business that fails to produce consistently positive returns. Moreover, it is also less likely to attract new investors, as investors normally expect a positive and higher returns on their equity. Nevertheless, the only explanation for the negative ROE over the period of the study is that some of the companies have negative equity.

The standard deviation of ROE is higher compared to the ROA. ROE has a volatility which equals to 148.11%, while ROA has a volatility of 0.0849, which means that ROE is more volatile than ROA. On the other hand, ROE is negatively skewed while ROA has a positive skewness. However, both ROE and ROA have a positive kurtosis which is 18.9721 and 18.3418 respectively, which means that they are leptokurtic as they are both more than one. Additionally, it further shows that this is a risky investment as the returns may be prone to extreme values on either side.

With regards to the independent variables, the three debt ratios namely DA, STD, LTD have a mean of 28.51%, 4.37%, 24.14% and a median of 29.35%, 4.43% and 23.20% respectively. This suggests that 28.51% of total assets in the British telecommunications companies is represented by debt, in which, 24.14% of total assets is a long-term debt and the short-term debt is merely 4.37% of total assets. This reveals that British telecommunications companies finance their businesses with more long-term debt as compared to short-term debt.

It is evident from the statistics that British telecommunications companies do not heavily depend on debt and thus, are not highly levered companies, which means that they are less risky for the investors. Moreover, it can be deduced from the result that these companies finance their businesses mainly with long term debt, which indicates that firms have the collateral required by financial institutions to access debt, thus possibly reflecting that they operate in a more efficient capital market where firms can access credit from a fairly developed financial institutions.

On the other hand, the independent variables used as control variables namely Size and Sales Growth, have a mean of 17.3969 and 0.1091 respectively. This means that the average firm size measured by logarithm of sales was 17.40 million. Whereas, the positive sales growth indicates that sales growth in the following year is 10.91% higher than that in the previous year.

4.3 Multicollinearity

Prior to running regression analysis, we have to see if our data is free from multicollinearity. According to Camm et al, (2019) Multicollinearity occurs when there is correlation between the independent variables in a regression model. This correlation is a problem because independent variables should be independent. Hence, there is a multicollinearity problem if the absolute value of the sample correlation coefficient exceeds 0.7 for any two independent variables (Camm, et al., 2019).

In this study there is no multicollinearity because of the fact that no two ratios were put in the same equation and hence, the ratios are calculated separately. Therefore, multicollinearity has been avoided.

Table 3: Correlation Matrix

	<i>ROA</i>	<i>ROE</i>	<i>DA</i>	<i>STD</i>	<i>LTD</i>	<i>SIZE</i>	<i>SG</i>
ROA	1						
ROE	0.0847	1					
DA	-0.3233	-0.2174	1				
STD	-0.0031	-0.1318	0.1287	1			
LTD	-0.3187	-0.1724	0.9473	-0.1958	1		
SIZE	0.1612	0.0747	-0.8077	-0.1354	-0.7550	1	
SG	-0.0133	0.1278	-0.1423	-0.2835	-0.0492	0.2460	1

Source: *Author's own computations*

As can be seen from table 3, the dependent variable ROA has a negative relation with all the independent variables (Debt to Asset ratio (DA), Short-term debt to total assets (STD), Long-term Debt to total assets (LTD), Sales Growth (SG)) except Size, which is positively related to ROA. Whereas, ROE has a negative correlation with the three independent leverage variables i.e. (DA, STD, LTD) and a positive correlation with Size and SG. As seen in table 3, leverage ratios i.e. (DA, STD, LTD) have a negative relation with the profits of the firm. This implies that firm's profitability will decrease as the leverage increases, and this may be due to increased financing costs. Hence, debt has negative influence on the performance of British telecommunications companies. This finding is consistent with the findings of Gleason et al.,

(2000), who studied the relationship between performance and leverage by using return on asset as a performance measure. Their findings concluded that leverage has a negative effect on company profitability.

4.4 Regression Result Analysis and Discussion

This study used regression analysis to investigate the relationship between capital structure and profitability. In this section, the Ordinary Least Square (OLS) results on the relationship between capital structure and profitability of the British telecommunications companies will be presented. Moreover, the relationship between each capital structure and profitability ratios will be discussed.

The relationship between Capital Structure and Return on Assets (ROA)

Relationship between ROA and STD and Impact on profitability

Table 4: OLS results – ROA – STD, Size and Sales Growth

ROA	Coefficients	Standard Error	P-value
Intercept	-0.0770	0.1474	0.6053
STD	0.0108	0.3899	0.9780
SIZE	0.0082	0.0084	0.3375
SG	-0.0219	0.0740	0.7695
R Square	0.0290		
F-test	0.8119		

Source: *Author's own computations*

In the first equation, the relationship between short-term debt to total assets (STD) and profitability measured by return on assets was studied, keeping size and sales growth as controlling variables.

$$\text{ROA} = -0.0770 + 0.0108 \text{ STD} + 0.0082 \text{ Size} + (-0.0219) \text{ SG}$$

Table 4 presents the OLS results of the panel data which indicates that R-square statistics value of 0.0290 implies that 2.9% of the variation in the model is explained by the variation in short term debt, Size and sales growth, while 97.1% was explained by other factors outside the model.

It can be observed in table 4, that the coefficients of short-term debt to total asset is 0.0108 with a P-value of $0.978 > 0.05$. This suggests that a unit increase in the short-term debt to total asset will result into 0.0108 unit increase in ROA of British telecommunications companies listed in London Stock Exchange. Additionally, the P-value which is greater 5% reveals that the relationship is statistically not significant. Hence, the null hypothesis that there is no significant relationship between short-term debt to total assets and firm's profitability (ROA) has been supported by this result and the alternative hypothesis is rejected at 5% level of significance. The finding is consistent with the findings of Vuong, et al., (2017) who found an insignificant positive relationship between short-term debt and ROA. However, these findings are contrary to the majority of previous findings such as (Ebaid, 2009; Zeitun & Tian, 2007) which find that STD has significant negative relationship with short-term debt to total assets.

Both size and sales growth have a p-value of 33.75% and 76.95% respectively which is greater than 5%, and thus, are insignificant in this model.

Relationship between ROA and LTD

Table 5: OLS results – ROA – LTD, Size and Sales Growth

ROA	Coefficients	Standard Error	P-value
Intercept	0.2933	0.2493	0.2480
LTD	-0.3192	0.1794	0.0848
SIZE	-0.0088	0.0124	0.4827
SG	0.0043	0.0698	0.9516
R Squared	0.1163		
F-test	0.2595		

Source: Author's own computations

In the second equation, the relationship between Long-term debt to total assets (LTD) and the financial performance measured by ROA was studied, keeping size and sales growth as controlling variables.

$$\text{ROA} = 0.2933 + (-0.3192) \text{ LTD} + (-0.0082) \text{ Size} + 0.0043 \text{ SG}$$

Table 5 presents the OLS results of the panel data which indicates that R-square statistics value of 0.1163 implies that 11.63% of the variation in the model is explained by the variation in

long term debt, Size and sales growth, while 88.37% was explained by other factors outside the model.

It can be observed in table 5, that the coefficients of long-term debt to total asset is -0.3192 with a P-value of $0.0848 > 0.05$. This suggests that a unit increase in the long-term debt to total asset will result into 0.3192 unit decrease in ROA of British telecommunications companies listed in London Stock Exchange. However, the P-value which is greater 5% reveals that the relationship is statistically not significant at 5% level. Hence, the null hypothesis that there is no significant relationship between long-term debt to total assets and firm's profitability (ROA) has been supported by this result and the alternative hypothesis is rejected at 5% level of significance. The finding is consistent with the findings of Al-Taani (2013), which found that long-term debt to total asset ratio has negative relationship with ROA, although the relationship is insignificant.

On the other hand, both size and sales growth were found to be insignificant in this model.as they have a p-value of 48.27% and 95.16% respectively which is greater than 5%.

Relationship between ROA and DA

Table 6: OLS results: ROA – DA, Size and Sales Growth

ROA	Coefficients	Standard Error	P-value
Intercept	0.3997	0.2777	0.1597
DA	-0.3859	0.1961	0.0578
SIZE	-0.0130	0.0133	0.3377
SG	-0.0092	0.0678	0.8925
R Square	0.1338		
F-test	0.1980		

Source: *Author's own computations*

In the third equation, the relationship between total debt to assets (DA) and the financial performance measured by return on assets was studied, keeping size and sales growth as controlling variables.

$$\text{ROA} = 0.3997 + (-0.3859) \text{ DA} + (-0.0130) \text{ Size} + (-0.0092) \text{ SG}$$

Table 6 presents the OLS results of the panel data which indicates that R-square statistics value of 0.1338 implies that 13.38% of the variation in the model is explained by the variation in

debt to total asset, Size and sales growth, while 86.62% was explained by other factors outside the model.

It can be seen in table 6, that the coefficients of debt to total asset is -0.3859 with a P-value of $0.0578 > 0.05$. This implies that a unit increase in the debt to total asset will result into 0.3859 unit decrease in ROA of British telecommunications companies listed in London Stock Exchange. However, with a P-value which is greater 5%, it is evident that the relationship is statistically not significant at 5% level. Hence, the null hypothesis that there is no significant relationship between total debt to total assets and firm's profitability (ROA) has been supported by this result and the alternative hypothesis is rejected at 5% level of significance. These findings are partially consistent with the findings of (Ebaid, 2009; Sivalingam & Kengatharan, 2018; Zeitun & Tian, 2007), who found that DA was negatively related to ROA, although they found the relationship to be significant.

On the other hand, both size and sales growth were found to be insignificant in this model.as they have a p-value of 33.77% and 89.25% respectively which is much higher than 5%.

Does Capital Structure (STD, LTD, DA) have a relationship with Profitability measured by ROA

Based on the OLS results in table 4, 5 and 6, it can be seen that capital structure of all the independent capital structure (STD, LTD, DA) variables have no significant relationship with profitability measured by ROA. In all the three independent variables, the null hypotheses that there is no significant relationship between capital structure (STD, LTD, DA) and profitability measured by ROA had been supported by the results. However, although the relationship is insignificant, STD has a positive relationship with profitability (ROA), whereas, LTD and DA have an insignificant and negative relationship with profitability (ROA). Hence, we can conclude that there is no statistically significant relationship between capital structure and profitability measured by ROA. These findings are consistent with the findings of Bokhari & Khan (2013). On the other hand, size and sales growth were also found to have no significant impact on profitability.

Implications

The study concludes that statistically, capital structure has no major impact on firm profitability. However, managers need to consider the proportion of debt they use in financing their projects. It is evident from the results that debt is not favourable to British

telecommunications companies as it generally has a negative impact on their return on assets. However, it is essential to note that the impact of debt on those companies largely depends on the type of debt they use. For instance, if they opt to use debt, using short-term debt will have a better advantage to the British telecommunications companies as it positively leads to slight increase in the return on assets as compared to using long-term debt which will dramatically reduce the return on assets for those companies. Therefore, British telecommunications companies should prioritise using internal funds, or if necessary short-term debt but should avoid long-term debt, since its more beneficial to those companies to use debt as a last resort. These findings support the pecking order theory which states that firms that are more profitable generally prefer to use internal funds to debt. thus, there is a negative relationship between leverage and profitability.

The relationship between Capital Structure and Return on Equity (ROE)

Relationship between ROE and STD

Table 7: OLS results – ROE – STD, Size and Sales Growth

<i>ROE</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>P-value</i>
Intercept	-0.5032	2.5742	0.8463
STD	-3.7797	6.8085	0.5827
SIZE	0.0317	0.1463	0.8300
SG	0.6208	1.2917	0.6341
R Square	0.02769		
F-test	0.82242		

Source: *Author's own computations*

In the fourth equation, the relationship between short-term debt to total assets and the financial performance measured by return on equity was studied, keeping size and SG as controlling variables.

$$\text{ROE} = -0.5032 + (-3.7797) \text{ STD} + 0.0317 \text{ Size} + (0.6208) \text{ SG}$$

Table 7 presents, the OLS results of the panel data which indicates that R-square has statistics value of 0.0276 which implies that 2.76% of the variation in the model is explained by the variation in short term debt, Size and sales growth, while 97.24% was explained by other factors outside the model.

It can be observed in table 7, that the coefficient of short-term debt to total asset is -3.7797 with a P-value of $0.5827 > 0.05$. This suggests that a unit increase in the short-term debt to total asset will result into 3.7797 unit decrease in ROE of British telecommunications companies listed in London Stock Exchange. However, the P-value which is greater 5% reveals that the relationship is statistically not significant at 5% level. Hence, the null hypothesis that there is no significant relationship between short-term debt to total assets and firm's profitability (ROE) has been supported by this result and the alternative hypothesis is rejected at 5% level of significance. The finding is consistent with the findings of Bokhari & Khan (2013), who found that STD has a negative impact on ROE, although the effect was insignificant. Nevertheless, the findings contradict with majority of previous findings, such as the findings of (Abor, 2005; Gill, et al., 2011; Yegon, et al., 2014) who found that a significant positive relationship exists between the short-term debt and profitability (ROE).

On the other hand, both size and sales growth were found to be insignificant in this model.as they have a p-value of 83% and 63.41% respectively which is greater than 5%.

Relationship between ROE and LTD

Table 8: OLS results – ROE – LTD, Size and Sales Growth

ROE	Coefficients	Standard Error	P-value
Intercept	3.7016	4.4846	0.4153
LTD	-3.8789	3.2283	0.2384
SIZE	-0.1689	0.2238	0.4559
SG	1.1315	1.2550	0.3740
R Square	0.0607		
F-test	0.5652		

Source: *Author's own computations*

In the fifth equation, the relationship between Long-term debt to total asset and the financial performance measured by return on equity (ROE) was studied, keeping size and SG as controlling variables.

$$\text{ROE} = 3.7016 + (-3.8789) \text{LTD} + (-0.1689) \text{Size} + 1.1315 \text{SG}$$

Table 8 presents, the OLS results of the panel data which indicates that R-square has a statistics value of 0.0607, which implies that only 6.07% of the variation in the model is explained by

the variation in long-term debt to total asset, size and sales growth, while 93.93% was explained by other factors outside the model.

It can be observed in table 8, that the coefficient of long-term debt to total asset is -3.8789 with a P-value of $0.2384 > 0.05$. This implies that a unit increase in the long-term debt to total asset will result into 3.8789 unit decrease in ROE of British telecommunications companies listed in London Stock Exchange. However, with a P-value which is greater 5%, it is evident that the relationship is statistically not significant at 5% level. Hence, the null hypothesis that there is no significant relationship between long-term debt to total assets and firm's profitability (ROE) has been supported by this result and thus the alternative hypothesis is rejected at 5% level of significance. These findings are consistent with the findings of Bokhari & Khan (2013), who found that LTD has a negative impact on ROE, although the relationship was insignificant. The findings are also in line with the findings of (Abor, 2005; Shubita & Alsawalhah, 2012) although their findings have a significant relationship.

On the other hand, both size and sales growth were found to be insignificant in this model.as they have a p-value of 45% and 37% respectively which is much higher than 5%.

Relationship between ROE and DA

Table 9: OLS results – ROE – DA, Size and Sales Growth

<i>ROE</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>P-value</i>
Intercept	6.3614	4.9495	0.2079
DA	-5.7985	3.4960	0.1070
SIZE	-0.2798	0.2375	0.2474
SG	1.0053	1.2083	0.4116
R Square	0.09604		
F-test	0.35038		

Source: *Author's own computations*

In the sixth equation, the relationship between total debt to asset (DA) and the financial performance measured by return on equity (ROE) was studied, keeping size and SG as controlling variables.

$$\text{ROE} = 6.3614 + (-5.7985) \text{ DA} + (-0.2798) \text{ Size} + 1.0053 \text{ SG}$$

Table 9 presents, the OLS results of the panel data which indicates that the R-square statistics value of 0.0960 implies that 96% of the variation in the model is explained by the variation in debt to total asset, size and sales growth, while only 4% was explained by other factors outside the model.

It can be seen in table 9, that the coefficients of debt to total asset is -5.7985 with a P-value of 0.1070 > 0.05. This implies that a unit increase in the debt to total asset will result into 5.7985 unit decrease in ROE of British telecommunications companies listed in London Stock Exchange. However, with a P-value which is greater 5%, it is apparent that the relationship is statistically not significant at 5% level. Hence, the null hypothesis that there is no significant relationship between total debt to total assets and firm's profitability (ROE) has been supported by this result and the alternative hypothesis is rejected at 5% level of significance. These findings are partially consistent with the findings of Bokhari & Khan (2013), who similarly found that LTD has a negative impact on ROE, but the relationship was insignificant. Likewise, (Zeitun & Tian, 2007; Shubita & Alsawalhah, 2012) have all found LTD to have a negative impact on ROE, although impact was significant in their findings. In contrast, the findings of others such as (Abor, 2005; Gill, et al., 2011) showed a significantly positive association between the ratio of total debt to total assets and return on equity.

On the other hand, both size and sales growth were found to be insignificant in this model.as they have a p-value of 24% and 41% respectively which is much higher than 5%.

Does Capital Structure (STD, LTD, DA) have a relationship with Profitability measured by ROE

As can be seen at tables 7, 8 and 9, there is no significant relationship between capital structure (STD, LTD, DA) variables and profitability measured by ROE. In all the three independent variables, the null hypotheses that there is no significant relationship between capital structure (STD, LTD, DA) and profitability measured by ROE had been supported by the result and the alternative hypothesis had been rejected at a 5% significance level. However, although the relationship is insignificant, all the capital structure variables had negative relationship with profitability (ROE). Hence, we can conclude that there is a negative and statistically insignificant relationship between capital and profitability measured by ROE for the British telecommunications companies listed in the London Stock Exchange. The findings are consistent with the findings of Bokhari & Khan (2013). Additionally, size and sales growth were found to have no significant relationship with profitability.

Implications

The study concludes that statistically, capital structure has no major impact on firm profitability measured by ROE. It is evident from the results that it is inevitable for managers to consider their choice of financing, considering the fact that debt financing will have a negative impact on the return on equity of British telecommunications companies, it is also obvious that using equity financing is more favourable to those companies as compared to using debt financing. . The results of the study confirm the pecking order theory which states that firms that are more profitable will prefer to use internal funds such as retained earnings to debt and as such there is a negative relationship between leverage and profitability. This is consistent with the findings of this study, considering the fact that British telecommunications sector has been consistently growing and had seen improved profits and major expansions over the past couple of years, it is thus understandable that as a highly profitable companies, the British telecommunications companies will be able to generate more capital through retained earnings and as such have less leverage.

Chapter 5: Conclusion, Limitations and Recommendations

The first part of this chapter will consist of a conclusion of the research and regression results conducted in this study, while the second part will discuss about the limitations incurred during the study and then give recommendations for a further research.

5.1 Conclusion

This study aimed at empirically examining the relationship between capital structure measured by (short-term debt to total asset, long-term debt to total asset and debt to asset) and profitability measured by return on asset and return on equity by considering the panel data of six British telecommunications companies listed in the London Stock Exchange from 2014 to 2019.

On the basis of the research findings, it was documented that all the independent capital structure (STD, LTD, DA) variables have no significant relationship with profitability measured by ROA. In all the three independent variables, the null hypotheses that there is a significant relationship between capital structure (STD, LTD, DA) and profitability measured by ROA had been rejected at a 5% significance level. Hence, we can conclude that there is no statistically significant relationship between capital and profitability measured by ROA. Moreover, size and sales growth were also found to have no significant impact on profitability.

With regards to the relationship between capital structure measured by (STD, LTD, DA) and profitability measured by ROE, this study found that in all the three capital structure variables, the null hypotheses that there is a significant relationship between capital structure (STD, LTD, DA) and profitability measured by ROE had been rejected at a 5% significance level. Hence, we can conclude that there is a negative and statistically not significant relationship between capital and profitability measured by ROE for the British telecommunications companies listed in the London Stock Exchange. These findings are consistent with the pecking order theory, which argues that firms prefer internal financing to external debt. whereas, empirically the findings are consistent with the findings of Bokhari & Khan (2013). Additionally, size and sales growth were found to have no significant relationship with profitability.

Hence, overall this study has concluded that capital structure has a negative and insignificant relationship with profitability of British telecommunications companies listed in LSE, however, it is inevitable for companies to consider their choice of capital structure in order to avoid too much debt, as it negatively affects their profitability which could make the company unattractive to investors.

5.2 Limitations and Recommendations

The research was limited to the sample of six British telecommunications companies listed in the London Stock Exchange, for a period of six years only. Therefore, any future research should investigate a general of the findings beyond six companies. additionally, the analysis could be extended to consider longer periods and larger sample sizes.

Although it was insignificant, results revealed that debt is negatively correlated with profitability, i.e. when there is a debt increase in capital structure the company's profitability will decrease. Therefore, it is beneficial for companies to rather opt for or prefer internal financing or other sources of financing than debt financing.

It is also suggested that in the future studies use other profitability measures other than the rate of return on assets, return on equity, as it might show a different result.

The time period of this study includes the years 2014 - 2019 which includes a time when most telecommunications companies have spent huge amount of money on the development of 5G in order to compete in the market. This could have likely increased the cost incurred by the companies and thus, reduced profitability. Therefore, it can be argued that there is still room for improvement, and thus, future researchers should consider increasing span of study to make the results more reliable.

Future research within the same context may compare firms in their research country with those in other countries. This could. This could provide a better understanding of the analysis and reduce possible biasness in the selection of the sample. It is also advisable to see how different profitability measures impact the company's profitability.

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