Capital Structure and Firm Performance of Technology Sector in Malaysia

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Abstract

The purpose of this study is to investigate the relationship between capital structure and firm performance of technology sector in Malaysia. The 27 public listed software companies in Bursa Malaysia are examined within the time period of 8 years from 2012 to 2019, with the total observation of 216. The data is focusing in one sub-sector of technology sector which is software sector. The study is conducted with two firm performance measures which are return on asset (ROA) and return on equity (ROE). Total debts to total assets (TDTA), long-term debt to total assets (LTDTA), and short-term debt to total assets (STDTA) are the proxies of capital structure while growth (GRO) is the control variable. Panel data regression model is used in this study and found that that long-term debt to total assets (LTDTA) and short-term debt to total assets (STDTA) have a negative significant relationship with return on equity (ROE) while total debt to total assets (TDTA) has a positive significant effect on return on equity (ROE). However, in return on assets (ROA), only short-term debt to total assets (STDTA) has a negative significant on it, while the other independent variables are insignificant. Lastly, there is a positive significant relationship between growth (GRO) and performance of a company.

Keywords: Capital Structure, Firm Performance, Malaysia, Return on Asset, Return on Equity

Introduction

Capital structure has become one of the most common topics for the allocation of resources among finance researchers. The capital structure of a company is extremely crucial with regards to the company's ability to meet the needs of its stakeholders. In addition, the firm's capital structure can determine the growth, sustainability, and development of the company. The capital structure applies to the method in which a corporation uses a combination of equity and debt to fund its assets (Saad, 2010). Debt financing, often defined as leverage, is an issue of capital structure. There are several options usable for companies assess its financing such as preferred equity, common shares, long-term debt, short-term debt and retained earnings. Besides, companies can choose to utilize a small amount of debt financing or a large portion of debt financing as their own strategies and options (Meah, Chaudhory, and Khalil, 2020). A company would have secured debt rather than risky debt when it is impossible to avoid levered and company will issue the common stock as equity financing for a last step (Abor, 2005).

In recent years, there are various capital structure theories that have been introduced to assess the capital structure. Since many scholars have used Modigliani-Miller (MM) theory and MM theory is the origin of the theory of capital structure, thus MM theory is the commonly acknowledged among theory of capital structure. Modigliani and Miller started the study of capital structure in proposition I in 1958. Modigliani & Miller realized in 1963 that their earlier ideas were not infallible and recognized the role of taxes in the choice of the capital structure (Modigliani and Miller, 1963). Different hypotheses have since developed, seeking to clarify in more depth how corporations decide their ideal capital structure. Some of the common theories are the pecking order theory which introduced by Myers & Majluf (1984) and trade-off theory developed by (Myers, 1984; Kraus & Litzenberger, 1973).

Furthermore, one of the main decisions of finance management is the choosing of the right capital structure, as it is closely linked to the firm's performance. Various variables may be employed to evaluate the firm performance such as earning per share (EPS), return on investment (ROI), profitability and liquidity (Barbosa & Louri, 2005). This financial measurement can be the instruments for determining a company's financial strengthens, financial weaknesses, financial opportunities, and financial threats (Tan and Hamid, 2016). The relationship between the capital structure and performance of firm can be related if the debt ratio is greater than a certain amount, the increased debt cost includes. Higher costs of bankruptcy bring the greater financial distress and further disputes between debt holders and shareholders, thereby reducing the value of the company (Shen, 2012). An appropriate capital structure should be determined by the financial manager of the firm, since it influences the wealth of shareholders and if not necessary, an increased level of debt in capital structure will raise the company's chances of insolvency (Chadha and Sharma, 2015). Hence, good capital structure decisions can impact financial results and company value, while poor decisions can cause to distress in financial and at last having a default (Eriotis et al., 2007).

However, according to Tian and Zeitun (2007), to determine the optimal capital structure, financial managers unable to obtain a method or formula which truly acceptable. Optimal capital structure means minimum weighted-average capital cost and thus significantly increases corporate value. For a variety of sectors and different kinds of organizations that are typically diversified, knowing the most ideal capital structure on it is perplexing. In fact, appropriate capital structure can reduce capital costs and increase firm performance in which to manage the threat and profitability of the business (Gitman, 2009). If the capital structure is irrelevant to the firm value of an imperfect market, then the imperfections that occur can give rise to its relevancy (Stephen, 2012). Moreover, if the firm's capital structure influences the firm's performance, this can be reasonable to conclude that firm's capital structure would influence the firm's health and probability of default. As a result, capital structure is key to how the company funds its overall operations and development using various sources of financing (Ong and Teh, 2011). Therefore, this research is conducted to examine the effects of capital structure on firm performance of technology sector in Malaysia.

Technology Sector in Malaysia

Today, the technology sector has played a crucial part in the growth of Malaysia's economy. Based on Department of Malaysia Statistics (2020), Malaysia's economy was 4.3% in 2019 as compared with 4.8% in 2018 and 5.8% in 2017. Services and manufacturing sectors are the key driver in the production supply side with a share of 79.9 % to the economy, thus bring companies from different sectors in Malaysia need IT products and services to help

them run their business all the time, make it easy for them to manage their business, achieve productivity and remain competitive (Foo et al., 2012). The performance of firm that will impact on the computer and software services market is essential to assess out as Malaysia becomes a prospective Asian nation that progress into a technology-oriented along with high-tech production-based expansion. Malaysia has categorized as a group of nations which capable in forming a new technology on their own (Mani, 2000). There are four sub-sectors in the technology sector in Bursa Malaysia, such as digital services, semiconductors, software, and technology equipment.

From 1971 to the end of the 2000s, Malaysia was changed from a primary commodity export country to an emerging multi-sector country. Malaysia shifted with an agricultural base and conventional commodity into a more advances in technological base country to establish the progress of industrial growth (Foo et al., 2012). Besides, Malaysian government has launched numerous efforts to enhance the digital economy, such as promoting the adoption of technology among businesses and embracing digital start-ups (Sharon, 2019). In the study of Foo, Mok, Tan, and Wah (2012), researchers analyzed the study of the relationship between capital structure and firm value of Malaysia's technology firm as a technology capable of boosting economic development. Researchers have used 50 technology firms for five years period from 2005 to 2009. They found that technology firm value is significantly influenced by firm size, profitability, and liquidity. By understanding the essential firm importance in the technology sector, the company will boost customer's delivery of products and services.

Figure 1: Contribution of ICT to the economy' Malaysia
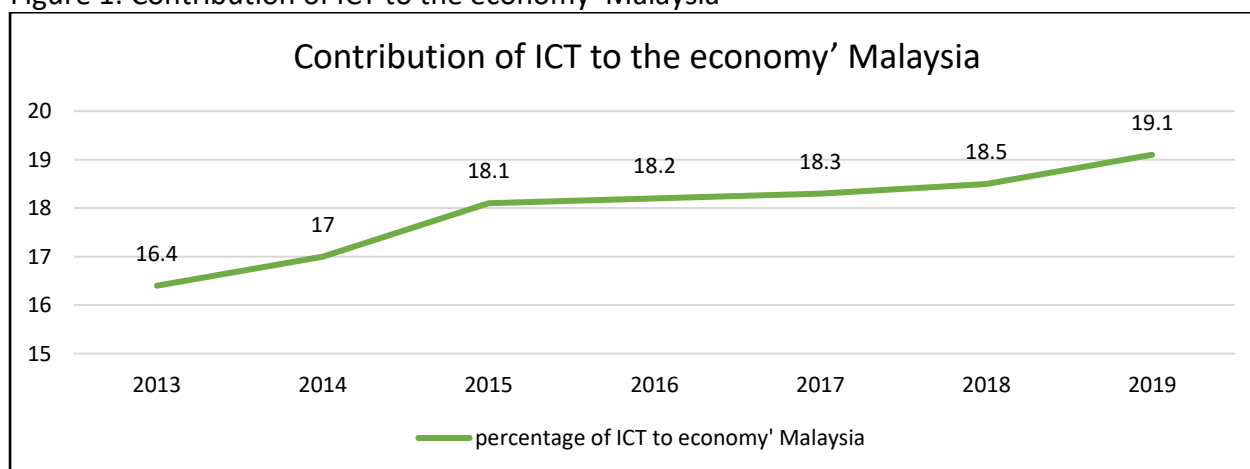
Source: Department of Statistics Malaysia (2020)

Figure 1 shows that contribution of Information and Communication Technology (ICT) to the economy Malaysia. In 2013, ICT contributed 16.4% to the GDP and it rose to 17% in 2014. Moreover, there is a boom which grew rapidly to 18.1% in 2015. Then, it rose slowly to 18.2% in 2016. 18.3% in 2017 and 18.5% in 2018. Lastly, in 2019, it achieves the highest percentage which is 19.1% to economy's Malaysia. Hence, the data suggested that ICT-producing industries played an important role in the economic growth in Malaysia from 2013 to 2019.

However, there are some issues surrounding capital structure choice by technology companies. First, when companies' start-up, technology firms prefer on using external financing, in the form of equity rather than debt (Brewer & Genay, 1994). In addition,

Dobusch and Kapeller (2018) report that developments in innovation and emerging technologies have a significant effect on shifts in the strategic choices of technology companies, this causes companies may reassess factors affecting decisions on corporate financing. Technology businesses also frequently search for funding sources for creative activities or R&D activities. Financing constraints occur when it is difficult for technology companies to access bank financing on fair terms, regardless of the business' merits. Banks refuse to borrow at any cost because technology firms would take the high risk of projects to fulfil the burden of high interest and it is difficult for outsiders to track research and development activities. In addition, the lack of collateral in technology companies leads to banks being reasonably unable to consider them as collateral (Stiglitz & Weiss, 1981). Therefore, since technology sector has a significance role in Malaysia and there is some restriction when technology companies' access to finance, it is important to study the significance impact on the firm performance on this sector.

Research Objectives
The main purpose of this paper is to investigate the impact of capital structure on the firm performance of technology sector in Malaysia. The specific objectives of this study are:
- To investigate the impact of short-term debt to total assets (STDTA) on firm performance of technology sector in Malaysia.
- To analyse the impact of long-term debt to total assets (LTDTA) on firm performance of technology sector in Malaysia.
- To examine the impact of total debts to total assets (TDTA) on firm performance of technology sector in Malaysia.
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Literature Review
Theoretical Review
This study focused three theoretical frameworks such as Modigliani and Miller (MM) theory, trade-off theory, and pecking order theory to explain the relationship between capital structure and firm performance. Modigliani and Miller (MM) theory were developed by Modigliani and Miller (1958) and they brought the MM proposition I to explain the relationship between capital structure and firm performance. The MM theory stated that the value of a firm is not affected by the capital structure. In fact, the value of a corporation is measured with its own assets, while current proposition of equity and debt cannot influence the firm's value. Furthermore, there is some essential assumptions about a perfect capital market in MM theory such as no transaction cost or taxes; no bankruptcies occur; perfect information is readily available to investors; investors can borrow at the same interest rates and the investors will have the same expectations about income of the firm; companies run with the same situations have the same risk level; and value maximization is a common purpose between managers (Modigliani and Miller, 1958). Five years later, Modigliani and Miller (1963) brought MM Proposition II in 1963 to further explain the theory. They are using tax-deductible spending; the presence of interest encourages lower tax payments and thereby increases the overall cash flow of the company. They reported that the use of the debt could generate a tax shield. The tax rate that needs to pay will decrease if use of debt increase. Both economists have found that firm profitability is now positively connected to financial leverage, which means that companies are entirely capable of increasing their profitability by raising their debt rates.

Furthermore, trade-off theory which states that companies can build an optimal capital structure that increase firm performance through issuing the debt by gaining tax savings benefits of debt. Kraus and Litzenberger (1973) suggests that companies interchange the benefits and costs of equity and debt funding. They also discover the appropriate capital structure based on market imperfections such as taxation, bankruptcies, and agency costs. Based on this theory, there is an advantage to debt funding, specifically the tax benefit. Nonetheless, there are some limitations of debt funding which is the expense of debt financing such as the more direct costs of debt financial distress and indirect costs of bankruptcy. Besides, there is a maximum point where the marginal benefit of further increases in debt declines as debt increases, while the marginal cost increases, so that companies that want to optimize firm value should concentrate on selecting the amount of equity and debt required to fund the companies' operations. Thus, static capital structure trading principal stated that an optimum capital structure is achieved where the net tax benefit of debt funding balances leverages associated costs such as holding company properties, financial distress and bankruptcy, and investment decisions.

Moreover, pecking order theory used to describe the financing decisions of business managers. In 1961, Donaldson (1961) was firstly suggested the pecking order theory, he found that owners are going to obtain financing of investment by using retained earnings rather than external funds, despite of the size of the business. Debt may have been repaid when the retained profits encounter the investment needs. Conversely, external equity will be the last choice chosen by corporations for the safest protection and debt when external financing was required. Later, Myers and Majluf (1984); Myers (1984) offered theoretical support for Donaldson's (1961) findings. They stated that investors and managers rely on when determining whether to borrow capital or issue equity, thus, information is a base for manager and investors. When managers believe the market is undervalued, they will refuse to issue equity. In addition, investors will view the issuing equity of firm as an indication that managers think that the company's equity is overvalued. This in turn, would lead to a decline in the share price as new shares are issued. This market reaction would result in there is not equity issuance of a company (Hillier et al., 2012).

Empirical Evidence

Several empirical studies have been performed to determine the impact of capital structure on firm performance in this study. Based on the study of Nguyen and Nguyen (2020), they investigated how capital structure impact firm performance in non-state enterprises and state owned in Vietnam. The proxies of firm performance are earnings per share (EPS), return on equity (ROE), return on assets (ROA). The ratios of total liabilities to total assets, long-term liabilities, and are proxies for capital structure. By using method of Generalized Least Square (GLS) and 488 non-financial listed companies from 2013 to 2018, they found that the capital structure has a statistically significant negative impact on the firm's performance. Meanwhile, firm sizes (SIZE) and sales growth (SG) has a statistically significant positive impact on firm performance. Le and Phan (2017) investigated the capital structure and firm performance at Vietnam by using Random and Fixed effect regression, generalized method of moments (GMM) estimator method, and Pooled OLS regression. They use non-financial firms that were listed on the Vietnam stock market from 2007 to 2012. The researchers found that there is negative and significant relationship between all debt ratios and firm performance. In addition, Patrisia (2020) use all listed manufacturing companies in Indonesia from year of 2014 to 2018 to examine the relationship between capital structure and firm performance.

By using multiple regression analysis methods, the researcher found that STDTA, LTDTA, and TDTA has a negative and significant impact on firm performance whereas size and growth have a positive and significant relationship to firm performance measure by ROA.

Furthermore, Robert, Richard, Rono (2020) discovered that long-term debt and equity financing have a positive and significant impact on ROA, whereas short-term debt has a negative and significant impact on ROA by using multiple regression analysis method. In this study, they examine the effect of capital structure on the performance of firms listed at the Nairobi Securities Exchange. The sample in the study are all firms listed at the Nairobi Securities Exchange from 2008 to 2013. As reported by Meah, Chaudhory and Khalil (2020), they had examined the relationship between capital structure and firm performance in Bangladesh. The sample used are 39 non-family firms and 39 family firms. Those firms are taken from eight sectors such as textiles, cement, engineering, leather, food, ceramics, pharmaceuticals, and fuel and power listed on Dhaka Stock Exchange (DSE) from 2013 to 2017. Based on the results of Pooled OLS multivariate regression model, it is reported that all leverage ratios have a relationship that significantly and negatively with ROA. Ahmed and Afza (2019) also discovered that there is a negative relationship between capital structure and accounting performance of firm in random and fixed effect models. However, capital structure has a positive effect on market performance of firm. Besides, the size, growth, liquidity, and risk are statistically significant and positive on firm performance. The sample of 333 listed non-financial firms from 14 sectors in Pakistan from 2006 to 2013 had been selected.

Ozcan (2019) has examined the effect of capital structure on firm performance in airport industry. The researcher has using 29 publicly traded airports from 20 countries from 1989 to 2017. By using the generalized method of moments (GMM), the results show that total and long-term leverage are significant and negatively correlated with ROA, but they have a positive and significant relationship with ROE. Moreover, size has a positive and statistically significant on firm performance. While tangibility has a negative and statistically significant on firm performance. Lastly, growth and holding have not relation with firm performance. Besides, Hussein, Muhannad, and Mashhoor (2019) using panel data collected from 112 Jordanian listed companies from 2005 to 2017. The study is to test correlation between capital structure and firm performance and identify the statistical significance of the relationship. They discovered that asset growth and firm size affect the ROA significantly and positively, STDTA and TDTA are significant negative effect on ROA. Besides, STDTA and TDTA have the same effects on ROE, but TDTA is not statistically significant. Furthermore, TDTA is statistically significant on EPS and Tobin's Q. Muhammad, Abubakar, Kakanda and Abubakar (2020) examined the relationship between capital structure and firm value in Nigeria for ten years. The sample used was 14 Nigeria's quoted industrial goods companies from the year 2008 to 2017. By using multiple regressions, they discovered that there is a negative and significant relationship between long-term debt and ROE. However, there is an insignificant positive relationship between short-term debt and ROE. Besides, there are a positively significant relationship between STDTA and share price. Moreover, size has a negative and significant impact on ROE but positive on share price. While efficiency does not have an impact on ROE but significant and positive impact on share price.

In the study of Aulia and Gandakusuma (2020), they investigated the relationship between capital structure and firm performance of manufacturing firms in Asean 5 country which are Indoneia, Malaysia, Philippines, Singapore, and Thailand. By using panel data from 2014 to 2018 and linear regression model analysis, they found that TDTA have a negatively

significant impact on ROA. But TDTA and TDTE have a negatively significant effect on ROE while TDTE has an insignificantly negative impact on Tobin's Q. Moreover, sales growth and size positively effect company performance. While asset tangibility negatively affects company performance but not significant. As reported by Ehikioya, Inua, and Obera (2019), they found that TDTA and STDTA have a significant negative effect on ROA and EPS. Whereas LTDTA is negative and insignificant on performance. Besides, firm size, firm age and asset tangibility have a positive relationship with performance. The study examines the impact of capital structure decisions on the performance of 61 listed firms from different sectors of the economy in Nigeria during the period of January 2013 to December 2017. Besides, they used the panel data regression technique, pooled ordinary least square, random and fixed effects model to analyse the secondary data that collected from annual reports and account of firms listed in the Nigerian Stock Exchange.

Besides, Ganiyu, Adelopo, Rodionova and Samuel (2019) found that capital structure is statistically significant on firm performance if there is moderate use of debt funding by using two-step generalized method of moments (GMM) estimation method. They used 115 listed non-financial firms in Nigeria from 2005 to 2014. Meanwhile, Ajibola, Wisdom and Qudus (2018) discovered that from the results of the panel ordinary least square (OLS), LTDTA and TDTA have positive and significant impact on ROE while STDTA has a positive and insignificant on ROE. Besides, there was an insignificant and negative relationship between LTD, STD and TD and ROA. They use panel methodology to analyses the impact of capital structure on financial performance of 10 quoted manufacturing firms in Nigeria from 2005 until 2014. Wassie (2020) investigate the impact of capital structure on construction companies' profitability in Ethiopia from 2011 to 2015. They extracted the financial statement of 30 construction firms in Nigeria. By using random effect multiple regression models, they discovered that debt to equity ratio (DER) and LDTA has a significant positive correlation with ROE and ROA. But debt to total asset ratio (DAR) has a significant negative correlation with ROE and ROA. Minh, Tien, and Hoang (2019) used 17 listed cement enterprises in Vietnam from 2010 to 2018. By using the quantitative regression model, they found that capital structure has a statistically significant and negative impact on business performance. Moreover, the SIZE variable has significant positive effect on performance while tangibility is significant negatively associated on performance. However, growth and liquidity have no clear conclusion on firm performance.

Hypothesis Development
The following hypothesis is formulated for the study:
Hypothesis 1 (H₁): There is a significant relationship between short term debt to total asset (STDTA) and return on assets (ROA).
Hypothesis 2 (H₂): There is a significant relationship between short term debt to total asset (STDTA) and return on equity (ROE).
Hypothesis 3 (H₃): There is a significant relationship between long term debt to total asset (LTDTA) and return on assets (ROA).
Hypothesis 4 (H₄): There is a significant relationship between long term debt to total asset (LTDTA) and return on equity (ROE).
Hypothesis 5 (H₅): There is a significant relationship between total debt to total asset (TDTA) and return on assets (ROA).
Hypothesis 6 (H₆): There is a significant relationship between total debt to total asset (TDTA) and return on equity (ROE).

Methodology
Data and Sample

In this study, descriptive research aims to analyze the impact of capital structure to firm performance of technology sector in Malaysia. This study concentrates on software companies that listed in Bursa Malaysia over a period of eight years from 2012 to 2019. The secondary data such as financial statements and reports of listed software companies are collected from the website of Bursa Malaysia. There are total of 32 software companies listed in Bursa Malaysia. However, due to some software companies did not have sufficient data, sample further reduced to 27 software companies. Thus, for this research, the final sample is 27 listed companies of software sector which listed on the Main Board and ACE Market of Bursa Malaysia. Panel data analysis such as pooled OLS regression, random effect regression and fixed effect regression are used in this research to check the important of capital structure on firm performance in Malaysian technology sector. The data on net income, total assets, total equity, total debt, short term debt, long term debt and sales in years need to collect from the financial statements of software companies in 2012 until 2019. From all that information, the dependent variables, independent variables, and control variables can be measured based on the data that collected. In addition, Stata 16 software used to analyze the data of public-listed firms of software companies from Bursa Malaysia. Stata 16 also analyzing on the cross-sectional and time series data and test on the correlation between variables.

Determinants of Variables

In this study, the dependent variables are return on asset (ROA) and return on equity (ROE). The ROA and ROE are used for the measurements of firm performance. Whereas the independent variables are short-term debt to total assets (STDTA), long-term debt to total assets (LTDTA) and total debt to total assets (TDTA). The STDTA, LTDTA, and TDTA are used for the measurements of capital structure. Lastly, Growth (GRO) has been used as control variables in this study.

Table 1: Summary of Variables Definition

Variables	Definition	Formula	Note
Dependent variables: Return on asset (ROA)	ROA shows that on average, after the course of production and business activities, how much profit the enterprise will collect from a dollar of assets invested in investment.	$\dfrac{Net\ income}{Total\ assets}$	Ajibola, Wisdom, and Qudus (2018)
Return on equity (ROE)	ROE shows that on average, an equity capital is invested in investment, then after the course of production and business activities, the owner will get how many profits.	$\dfrac{Net\ income}{Total\ equity}$	Aulia and Gandakusuma (2020)
Independent variables: Total debt to total asset (TDTA)	Total debt shows how much of the company's assets are financed by loans	$\dfrac{Total\ debt}{Total\ assets}$	Nguyen and Nguyen (2020)
Short term debt to total asset (STDTA)	The short-term debt is the current liabilities of a company shown on the balance sheet.	$\dfrac{Short-term\ debt}{Total\ assets}$	Sakr and Bedeir (2019)
Long term debt to total asset (LTDTA)	The long-term debt ratio indicates the portion of a company's total assets which are financed from long term debt.	$\dfrac{Long-term\ debt}{Total\ assets}$	Patrisia (2020)
Control variables: Growth (GRO)	Growth can be measured by the percentage change in sales over the year.	$\dfrac{(Current\ year's\ sales - Previous\ year's\ sales)}{Previous\ year's\ sales}$	Le and Phan (2017)

Model Specification

This study used panel data regression model to test the significance of the capital structure with firm performance of technology sector in Malaysia. The model for regression is chosen because the findings would be more accurate and efficient when examining the coefficient parameter in empirical model (Hsiao, Mountain and Illman, 1995) and can control heterogeneity of the individual (Frees, 2004). The general panel data regression model is transformed into more specified variables which is:

$$ROA_{i,t} = \beta_0 + \beta_1 STDTA_{i,t} + \beta_2 LTDTA_{i,t} + \beta_3 TDTA_{i,t} + \beta_4 GRO_{i,t} + \varepsilon_{i,t} \qquad (1)$$
$$ROE_{i,t} = \beta_0 + \beta_1 STDTA_{i,t} + \beta_2 LTDTA_{i,t} + \beta_3 TDTA_{i,t} + \beta_4 GRO_{i,t} + \varepsilon_{i,t} \qquad (2)$$

where ROA is Return on Asset; ROE is Return on Equity; STDTA is Short-term Debt to Total Assets; LTDTA is Long-term Debt to Total Assets; TDTA is Total Debt to Total Assets; GRO is Firm Growth; i is Cross-sectional Data; t is Time Series Data; Ɛ is Error Term.

Findings and Discussion
Descriptive Analysis
Table 2: Descriptive statistics for all variables

Varia bles	Variables	Observa tions	Me an	Stan dard Deviation	Mini mum	Maxi mum
	ROA	216	-0.0757	0.24 82	-2.0575	0.307 7
	ROE	216	-0.1150	0.35 69	-2.6810	0.472 3
A	STDT	216	0.1 688	0.12 66	0.000 0	0.788 6
A	LTDT	216	0.0 505	0.06 33	0.000 0	0.292 9
	TDTA	216	0.2 221	0.15 86	0.002 5	0.789 0
	GRO	216	0.3 955	2.26 68	-0.9208	29.66 04

Based on Table 2, it shows the descriptive statistics for 27 listed software companies in Malaysia from 2012 to 2019 for a total up of 216 observations where it has summarized the mean, standard deviation, minimum, maximum of dependent variables, independent variables, and control variables.

ROA and ROE are presented as firm performance of Malaysian software companies' indicators in this study. ROA and ROE have an average negative profit of -0.0757 and -0.1150 respectively. This result shows that the managers of software firms are incapable of using the total assets to generate a profit. The standard deviation of ROA and ROE is recorded as 0.2482 and 0.3569, which suggests how exposed the firms' performance are to the risk of capital structure. The range value of ROA for listed software firms is from -2.0575 to 0.3077. On the other hand, the range value of ROE for listed software firms in Malaysia is from -2.6810 to 0.4723. The value of ROA and ROE imply a wide range and there is an important gap in firm performance across Malaysian software listed enterprises in the time period from 2012 to 2019.

Furthermore, the proxies of capital structure in this study are TDTA, STDTA and LTDTA. The mean value of TDTA account for 0.2221 during period from 2012 to 2019, followed by the STDTA and LTDTA with 0.1688 and 0.0505, respectively. This shows that software firms use only 22% of total debt and the 22% of total debt means that Malaysian software firms finance their assets with 22% of debt ratio and 78% of equity ratio. This implies that software firms in Malaysia finance their economic activities with more equity than debt. Besides, the component of long-term debt revealed as 5%, which means that the remaining portion of the total debt is made up of short-term debt. This implies that most software firms in Malaysia finance their assets using more of the short-term financing arrangement than the long-term. The implication of this is that the assets of the business are deployed to service more of the short-term financial obligations. The use of short-term debt to finance the assets of the business could be seen as a mismatch and a risky decision for the business. Asset's financing requires the business to consider the option of spreading the repayment period over a long-term period. This result suggests too that software firms in Malaysia may be financing their

investment activities at a high cost, using short-term debt in place of long-term debt arrangement.

Moreover, the standard deviation is used to determine the risks associated with these financial operations of Malaysian software firms. Based on Table 2, TDTA has the highest of standard deviation which recorded 0.1586, followed by STDTA and LTDTA with 0.1266 and 0.0633, respectively. The standard deviation of 0.1586 shows that Malaysia software firms have 15.86% level of risk due to the debt component in the firm's capital structure. The standard deviation of 0.0633 for long-term debt and 0.1266 for short-term debt suggests that short-term debt contributes more risk to the capital structure than long-term debt. Next, TDTA has the minimum value of 0.0025 and maximum value of 0.7890. Whereas the STDTA of listed software firms ranges from 0.0000 to 0.7886 and the LTDTA of listed software firms ranges from 0.0000 to 0.2929. Lastly, the control variable in this study is growth of firms (GRO). The mean value of GRO is 0.3955, and the standard deviation is 2.2668. It shows that the software companies in Malaysia's average sales growth is approximately 39.55 %. The range value of GRO is from -0.9208 to 29.6604.

Pearson Correlation Matrix

Table 3: Pearson correlation matrix analyses of all variables

Variables	ROA	ROE	STDTA	LTDTA	TDTA	GRO
ROA	1.0000					
ROE	0.9617 (0.0000)***	1.0000				
STDTA	-0.1848 (0.0064)***	-0.2948 (0.0000)***	1.0000			
LTDTA	0.0358 (0.6005)	-0.0380 (0.5789)	0.2338 (0.0005)***	1.0000		
TDTA	-0.1205 (0.0772)*	-0.2386 (0.0004)***	0.8909 (0.0000)***	0.5729 (0.0000)***	1.0000	
GRO	0.0769 (0.2605)	0.0702 (0.3041)	0.2945 (0.0000)***	-0.0625 (0.3610)	0.2084 (0.0021)***	1.0000

Notes:
1. The p-value of the correlation coefficient is shown by the number in parentheses.
2. *, ** and *** indicate 10%, 5%, and 1% of significant level, respectively.

Table 3 indicate Pearson correlation matrix analyses of the Malaysian listed software companies to understand whether there is a relation between each of the variables. In this test, the correlation coefficient, r, is used to determine whether there is a relationship between variables, whereas the p-value can be used to decide whether the relationship between variables is significant.

The correlation between STDTA and ROA is weakly negative associate of -0.1848 and significant with 1 % of significant level, where the STDTA ratio are inversely proportional to ROA. This mean that the decrease in STDTA ratio, will increased ROA. In other words, the lower the short-term debt of the listed software companies in Malaysia, the greater the profits. Besides, the same goes to TDTA of software companies that also has a weakly negative relationship to ROA with the value of -0.1205 and significant at 10% significant level. On the other hand, at 10 % level of significance, LTDTA and GRO are insignificantly associated with ROA. LTDTA and GRO have shown a positive relationship of 0.0358 and 0.0769 respectively,

with ROA. It means that when long-term debt is higher, the profitability become higher. While the increase in growth of software companies in Malaysia will lead to the increases to ROA. Moreover, results in Table 3 show that STDTA, LTDTA and TDTA are recorded as -0.2948, -0.0380 and -0.2386 respectively and has the negative relationship to ROE. TDTA and STDTA are significantly correlated with ROE at 1% significant level. However, the LTDTA is insignificantly associated with ROE at 10% level of significance. As for the growth (GRO) of the firm, there are positive relationship to ROE with 0.0702 where the increase of GRO indicates the rising in value of return on equity and is insignificant at 10% significant level.

Panel Data Regression Model

Table 4: Results of panel data regression model in dependent variables: ROA and ROE

Variables	ROA			ROE		
	Pooled OLS Model	Random Effects Model (REM)	Fixed Effects Model (FEM)	Pooled OLS Model	Random Effects Model (REM)	Fixed Effects Model (FEM)
Constant	-0.0199 (0.491)	0.0454 (0.246)	0.1377 (0.000)***	0.0277 (0.493)	0.1277 (0.019)**	0.2769 (0.000)***
STDTA	-0.8431 (0.052)*	-0.9361 (0.020)**	-1.3449 (0.001)***	-1.4571 (0.017)**	-1.6661 (0.003)***	-2.3543 (0.000)***
LTDTA	0.0878 (0.854)	0.0852 (0.854)	-0.0874 (0.855)	-0.0949 (0.887)	-0.2137 (0.742)	-0.5637 (0.400)
TDTA	0.3387 (0.406)	0.0948 (0.794)	0.0092 (0.979)	0.4360 (0.443)	0.1431 (0.779)	0.0430 (0.931)
GRO	0.0175 (0.024)**	0.0293 (0.000)***	0.0407 (0.000)***	0.0285 (0.009)***	0.0445 (0.000)***	0.0620 (0.000)***
Observations	216	216	216	216	216	216
R^2	0.0665	-	-	0.1195	-	-
Adjusted R^2	0.0488	-	-	0.1028	-	-
F-statistics	3.76	-	12.20	7.16	-	18.13
Prob > F	0.0057	-	0.0000	0.0000	-	0.0000
R-square (within)	-	0.2001	0.2088	-	0.2764	0.2816
Wald test	-	29.52	-	-	47.12	-
Prob > Chi2	-	0.0000	-	-	0.0000	-
F-test that all u_i = 0	-	-	5.06	-	-	5.04
Prob > F	-	-	0.0000	-	-	0.0000

Notes:
1. The p-value of the correlation coefficient is shown by the number in parentheses.
2. *, ** and *** indicate 10%, 5%, and 1% of significant level, respectively.

Table 4 above indicate that the summary result of panel data regression model to determine the impact of capital structure on software firm performance in Malaysia. In this study, ROA and ROE are the dependent variables while TDTA, STDTA and LTDTA are independent variables and lastly, GRO as a control variable. In fact, pooled OLS, REM, and FEM estimation methods are commonly used for panel data estimation. There are some reasons that the Pooled OLS, REM and FEM are needed in this study. First, the model is estimated using Pooled Ordinary Least Squares (POLS) in this study. There is an issue with employing Pooled OLS in that the heterogeneity linked to unobservable effects is not taken into account, which may result in biased results because this study uses several omitted variables. Besides, the Pooled OLS approach has several limitations. Pooled OLS ignores information of time and cross-sectional dimensions from panel data. Additionally, Pooled OLS is not practical to include and measure all unit-specific and time-constant effects in the model, hence, the assumption of pooled OLS is unrealistic. As a result, when this study employed OLS to analyze panel data, the assumption was frequently breached. In this case, the pooled OLS estimator is unreliable and biased (Gujarati, 2003; Wooldridge, 2006). Following that, this study attempted an alternative method of assessing the same set of explanatory variables by applying Fixed Effects Model (FEM) and Random Effects Model (REM) to control for omitted factors that are consistent throughout time. These two models enable this study to ensure the data's previously unknown heterogeneity (Tae, Sock, and Hua, 2007). After that, only one of these three-panel data regression models will be chosen as the best model for this study.

Proposed Model Selections

Table 5: Results of Breusch Pagan LM Test and Hausman Test

Breusch Pagan LM Test:		
Variables	**Chi-Square**	**Probability**
ROA	46.65	0.0000
ROE	39.79	0.0000
Hausman test:		
ROA	13.80	0.0080
ROE	22.04	0.0002

Table 5 above show the results of Breusch Pagan LM Test and Hausman Test. In this study, Breusch Pagan LM Test is first test to conducted and determined which model regression method is more appropriate between Pooled OLS or Random Effects Model (REM). According to Table 5, the p-values of ROA and ROE are the same, which is 0.0000. This implies that both p-values are smaller than the 5% significance level, suggesting that there is statistical significance at the 5% level. As a result, it rejects the null hypothesis, and conclude that the REM model is preferable than the Pooled OLS model.

Next, Hausman test is used to select the empirical model between a Random Effect Model (REM) and Fixed Effect Model (FEM). Results in Table 5 show that the p-value of ROA and ROE is 0.0080 and 0.0002, respectively. This means that both p-values are less than the 5% significance level, indicating that there is statistical significance at the 5% level. As a result, it rejects the null hypothesis, leading to the conclusion that FEM is more appropriate than REM, and that FEM are the best model in this study.

Diagnostic Checks
Normality Test
Table 6: Result of skewness or kurtosis (Jarque-Bera) tests for normality

Variable	Pr(Kurtosis)	Pr(Skewness)	Adjusted Chi Square (2)	Prob > chi2
myResiduals	0.0000	0.0000	.	0.0000

Table 6 indicate the result of skewness or kurtosis tests for normality. The Jarque-Bera is a test for normality, which is a goodness-of-fit test which it is used to determine whether the data set is normally distributed. Results of Table 6 show that based on skewness, the probability that myResiduals is normal which is 0.0000 and based on the kurtosis, the probability that myResiduals is also normal which is 0.0000. P-value in this test is 0.000 and is less than 5% significant level. This led to the rejection of null hypothesis and there is a statistically significant lack of normality. Thus, it can be concluded that the data set are not normally distributed at 5% level of significance.

Multicollinearity Test
Table 7: Results of multicollinearity test

Variable	VIF
TDTA	15.24
STDTA	10.98
LTDTA	3.34
GRO	1.12
Mean VIF	**7.67**

Table 7 indicate the results of multicollinearity test among the independent variables. When there is a high correlation between independent variables and other independent variables, multicollinearity exists. The multicollinearity of this study was investigated using the Variance Inflation Factor (VIF). The results of mean VIF obtained from the multicollinearity test is 7.67 which mean is not more than 10 and it should not reject the null hypothesis. Therefore, it concluded that multicollinearity problem does not present among independent variables.

Autocorrelation Test
Table 8: Results of Wooldridge test in autocorrelation

Variables	F-statistics	Probability
ROA	0.741	0.3971
ROE	1.027	0.3202

Table 8 show the results of Wooldridge test in autocorrelation in this study. If the term of error in one period is correlated with the term of error in the preceding period, autocorrelation exist. In this study, the Wooldridge test for correlation is used in a time series, to observe that the lagged version of a variable's value compares to the original version. Based on Table 8, the p-value for ROA and ROE are depicted as 0.3971 and 0.3202 respectively, and both p-value is more than 5% significant

level. Hence, it should not reject the null hypothesis, and it led to the proposed Fixed Effect Model (FEM) of this study does not have autocorrelation problem.

Heteroscedasticity Test

Table 9: Results of modified Wald test in heteroscedasticity

Variables	Chi-Square	Probability
ROA	72157.46	0.0000
ROE	30154.12	0.0000

In this study, Table 9 show the result of heteroscedasticity test. Heteroscedasticity occurs when the variance of the error terms is not constant. In the residuals of a fixed-effect regression model for groupwise heteroskedasticity, the modified Wald test is applied in this study. Table 9 shows that the p-values for ROA and ROE are the same, which is 0.000. Both p-values are less than 5% significant level. As a result, this cause the null hypothesis to be rejected, the variance of the error terms is not constant, and it can be stated that the proposed Fixed Effect Model (FEM) of this study has a heteroscedasticity problem. In this study, since there is presence of heteroscedasticity problem in the proposed Fixed Effect Model (FEM), thus, robust standard errors are conducted to correct the problem of heteroscedasticity.

Fixed Effects Model (FEM) with Robust Standard Error

Table 10: Results of Fixed Effects Model (FEM) with robust standard error

Variables	Dependent Variables	
	ROA	ROE
STDTA	-1.3449 (0.000)***	-2.3543 (0.000)***
LTDTA	-0.0874 (0.614)	-0.5637 (0.085)*
TDTA	0.0092 (0.287)	0.0430 (0.011)**
GRO	0.0407 (0.000)***	0.0620 (0.000)***
Constant	0.1377 (0.000)***	0.2769 (0.000)***
R^2	0.2088	0.2816
Adjusted R^2	0.1938	0.2680
F-statistics	65.26	22.08
Prob > F	0.0000	0.0000

Notes:
1. The p-value of the correlation coefficient is shown by the number in parentheses.
2. *, ** and *** indicate 10%, 5%, and 1% of significant level, respectively.

Table 10 reports the outcomes on the relationship between capital structure and firm performance in Malaysian software sector, which were estimated by the FEM with adjusted standard

error. Return on assets (ROA) and return on equity (ROE) were used to measure firm performance. Adjusted R-squared and F-statistics can be used to examine the goodness of fits of the Fixed Effects Model (FEM) in this study. Besides, the beta coefficient (β) is used in this section to demonstrate how much change in ROA or ROE would occur in the case of a single unit change in capital structure for all Malaysian software companies.

Effect of Capital Structure on ROA

Results of Table 10 show that the adjusted R^2 of ROA is 0.1938 and this indicate 19% of variation in ROA is explained by all the explanatory variables such as STDTA, LTDTA, TDTA, and GRO. This suggests that there are other factors besides the ones chosen to explain the ROA due to low value of the adjusted R-squared. Besides, F-statistics of ROA is 65.26, and the p-value of F-statistics in ROA is 0.0000, which is less than the 5% level of significance and it can reject the null hypothesis. It has sufficient evidence to conclude that the regression model in ROA is statistically fit to establish the relationship at 5% of significances level.

As shown in Table 10, the coefficient of STDTA is -1.3449 and p value is 0.000 which less than 1% of significance level with ROA. It shows that there is a negative and significant relationship between STDTA and ROA. This can be concluded that increasing short-term debt will reduce software company performance in Malaysia as measured by ROA. This result also implies that short-term debt is capable of exposing the firm to the risk of bankruptcy because of charges and other conditions associated with debt financing. To put it another way, the negative association between STDTA and ROA shows that enterprises with higher performance will opt to employ internally generated capital and less debt at a lower cost, indicating that the research findings support the pecking order theory. Trade-off theory also aligned with this result which if the cost of borrowing exceeds the optimal level, it generates to the increasing of cost of capital and thus, profitability of firm will decrease. The expected negative sign is consistent with the study of Nguyen and Nguyen (2020) and Le and Phan (2017) in which they use conduct the study in same country, Vietnam and use non-financial listed firms from 2013 to 2018 and 2007 to 2012, respectively. In their study, they found out that there is a negative and significant relationship between STDTA and ROA. In other prior literature from Robert, Richard, Rono (2020) with sample from Kenya from 2008 to 2013, also support that short term debt to total assets has statistically significant and negatively related to ROA. Besides, this results also support by Tretiakova, Shalneva and Lvov (2021), which found that ROA has a negative and significant relationship with short-term debt of pharmaceutical industry in the UK from 2009 to 2019. However, this result is incongruent with the findings of Ashraf, Ameen, and Shahzadi (2017) which they had found that short term debt ratio shows positive and significant relationship with return on asset in cement industry of Pakistan from 2006 to 2015. The inconsistency in results could be attributed to a different time period, sector, and country being picked, and also differences in economies and levels of development between countries.

The relationship between LTDTA and ROA in this study is negative and insignificant at 10% of significance level. Specifically, the coefficient of LTDTA is -0.0874 which denotes that one-unit change in LTDTA will lead to a decrease of approximately 8.74 % in ROA, holding all other variables constant. In other words, as long-term borrowing increases, the firm performance are reduced measured by ROE. The findings, however, indicate that the decrease is insignificant. The effect was insignificant, as evidenced by a p-value of 0.614, which is greater than 10% of the significance level, thus, this conclusion verifies Myers (1984) and Charles and Peter (2015), who suggested that a firm's reliance

on long-term loans leads to bigger distortions in owner or manager risk. The use of long-term debt inevitably raises the firm's financing expenses, diminishing profitability. Furthermore, the study agrees with the findings of an earlier study by Isabwa and Albert (2015) on the influence of long-term debts on company performance in Kenya, which found that long-term debts have a negative impact on ROA. This results also can be support by Ehikioya, Inua, and Obera (2019) which found out long term debt has a negative but insignificant impact on return on assets in emerging country, Nigeria from 2013 to 2017. This result aligned with Modigliani and Miller (1958) irrelevant theory which a company's capital structure is not a major consideration and cannot influence the value of company. Nevertheless, this finding against with Wassie (2020) which the researcher found that LTDTA has a positive and significant relationship on ROA in 30 construction companies during the 2011 to 2015 period. This mean that in the study of Wassie (2020) indicates that Ethiopian construction firms have been highly profitable while maintaining a high LTDTA ratio. The different result arises because in this research is focus on technology sector only and different country and sector has different characteristics and behavior.

Furthermore, the results reveals that a positive and insignificant relationship between TDTA and ROA. The coefficient of TDTA is reported as 0.0092 in Table 10 and the p-value of 0.287 is greater than 10% of significance level. In other words, an increase of 1% in TDTA will lead to an increase of approximately 0.92% in ROA. It implies that the company's total debt level has increased as a result of rising tax benefits, and hence the company's ROA has increased. The findings, however, indicate that the increase is insignificant. This result is supported by Modigliani and Miller (1958) irrelevant theory which indicated that current proposition of debt and equity cannot influence the firm's value provided income tax and distress expenses are not occur in the business environment. This finding is consistent with Javed, Younas and Imran (2014) which had found that from 2007 to 2011, the total debt to total assets ratio was positive and insignificant with the ROA of 63 companies listed on the Karachi Stock Exchange. However, the result is contrary to the findings obtained by Ehikioya, Inua, and Obera (2019) who studied only Nigerian listed firms from 2013 to 2017 and Minh, Tien, and Hoang (2019) who studied on cement industry in Vietnam from 2010 to 2018 and both researchers found that total debt ratios have a significant negative impact on company performance as measured by ROA. Due to each country and industry has unique behaviors and characteristics, thus various outcomes occur.

In addition, in the regression results based on Table 10, GRO has a positive and significant relationship on ROA. The coefficient of GRO is recorded as 0.0407 and p-value of 0.000 is less than 0.05 of significance level. It reflects that if the GRO increases, the ROA will increase too. The justification for this could be that a high growth rate corresponds to a reduced cost of capital, implying greater asset utilization efficiency. As a result, company growth and performance of firm are positively correlated. Nevertheless, this result is supported by the studies such as Nguyen and Nguyen (2020) and Alghusin (2015), they investigated the research by using listed companies in Vietnam from 2006 to 2014 and Jordanian Industrial companies listed from 1995-2005, respectively, and concluded that GRO has a positive and significant impact on ROA. On the other hand, Patrisia (2020) and Meah, Chaudhory and Khalil (2020) are used manufacturing companies listed in Indonesia from the 2014 to 2018 period and listed companies in Bangladesh from 2013 to 2017, respectively to examine the relationship between GRO and ROA. The outcome of their research is consistent with this result which they found that there is a positive and significant relationship between GRO and ROA. Thus, companies with high growth potential send a positive signal about the company's prospects. As a

result, as compared to the poor growth potential in organizations, investors are attracted to invest in companies with high growth potential (Al-Najjar and Taylor, 2008). However, this result has contradicted with the finding of Chowdhury and Chowdhury (2010) in Bangladesh from 1994 to 2003 and Pakpahan (2010) by using samples of manufactured firms in Indonesia from 2003 to 2007. Both researchers found that there is an insignificant and negative effect between firm growth and firm value. The different results arise with this finding of research because different time frame and different country and industry has different characteristics and behavior.

Effect of Capital Structure on ROE

Based on Table 10, it shows that the adjusted R^2 of ROE is 0.2680, which reveals that 27% of the total variation in ROE can be explained by all the explanatory variables such as STDTA, LTDTA, TDTA, and GRO. This suggests that there are other factors besides the ones chosen to explain the ROA due to low value of the adjusted R-squared. Moreover, F-statistics of ROE is 22.08, and the p-value of F-statistics in ROE is 0.0000, which is less than the 5% level of significance and it can reject the null hypothesis. It has sufficient evidence to conclude that the regression model in ROE is statistically fit to establish the relationship at 5% of significances level.

As compared to the relationship between STDTA and ROE in Table 10, the STDTA and ROE also has a negative and significant impact on ROE at 1% of significance level which p value is 0.000, less than 1% of significance level. The coefficient of STDTA is noted as -2.3543 and the negative sign indicate STDTA is inversely proportional related to ROE. Specifically, when the STDTA of a firm was low, the firm performance measured by ROE are higher. The findings showed that software firms' financing patterns were aligned with pecking order theory and trade-off theory. Profitable companies, according to the pecking order theory, prefer to finance new investment opportunities through retained earnings rather than issuing debt. STDTA is adversely correlated with company performance as indicated by ROE since a high degree of debt affects a company's financial performance which consistent with trade-off theory. The expected negative sign is similar to the finding of Ahmed and Afza (2019) which discovered that there is a negative significant impact between short term debt ratio and ROE in random and fixed effect models by using 14 sectors in Pakistan from 2006 to 2013. Besides, Kasasbeh (2021) also discovered the impacts of short-term debt to total assets are significant and negative on return on equity in 40 listed firms of Jordan. Additionally, Le and Phan (2017) and Nguyen and Nguyen (2020) who studied on the same country namely Vietnam, both concluded that there is a negative and significant relationship between STDTA and ROE. Nevertheless, the result of this study against with the findings of Amjed (2011) which investigated 100 listed textile companies in Pakistan from 1999 to 2004. The short-term debt ratio was positively and significantly correlated with ROE, implying that using more short-term debt could increase profits. Since each industry and country was picked differently, the different result with this finding of research was arisen.

Moreover, the results reveals that a negative and significant relationship at 10% of significance level between LTDTA and ROE. The coefficient of LTDTA is -0.5637 and p-value of 0.085, which is less than the 10% significant level. This mean that when LTDTA is increase, the ROE will decrease and the long-term debt's cost in the country is often high. Thus, the high cost of long-term borrowing, corporations' profits are reduced, and earnings retained by corporations are reduced. The findings show that enterprises should be aware of the amount of long-term debt they use to fund their operations. This expected negative sign is supported by the empirical investigation made by

Hussein, Muhannad, and Mashhoor (2019) which they discovered that long-term debt levels have a significant negative impact on return on equity for all corporations listed on ASE from 2005 to 2017. Additionally, this results also consistent with the studies of Muhammad, Abubakar, Kakanda and Abubakar (2020) which found that LTDTA has negative and significant effect on ROE of Nigerian industrial goods listed companies during period of 2008 to 2017. Besides, referring to prior study by Hajisaaid (2020), surprisingly, they also discover that LTDTA has a negative and significant relationship impact on ROE by using basic material sector in Saudi Arabia from 2009 to 2018. This finding also supports the pecking order theory, which states that corporations should employ internally generated capital rather than taking a loan, which is costly and reduces company performance. Companies' performance has suffered because of their usage of debt, as debt has increased interest costs and lowered income (Aziz and Abbas, 2019). However, this result is incongruent with the finding of Ahmed and Bhuyan (2020) which they found that long-term debt to total assets has positively significant relationship with return on equity. From 2009 to 2019, they determined that a high degree of long-term debt in the capital structure is favorable to boosting shareholder value in the case of service sector companies in Australia. The inconsistency in results could be attributed to a different industry and country being chosen, as well as differences in economies and levels of development between countries.

Other than that, the relationship between TDTA and ROE in this study is positive and significant at 5% of significance level. The TDTA of p-value is 0.011, which is greater than the 5% level of significance. The coefficient of TDTA is reported as 0.0430 and show the expected sign is positive in Table 10. According to the results of Table 10, every 1% rise in the TDTA has a marginal influence on ROE of approximately 4.3%. In other words, as total debt grows, a higher return to equity shareholders because there is an increase in debt results in tax shielding. As a result, high-profitable firms have a lower chance of bankruptcy and are more able to request for and obtain further loans. This result is supported by trade-off theory which stated indicated the highly profitable firms will have higher debt levels to maximize taxation benefits and increase the available of capital. The expected positive sign of TDTA have the same outcome as the prior studies such as Ajibola, Wisdom and Qudus (2018) who studied on manufacturing firms in Nigeria from 2005 to 2014 and they concluded that a positive significant relationship exists between TDTA and ROE. Besides, this outcome is consistent with the research of Ganiyu, Adelopo, Rodionova and Samuel (2019) which mentioned that TDTA has positive and significant effect on ROE in the sample of non-financial firms in Nigeria from 1998 to 2015. This result of this study also supported by Dang, Bui, Dao, and Nguyen, (2019) by using listed companies in food and beverage sector in Vietnam from 2000 to 2017 and concluded that when TDTA increase, it will lead to an increase to ROE in their study. In addition, this results also show support to Modigliani and Miller (1958) relevant theory which stated that when companies raising their debt rates, the companies are entirely capable of increasing their profitability. However, Aulia and Gandakusuma (2020) presented that TDTA has affect ROE negatively significant of manufacturing firms in Asean 5 country from 2014 to 2018. The different result arises because this research only focuses on software sector and one country namely Malaysia has been used.

Meanwhile, GRO establishes a positive and significant relationship with ROE at 1% of significance level. The coefficient of GRO is 0.0620 and p-value is 0.000 which less than 1% of significance level. This indicates that companies with strong growth potential have a high-performance ratio, as growing companies can gain profit from their investments. The findings of this research are aligned with the trade-off theory, the theory considers growth as a predictor of

corporate performance, with those organizations that have them being able to withstand financial crisis. According to the theory, when an organization has a good opportunity, then they have a high reputation for obtaining funds and better access to financial markets, which is reflected in their performance. Furthermore, the outcomes of this study are supported by Hajisaaid (2020) by using companies in the basic material sector in Saudi Arabia during the period 2009 to 2018 and stated that if a company has significant investment chances it will lead to the agency costs become lower, which will result in a higher ROE. Furthermore, the result is also consistent with Ahmed and Afza (2019) and Pouraghajan, Malekian, Emamgholipour, Lotfollahpour, and Bagheri (2012) by using non-financial firms listed from 14 sectors at Pakistan from 2006 to 2013 and listed companies in Iran from 2006 to 2010, respectively, both investigations in findings reviled that GRO has a significant and positive effect on ROE. The study of Awais, Iqbal, Iqbal and Khursheed (2016) and Wassie (2020) also same as the result in this study which found that when growth is rising, the ROE also will increase by using the sample of non-financial firms listed at Pakistan during the 2004 to 2012, and construction companies at Ethiopia during the 2011 to 2015 period, respectively. However, the results are not consistent with the result obtained from the research of Bokhari and Khan (2013) which the effect of sales growth on return on equity was negative and insignificant of listed non-financial firms in Pakistan from 2005 to 2011. The different result with this finding of research was arisen because the country and time period were picked differently.

Conclusion

This study has examined the relationship between capital structure and performance of technology firm in Malaysia. The total sample for this research is 27 listed companies of software sector which listed on the Main board and ACE market of Bursa Malaysia. Specifically, there are 6 software companies came from Main board while 21 software companies came from ACE market. The data of financial statements and reports of listed software companies are collected and obtained from the official website of Bursa Malaysia over a period of eight years from 2012 to 2019. The firm performance of Malaysia's technology firm as dependent variables is measured by return on assets (ROA) and return on equity (ROE) while the capital structure as independent variables is measured by short-term debt to total assets (STDTA), long-term debt to total assets (LTDTA) and total debt to total assets (TDTA). GRO as control variable was also use in this study.

To test the relationship of this study, descriptive statistics, Pearson correlation matrix, panel regression analysis, Breusch Pagan LM test, Hausman test, and diagnostic tests were used. In this study, three panel data regression models were used such as Pooled ordinary least square (OLS), Random Effects Model (REM), and Fixed Effects Model (FEM). According to the Breusch Pagan LM test and Hausman test results, it shows that Fixed Effects Model (FEM) has chosen among these three-panel data regression model as the most appropriate model in this study. Hence, for this research, the FEM model is used to make decisions based on the hypotheses and overall conclusion. Furthermore, in this study, the models are free from multicollinearity and autocorrelation problems. However, the models have the heteroskedasticity problem and the models are not correctly specified and fulfil the assumption of normality. To solve the heteroscedasticity problem, a robust standard error is conducted in the FEM model. Throughout of this study, the results of the analysis in FEM model with robust standard error indicate that there is negative and significance relationship between STDTA and ROA and ROE. Furthermore, through the results which are obtained, LTDTA is having a negative and insignificant relationship between ROA. However, LTDTA is having a negative

and significant relationship between ROE. On the other hand, there is a positive and insignificant relationship between TDTA and ROA. Nonetheless, TDTA is significantly positive relationship with ROE. In addition, for the control variables, GRO establishes a positive and significant relationship with ROA and ROE. Besides, the findings suggested that theories namely the Modigliani and Miller (MM), trade-off and pecking order theories, were able to explain the concept of optimal capital structure in software firms in Malaysia.

This research study has contributed to better understanding of the Modigliani and Miller (MM) theory in MM proposition I in 1958 and Proposition II in 1963, trade-off theory and pecking order theory.First, this study is contributed to Modigliani-Miller irrelevant theory, which states that a company's capital structure is not a major consideration and cannot influence the value of company in the first proposition, and Modigliani-Miller relevant theory, which states that financial leverage has direct influence on performance of firm in the second proposition. This research also contributed to trade-off theory where debt if managed as optimal possible will have positively effect for company performance but if addition to debt exceeds profits earned by the company, then debt will have a negative effect on company performance. By doing this, it can improve and gives an idea to the software company on how much equity and debt funding to manage the benefits and costs for the software companies in Malaysia and can help them to build an optimal capital structure. In the meantime, this study also contributed to pecking order theory which described the idea of optimal capital structure, which is useful when companies like to significantly increase their assets' return on investment. Based on the findings, corporations should employ internal funding rather than taking out loans, which are complex and expensive and reduce company performance. Companies' performance has suffered because of their usage of debt, as debt has risen interest costs and lowered profitability of companies.

This research study also significant to the existing knowledge for corporate managers of policy makers, technology firms, investors, and lenders. Corporate managers of policymakers can make better decisions to optimize firm value and shareholder wealth if they have a solid insight and understanding on the capital structure. This can help managers to managing the company's capital structure and can generate greater profits. Furthermore, technology firm will have a guidance and concentrate on the component of capital structure such as technology firms should take a specific choice and strategy to improve its performance. Besides, this research is to facilitate the management of software company on congestion to cheaper financing alternative through production of corporate bonds at Bursa Malaysia. In addition, the capital structure information helps investors make smart choices and understand their investments by providing better guidelines and understanding. This study is also essential to the firms' stakeholders, particularly lenders. By this information, lenders can have a greater analysis and understanding on the cash flows, market value, the degree of the firm's liabilities and assets and volatility and liquidity of the firm's assets. By this, lenders can reduce the risk of obligation payment default.

There are some recommendations for software companies in Malaysia. First, since the short-term debt are the most significant variables in this study as the used of short-term debt making the firm performance of software sector reduced, thus firm managers should exercise caution while utilizing debt financing. Before making capital structure decisions, firm managers should assess the influence of debt financing on firm performance. In order to maximize the software firms' profitability, it is suggesting that to use internal funds as financing option, this may help the potential of using debt be avoidable or using debts as last alternative in their capital structure. It is proposed

that enterprises in this sector handle debt cautiously and wisely in order to focus constant for short term debt's proper management and preserve overall accounting performance in order to achieve long-term market-based performance.

In addition, according to the findings of this study, there is a suggestion for software firms in Malaysia to maintain an optimal capital structure in order to minimize financing costs and maximize business performance. In other words, software firms in Malaysia should establish the point where the cost of capital is reduced along with decrease the insolvency cost, and shareholders' wealth maximized. Moreover, software firms in Malaysia should match long-term economic activities with long-term finance as against the use of short-term finance for long-term project, which may stress the working capital of the business. Besides, it is also important for the Malaysian government to support the development of the financial markets with policies and programs so that the market can support economic activities with long-term debt, especially for economic activities spanning over a year. Lastly, according to the findings of this study, software firm management in particular, and other researchers in general, should focus on statistically significant control variables such as growth.

Limitation

Throughout this study, several limitations appeared during the completion process. First, the samples in this study are solely focus on the technology sector, which is listed on the Main board and ACE market of Bursa Malaysia and only software subsector had been chosen and used in this study. As a result, the findings may not be representative of the outcomes in another subsector of Malaysia's technology sector. Furthermore, Bursa Malaysia currently has 32 publicly traded software firms. However, due to a lack of information and unavailability market data, certain companies were eliminated from this research. Hence, the final sample size for this study was 27 publicly traded software firms in Malaysia. As a result, the accuracy and reliability of the results acquired by this study might have been questioned, and the results may not accurately reflect the overall situation of the Malaysian software subsector in technology. Apart from that, the period for investigated data ranges from 2012 to 2019. Because the technology sector is the riskiest in the market, 8 years of data may not be enough to provide a better analysis and more precise results for the report.

Suggestion for Futures Study

There are some suggestions for future study in order to improve the precision, accuracy, credibility of the results. First, scholars are suggested to increase sample size for this kind of study such as 10, 15, or 20 years, or increase the number of companies. Furthermore, it is also proposed for future research to use data from different countryside in order to provide a larger spectrum of data analysis and ideas for policymakers. It can also compare the dataset to other countries on a macroeconomic basis for those suggested to compete and sustain on a global basis. Moreover, since only four variables were studied in this study such as STDTA, LTDTA, TDTA, and GRO, it is advised to find new variables to be included in the data running and analysis to identify which factors are more significant in delivering effects towards firm's performance. The variables such as debt equity ratio (DER), tangibility, firm size, liquidity, and firm age shall be included as proxy for measuring the firm's performance to ensure the results to be more precise. While for firm performance measurement, scholars can use Tobin's Q, price to book value (PBV), earning per share (EPS), net profit margin (NPM), and return on investment (ROI) ratios.

References

Abor, J. (2005). The effect of capital structure on profitability: An empirical analysis of listed firms in Ghana. *Journal of Risk Finance, 6*(5), 438-445. https://doi.org/10.1108/15265940510633505

Ahmed, N., & Afza, T. (2019). Capital structure, competitive intensity, and firm performance: evidence from Pakistan. *Journal of Advances in Management Research, 16*(5), 796-813. https://doi.org/10.1108/JAMR-02-2019-0018

Ahmed, R., & Bhuyan, R. (2020). Capital structure and firm performance in Australian service sector firms: A panel data analysis. *Journal of Risk and Financial Management, 13*(9), 1-16. https://doi.org/10.3390/jrfm13090214

Ajibola, A., Wisdom, O., & Qudus, O. L. (2018). Capital structure and financial performance of listed manufacturing firms in Nigeria. *Journal of Research in International Business and Management, 5*(1), 81-89. http:/dx.doi.org/10.14303/jribm.2018.018

Alghusin, N. A. S. (2015). The impact of financial leverage, growth, and size on profitability of Jordanian industrial listed companies. *Research Journal of Finance and Accounting, 6*(16), 86-93. http://dx.doi.org/10.6007/IJARBSS/v5-i4/1580

Al-Najjar, B., & Taylor, P. (2008). The relationship between capital structure and ownership structure, new evidence from Jordanian panel data. *Managerial Finance, 34*(2), 919-933. https://doi.org/10.1108/03074350810915851

Amjed, S. (2011). Impact of financial structure on firm's Performance: A study of Pakistan's Chemical Sector. *In Society of Interdisciplinary Business Research (SIBR) 2011 Conference on Interdisciplinary Business Research*, 454-476. https://dx.doi.org/10.2139/ssrn.1867882

Asare, C., & Angmor, P. L. (2020). The effect of debt financing on the profitability of SMEs in Accra Metropolis. *ADRRI Journal of Arts and Social Sciences, 13*(2), 1-11. Retrieved from https://journals.adrri.org/index.php/adrrijass/article/view/183

Ashraf, M., Ameen, A., & Shahzadi, K. (2017). The impact of capital structure on firm's profitability: A case of cement industry of Pakistan. *International Journal of Business and Social Science, 8*(4), 140–147. Retrieved from
https://www.ijbssnet.com/journals/Vol_8_No_4_April_2017/15.pdf

Aulia, H., & Gandakusuma, I. (2020). The effect of capital structure on firm performance of manufacturing companies in ASEAN 5 country. *Advances in Economics, Business and Management Research, 144*, 473-477. https://dx.doi.org/10.2991/aebmr.k.200606.080

Awais, M., Iqbal, W., Iqbal, T., & Khursheed, A. (2016). Impact of capital structure on the firm performance: Comprehensive study of Karachi Stock Exchange. *Sci.Int.(Lahore), 28*(1), 501-507. Retrieved from http://www.sci-int.com/pdf/636327989680299085.--30-12-15.pdf

Aziz, S., & Abbas, U. (2019). Effect of debt financing on firm performance: A study on non-financial sector of Pakistan. *Open Journal of Economics and Commerce, 2*(1), 8-15. Retrieved from https://www.sryahwapublications.com/open-journal-of-economics-and-commerce/pdf/v2-i1/3.pdf

Barbosa, N., & Louri, H. (2005). Corporate performance: Does ownership matter? a comparison of foreign- and domestic-owned firms in Greece and Portugal. *Review of Industrial Organization, 27*(1),73-102. https://doi.org/10.1007/s11151-005-4920-y

Bokhari, H. W., & Khan, M. A. (2013). The impact of capital structure on firm's performance: A case of non-financial sector of Pakistan. *European Journal of Business and Management, 31*(5), 111-137. Retrieved from https://www.iiste.org/Journals/index.php/EJBM/article/view/9470

Brewer, E., & Genay, H. (1994). Funding small business through the SBIC program. *Federal Reserve Bank of Chicago Economic Perspectives, 18*, 22 – 34. Retrieved from https://www.researchgate.net/publication/23529667_Funding_Small_Business_through_the_SBIC_Program

Chadha, S., & Sharma, A. K. (2015). Capital structure and firm performance: Empirical evidence from India. *Vision: The Journal of Business Perspective, 19*(4), 295–302. https://doi.org/10.1177%2F0972262915610852

Chowdhury, A., & Chowdhury, S. P. (2010). Impact of capital structure on firm's value: Evidence from Bangladesh. *Business and Economic Horizon (BEH), 3*(3), 111-122. Retrieved from https://econpapers.repec.org/article/pdcjrnbeh/v_3a3_3ay_3a2010_3ai_3a3_3ap_3a111-122.htm

Dang, Y. T. H., Bui, N. T. H., Dao, A. T. H., & Nguyen, H. T. (2019). Impact of capital structure on firm performance: Empirical evidence from listed food and beverage companies in Vietnam. *International Journal of Economics, Commerce and Management, 7*(2), 567-577. Retrieved from http://ijecm.co.uk/wp-content/uploads/2019/02/7237.pdf

Department of Statistics Malaysia. (2020, May 13). *Malaysia economy performance 2019*. https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=153&bul_id=bVN1K0txTSt1TVRGRFZBRE8yU0JYZz09&menu_id=TE5CRUZCblh4ZTZMODZIbmk2aWRRQT09

Department of Statistics Malaysia. (2020). *Information and communication technology satellite account 2019.* https://www.dosm.gov.my/v1/index.php?r=column/cthemeByCat&cat=319&bul_id=cHBrejFuMlVMdFZzc2VrNjlIZEZQUT09&menu_id=TE5CRUZCblh4ZTZMODZIbmk2aWRRQT09

Dobusch, L., & Jakob K. (2018). Open strategy-making with crowds and communities: Comparing Wikimedia and Creative Commons. *Long Range Planning, 51*, 561–79. https://doi.org/10.1016/j.lrp.2017.08.005

Donaldson, G. (1961). *Corporate debt capacity*. Harvard University Press, Cambridge, MA.

Ehikioya, B. I., Inua, O. I., & Obera, J. J. O. (2019). Capital structure and firm performance in developing economies: evidence from Nigeria. *Journal of Management Sciences, 17*(2), 58-74. Retrieved from https://docplayer.net/200712588-Capital-structure-and-firm-performance-in-developing-economies-evidence-from-nigeria-benjamin-i-ehikioya-1-ofe-i-inua-2.html

Eriotis, N., Vasiliou, D., & Neokosmidi, Z. (2007). How firm characteristics affect capital structure: An empirical study. *Managerial Finance, 33*(5), 321-331. https://doi.org/10.1108/03074350710739605

Foo, W. F., Mok, Y. W., Tan, L. Y., & Wah, W. X. (2012). *Capital structure affects firm value: Technology sector in Malaysia* (Bachelor's thesis). University of Tunku Abdul Rahman. Retrieved from http://eprints.utar.edu.my/589/

Frees, E. W. (2004). *Longitudinal and panel data: Analysis and applications in the social science.* University of Wisconsin, Madison: Cambridge University Press.

Ganiyu, Y. O., Adelopo, I., Rodionova, Y., and Samuel, O. L. (2019). Capital structure and firm performance in Nigeria. *African Journal of Economic Review, 7*(1), 31-56. Retrieved from https://www.ajol.info/index.php/ajer/article/view/182550

Gitman, L. J. (2009). *Principles of managerial finance* (12th ed.). New York, US: Pearson Education.

Gujarati, D. N. (2003). *Basic econometrics* (4th ed.). McGraw-Hill, New York.

Hajisaaid, A. (2020). The effect of capital structure on profitability of basic materials Saudi Arabia Firms. *Journal of Mathematical Finance, 10*, 631-647. doi: 10.4236/jmf.2020.104037.

Hillier, D., Grinblatt, M., & Titman, S. (2012). *Financial markets and corporate strategy* (Second European ed.). London: Irwin/McGraw-Hill.

Isabwa, K. H., & Albert, C. (2015). The effect of long-term loan on firm's performance in Kenya. A survey of selected sugar manufacturing firms. *Global Journal of Advanced Research, 2*(6), 1019-1024. Retrieved from http://www.gjar.org/articles/THE-EFFECT-OF-LONG-TERM-LOAN-ON-FIRM-PERFORMANCE-IN-KENYA--A-SURVEY-OF-SELECTED-SUGAR-MANUFACTURING-FIRMS

Javed, T., Younas, W., & Imran, M. (2014). Impact of capital structure on firm performance: Evidence from Pakistani firms. *International Journal of Academic Research in Economics and Management Sciences, 3*(5), 28-52. http://dx.doi.org/10.6007/IJARBSS/v3-i5/1141

Kasasbeh, F. I. (2021). Impact of financing decisions ratios on firm accounting-based performance: evidence from Jordan listed companies. *Future Business Journal, 7*(15), 1-10. https://doi.org/10.1186/s43093-021-00061-0

Kraus, A., & Litzenberger, R. H. (1973). A state-reference model of optimal financial leverage. *The Journal of Finance, 28*, 911-922. https://doi.org/10.1111/j.1540-6261.1973.tb01415.x

Le, T. P. V., & Phan, T. B. N. (2017). Capital structure and firm performance: Empirical evidence from a small transition country. *Research in International Business and Finance, 42*, 710–726.

Mani, S. (2000). *Policy instruments for stimulating R&D in the enterprise sector: The contrasting experience of two MNC dominated economies from southeast Asia.* Maastricht: United Nations University, Institute for New Technologies.

Meah, M. R., Chaudhory, N. U., & Khalil, M. I. (2020). Does capital structure affect the profitability of listed family and non-family firms? Evidence from Bangladesh. *International Journal of Business, Economics and Management, 7*(3), 131-145. Retrieved from https://econpapers.repec.org/article/pkpijobem/2020_3ap_3a131-145.htm

Minh, H. T. T., Tien, N. H., & Hoang, N. B. (2019). The impact of capital structure on effectiveness of business activities of the listed cement companies in Vietnam. *American International Journal of Business Management, 2*(11), 29-44. Retrieved from https://www.researchgate.net/publication/338594491_The_Impact_of_Capital_Structure_on_Effectiveness_of_Business_Activities_of_the_Listed_Cement_Companies_in_Vietnam

Modigliani, F., Miller, M. (1958). The cost of capital, corporate finance, and the theory of investment. *The American Economic Review, 40*(3), 261-297.

Modigliani, F., & Miller, M. (1963). Corporate income taxes and the cost of capital: A correction. *American Economic Review, 53*(3), 433-443.

Muhammad, M. I., Abubakar, M., Kakanda, M., & Abubakar, M. A. (2020). The dynamics of capital structure and firm value of listed industrial goods in Nigeria. *Asian Journal of Empirical Research, Asian Economic and Social Society, 10*(7), 184-193. Retrieved from http://www.aessweb.com/pdf-files/1-489-10(7)2020-AJER-184-193.pdf

Myers, S. C. (1984). The capital structure puzzle. *The Journal of Finance, 39*(3), 575-592.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics, 13*(2), 187–221.

Nguyen, H. T., & Nguyen, A. H. (2020). The impact of capital structure on firm performance: Evidence from Vietnam. *The Journal of Asian Finance, Economics and Business, 7*(4), 97–105. https://doi.org/10.13106/jafeb.2020.vol7.no4.97

Ong, T. S., & Teh, B. H. (2011). Capital structure and corporate performance of Malaysian construction sector. *International Journal of Humanities and Social Science, 1*(2), 28-36. Retrieved from http://www.ijhssnet.com/journals/Vol._1_No._2;_February_2011/3.pdf

Ozcan, I. C. (2019). Capital structure and firm performance: Evidence from the airport industry. *European Journal of Transport and Infrastructure Research, 19*(3), 177-195. https://doi.org/10.18757/ejtir.2019.19.3.4384

Pakpahan, R. (2010). The influence of enterprise fundamental factors and company dividends on enterprise value. *Journal of Economics, Finance, Banking and Accounting, 2*(2), 211 - 227.

Patrisia, N. D. (2020). The effect of capital structure for firm performance in manufacturing companies listed of the Indonesia stock market. *Advances in Economics, Business and Management Research, 152*, 17-23. https://dx.doi.org/10.2991/aebmr.k.201126.003

Pouraghajan, A., Malekian, E., Emamgholipour, M., Lotfollahpour, V., & Bagheri, M. M. (2012). The Relationship between capital structure and firm performance evaluation measures: Evidence from the Tehran Stock Exchange. *International Journal of Business and Commerce, 1*(9), 166-181. Retrieved from https://ijbcnet.com/1-9/IJBC-12-1915.pdf

Robert, K., Richard, K., & Rono P. K. (2020). The effect of capital structure on financial performance of firms in Kenya: Evidence from firms listed at the Nairobi securities exchange. *Scientific Research Journal (SCIRJ), 8*(1), 1-7. http://dx.doi.org/10.31364/SCIRJ/v8.i1.2020.P0120737

Sakr, A., & Bedeir, A. (2019). Impact of capital structure on firm's performance: Focusing on non-financial listed Egyptian firms. *International Journal of Financial Research, 10*(6), 78. https://doi.org/10.5430/ijfr.v10n6p78

Sharon, A. (2019). *Tech shaping the Malaysian economy.* Retrieved from https://opengovasia.com/tech-shaping-the-malaysian-economy/

Shen, G. C. (2012). *How does capital structure affect firm performance?: Recent evidence from Europe countries* (Bachelor's thesis). University of Tilburg.

Stephen, M. M. (2012). *The influence of capital structure on firms' performance: a case of selected firms listed in Nairobi securities exchange, Kenya* (Master's thesis). University of Nairobi.

Stiglitz, J. E., & Weiss, A. (1981). Credit rationing in markets with imperfect information. *American Economic Review, 71*(3), 383 – 410.

Tae, H. E., Sock, H. L., & Hua, X. (2007). *Introduction to Panel Data Analysis: Concepts and Practices*. In Handbook of Research Methods in Public Administration, Gerald R. Miller and Kaifeng Yang, eds. CRC Press.

Tan, S. L., & Hamid, N. I. N. A. (2016). Capital structure and performance of Malaysia plantation sector. *Journal of Advanced Research in Social and Behavioural Sciences, 3*(1), 34-45. Retrieved from http://eprints.utm.my/id/eprint/50764/

Tian, G. G., & Zeitun, R. (2007). Capital structure and corporate performance: evidence from Jordan. *Australian Accounting Business and Finance Journal, 1*(4), 40-61. http://dx.doi.org/10.14453/aabfj.v1i4.3

Tretiakova, V. V., Shalneva, M. S., & Lvov, A. S. (2021). The relationship between capital structure and financial performance of the company. *SHS Web of Conferences, 91*, 1-9. https://doi.org/10.1051/shsconf/20219101002

Wooldridge, J. M. (2006). *Introductory econometrics: A modern approach* (3rd ed.). Thomson/South-Western, Mason.