MALAYSIA LISTED TECHNOLOGY COMPANIES: EXAMINING THE OPTIMAL CAPITAL STRUCTURE, FINANCIAL RATIOS TREND AND FINANCIAL HEALTH FROM 2012 TO 2016

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ABSTRACT

Capital structure of the firm plays an important role to help firm achieves better performance and sustainability in its business. As such, this study was conducted to investigate the optimal capital structure, to observe financial ratio trends and to examine the financial health in the context of technology companies listed on KLTEC Index in Malaysia. The financial data of 30 technology companies listed on KLTEC Index were extracted from Bloomberg database for 5 years, which is from 2012 to 2016. The financial data were analyzed using Descriptive Analysis, Financial Ratio Analysis and Altman's Z-Score. Descriptive analysis was used to investigate the optimal capital structure, the financial ratio analysis was used to see the profitability, tangibility and liquidity trends and Altman's Z-Score Model was used to examine the financial health of the listed technology companies. The descriptive analysis summarized that most of the technology companies have acquired 71.3 per cent debt financing to finance its assets. The profitability ratio showed a declining trend for three (3) consecutive years from 2014 to 2016, the tangibility ratio showed moderate-to-healthy trend which ranged between 0.40 and 0.38 in 2012 and 2016 respectively, and the liquidity ratio indicated a stable trend which ranged between 3.15x to 3.04x from 2012 to 2016. The Altman's Z-Score presented that the Green Packet Bhd, Omesti Bhd and HeiTech Padu Bhd have recorded the lowest Z-Score which portrayed high risk of bankruptcy.

Keywords: Capital Structure, Leverage, Optimal Capital Structure, Technology Companies

ABSTRAK

Struktur modal syarikat memainkan peranan yang penting dalam membantu syarikat mencapai prestasi dan kemampanan yang lebih baik di dalam perniagaan. Sehubungan itu, kajian ini dijalankan untuk menyelidik struktur modal yang optimal, memerhati perubahan atau tren nisbah kewangan, mengkaji kedudukan kewangan di dalam konteks syarikat teknologi yang tersenarai di KLTEC Index Malaysia. Data kewangan bagi 30 syarikat teknologi yang tersenarai di KLTEC Index Malaysia telah diperolehi daripada pangkalan data Bloomberg untuk 5 tahun, iaitu dari tahun 2012 hingga 2016. Data kewangan ini telah dianalisis menggunakan Analisis Deskriptif, Analisis Nisbah Kewangan dan Model Z-Score Altman. Analisis Deskriptif digunakan untuk menyelidik struktur modal yang optimal, Analisis Nisbah Kewangan digunakan untuk memerhati tren keuntungan, asset ketara dan kecairan dan Z-Score Altman digunakan untuk mengkaji keadaan kewangan. Analisis deskriptif mendapati majoriti syarikat teknologi menggunakan 71.3 peratus pembiayaan hutang untuk membiayai asset mereka. Nisbah keuntungan menunjukkan tren menurun selama tiga tahun berturut-turut dari 2014 hingga 2016, nisbah asset ketara menunjukkan tren sederhana-kepada-baik pada kadar di antara 0.40 and 0.38 pada 2012 hingga 2016 masing-masing, dan nisbah kecairan menunjukkan tren stabil pada kadar di antara 3.15x to 3.04x dari 2012 hingga 2016. Analisis Z-Score Altman menunjukkan Green Packet Bhd, Omesti Bhd dan HeiTech Padu Bhd telah merekodkan mata Z-Score yang terendah yang mempamerkan risiko tinggi terhadap insolvensi.

Katakunci: Struktur Modal, Keberhutangan, Struktur Modal Optimal, Syarikat Teknologi

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And others	Et al

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

The terminology of technology sector has been widened for so many times as more and more technologies companies with new businesses related to information technology (IT) has eventually entered into a market. The technology sector was originally begun with semiconductors, computing hardware and communcations equipments. Then it gradually adding companies that are related to ecommerce, social media services, sharing economy and cloud based computing. There are multiple investors exist either in global or local market as the technology sector has rapidly grown and gives a better returns to an investors.

According to Doms (2004), the stake in the telecommunication industry has eventually raised by investors as the industry has experienced an advanced growth. As the world nowadays has been facing a fast pace in the technological advances, the world also has seen a remarkable headway in the investment in the technology sector. The growth of technology sector foresees progress and development and the sector has become the key economic indicators of any country and has substantial influence on any country's economy (Roller, 2001; Datta, 2004; Wavermann and Meschi, 2005).

Koh and Magee (2006) reported that the average growth rate of Information and Communication Technologies (ICT) industry is relatively steep and is nearly to 20 to 30 percent for the ICT worldwide. Koh and Magee (2008) then compared the IT sector to the other important sector like energy whereby they found that the growth rate of IT sector is greater as the average growth rate of the energy sector is 6 per cent at an

average annually. The progress of IT is complex and multi-dimensional. Jeanjean (2011) stated that the investment in the sector has been continually rising over the years and it has contributed towards customer's satisfaction, gives investors a better returns as well as helped to upgrade the standard of channeling the internet data.

The capital structure denotes the proportionate relationship between debt and equity. There are numerous number of researchers have debated thoroughly on capital structure theory through many empirical studies (Harris and Raviv, 1991) in their article "The theory of capital structure". The decision either to agree or disagree with the influential irrelevance theory of Modigliani and Miller (1958) on capital structure, other researchers have studied the firms' capital structure through a various sub topics such as debt-signalling model (Ross, 1977), agency signalling costs (Poitevin, 1989), taxes (Leland and Toft, 1996), and many more. However the understanding of the capital structure's determinants on technology companies are still limited and vague.

Hence, this study is conducted to investigate the optimal capital structure of listed technology companies in Malaysia, financial ratios trend and financial health of the technology companies listed on the Kuala Lumpur Stock Exchange Technology Index (KLTEC Index) which is still relatively new and underexplored. KLTEC Index is a capitalization-weighted index of both KLSE Main Board and KLSE Second Board Technology sector stocks which includes telecom, electronic and computer related firms, and are deemed to create and further technology. This sector contains businesses on the manufacturing of electronics, creation of software, computers or products and services relating to information technology. The total market capitalization has increased from RM5.4 billion in 2012 to RM13.2 billion in 2016. As at 29 Dec 2017,

the total market capitalization for KLTEC Index has increased more than 90 per cent to RM25.5 billion.

Currently, there is no clear understanding on the capital structure decision for the technology companies' managers. Apparently, the factors that influence the corporate financing behavior of the technology companies also unclear. Over the years, the development of technology sector in Malaysia is very aggressive however this sector still left behind the developed economies such as UK, US and China. However, the sector is progressing fast and the technology companies are mushrooming and being listed on the KLSE Main Board and KLSE Second Board every year.

1.2 Technology Sector in Malaysia

The development of the technology sector specifically the ICT industry in Malaysia has been initiated by the Malaysian government since the 1990s, with the vision of developing a knowledge society by 2020. This has meant that the Malaysian government has actively fostered modernization and investment especially in the ICT industry, which has led to a modern telecommunications infrastructure, high broadband Internet penetration rates, and a vibrant software and software consultancy services subsector that serves a broad national and international client base. Unlike Malaysia, the government of China has started to promote the IT sector since the mid-1980s. They are promoting the technology sector by supporting local companies and drove a lot of efforts in research and development (R&D). In view of this, technology sector in China has changed the role of technology in the country's economy and society to build an information society.

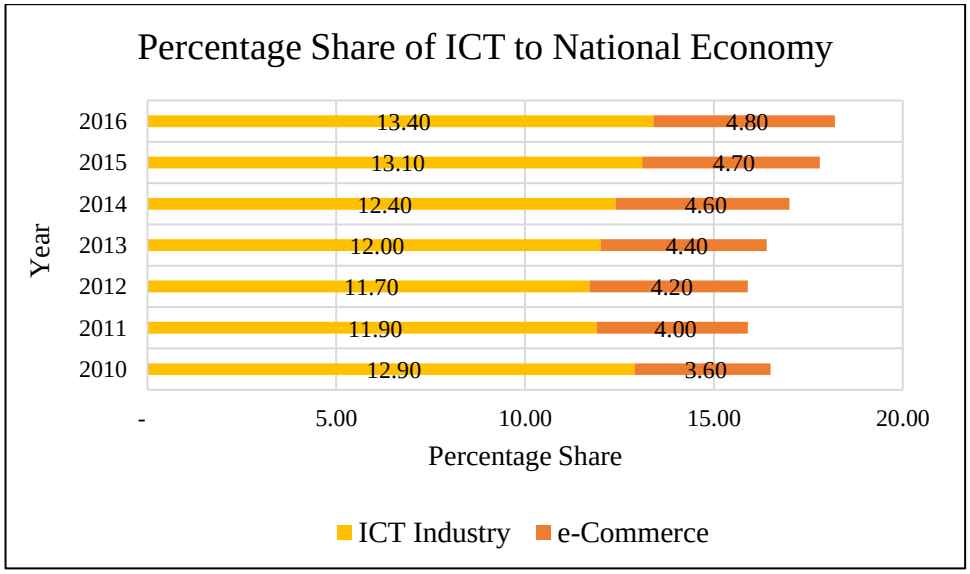
There is information technology (IT) gap between developed and developing countries because the developed countries have invested in the development of their IT infrastructure and systems and they are keep investing in it, while developing countries are doing little or nothing (Golding P, 1998). There is a less support and assistance to develop the information technology infrastructure by the developed countries to the developing countries. The basis of this issue may be that the IT itself has rapidly grown over a short period and developed countries are still developing their IT infrastructure and systems so they do not have enough time to ponder and support developing countries.

1.2.1 ICT Contribution to the Malaysia's Economy

Developing countries like Malaysia has increasingly investing in ICT industry. In fact, the contribution of ICT industry towards Malaysia GDP has increased over the years. The development of ICT industry of other countries can be an evidence that the industry can immensely contributes to the national GDP, including Malaysia.

Figure 1.1

Percentage share of ICT to the national economy

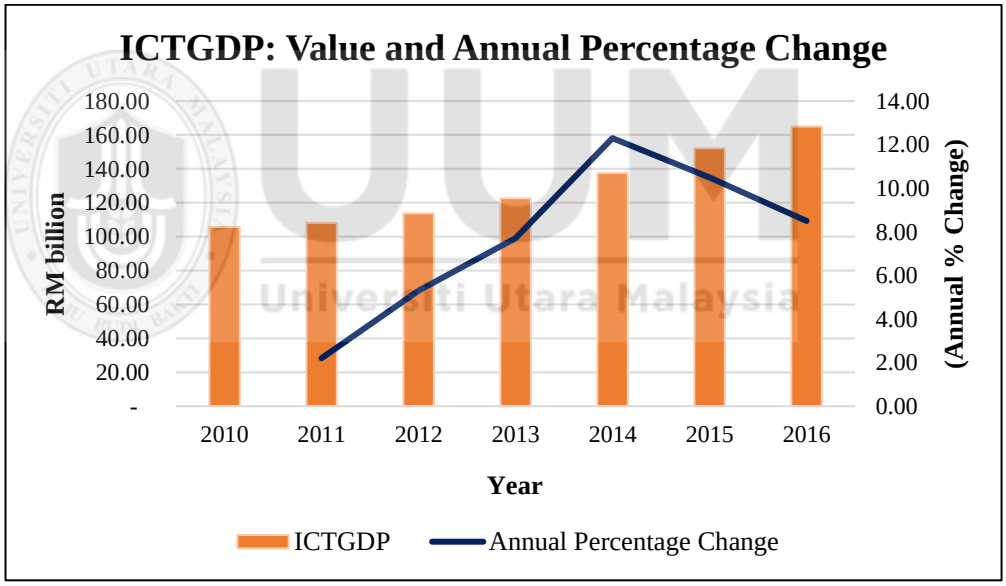


Source: Department of Statistic Malaysia (2016)

The ICT segment has increased from 17.8 per cent in 2015 to 18.2 per cent in 2016 to the national economy. ICTGDP contributed 13.4 per cent while e-Commerce was 4.8 per cent as depicted in Figure 1.1. ICT has contributed a lot to the economy where is acting as an enabler which helped to improve market competitiveness of a country's products and services as well as give positive impact on governance and other sectors of the economy. In turn ICT can effectively assist international economic integration, improve standard of living, narrow the digital divide, and improve biodiversity utilization and management.

Figure 1.2

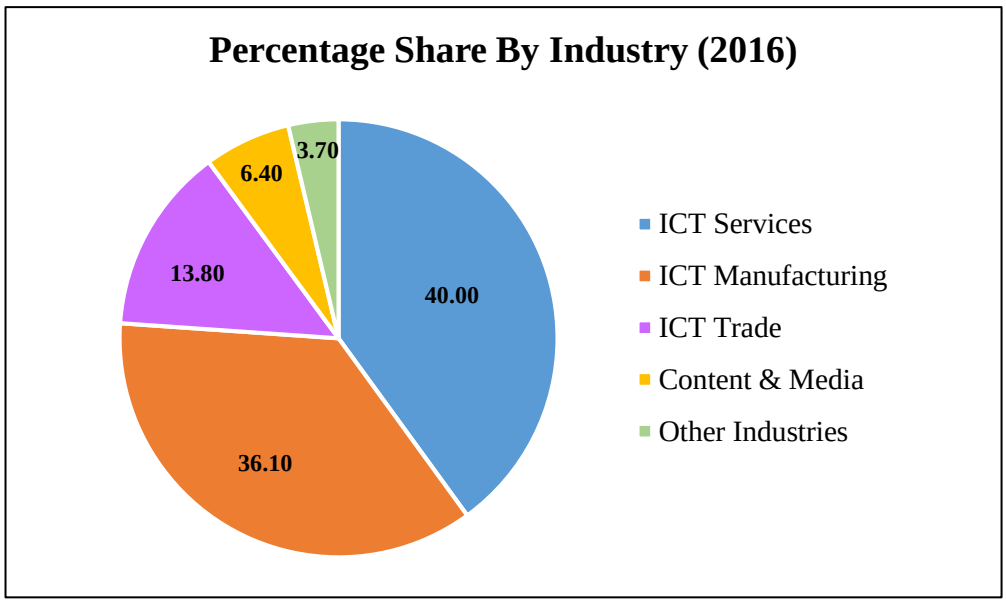
Malaysia's ICTGDP: Value and Annual Percentage Change



Source: Department of Statistic Malaysia (2015)

Figure 1.3

Malaysia's ICTGDP: Percentage share by Industry



Source: Department of Statistic Malaysia (2015)

Figure 1.2 above presents the ICTGDP value of RM164.9 billion in 2016 compared to RM152.1 billion in 2015. ICTGDP also registered a growth of 8.5 per cent which slightly lower than growth in 2015 which is 10.5 per cent, driven by activities in the ICT services and attributed to significant growth of telecommunication and computer services. And then, Figure 1.3 shows that the highest share by industry towards ICTGDP is ICT Services with share of 40.0 per cent followed by ICT Manufacturing with a share of 36.1 per cent. Internet is the example of information and communication technology (ICT) business where the usage has increased over the years. The increased use of Internet lead to higher productivity and efficiency in all aspects of the value chain. And this may help the technology companies in Malaysia to grow as more businesses are coming in.

1.3 Problem Statement

Capital structure decision has become the important strategy to corporate managers because the combination of debt and equity may affects firm's value. For example, Damodaran (2001) explains that if the ultimate goal of the corporate managers are to maximize the firm's value, then the investment, financing and dividend decisions must be interrelated to each other with the value of firm. Ross (1977)'s model elaborates that the firm's value will be increased with the rise in leverage as high level of leverage may increase the market's perception of value. Assuming that the agency problem does not exist where management only take action for the interest of all shareholders, the manager tend to choose optimal capital structure which is the highest possible debt ratio to maximize firm's value. The high quality firms' need to give a good indicator of their quality to the market as low-quality firms' managers will try to follow and imitate. Based on the above argument, the level of debt should have positive relationship with the firm's value. Contrary to the above, McConnell and Servaes (1995) find that high-growth firms' corporate value is having negative correlation with leverage, whereas for low–growth firms' corporate value is having positive correlation with leverage.

The argument on debt also has been made by Stulz (1990) that there will be a positive and negative effect on firm's value when firms issuing debt. Assuming that managers do not possess equity ownership in the firm and getting benefits by managing a larger firm, Stulz's model suggests that debt financing might lighten the overinvestment and underinvestment problem. Managers are keen to use "power of manager" which makes managers to be self-motivated to undertake negative present value projects. To overcome this issue, shareholders use their power by forcing firms to issue debt. By doing that, managers may have to forgo positive present value projects because firms

are forced to pay out funds. Therefore, to determine the optimal debt structure, it is important to balance the optimal agency cost of debt and the agency cost of managerial discretion.

While using leverage may increase the earnings of the company, especially in its return on equity, debt also may increase the company's risk of bankruptcy. Without proper leverage management, technology companies might have higher tendency going for bankruptcy. As what happened to U.S in 2002, it might also happen to Malaysia. There are lots of potential businesses or projects as the technology sector is growing now days. Thus, technology companies in Malaysia are exposed to have high leverage to finance their projects.

For example, there were three (3) giant telecommunication companies in U.S had filed for bankruptcy protection. First, the fiber-optic network operator, Global Crossing Limited (GCL) filed for Chapter 11 in January 2002 due to weakening demand for telecommunications services besides reckless corporate and executive spending. GCL provides computer networking services worldwide such as transit and peering links, VPN, leased lines, audio and video conferencing, long distance telephone, managed services, dialup, colocation and VoIP, to a various range of customers from individuals to large enterprises and to other carriers as well. In its filing, the company listed its total assets of $22.4 billion and debts amounting to $12.4 billion.

After the bankruptcy issue of GCL, U.S is then surprised again with Telecommunication Company filing bankruptcy which was Adelphia Communications in June 2002. The founder John Rigas and his son Timothy were convicted for fraud, $2.3 billion debt was hidden and deceiving investors about Adelphia's profit and subscriber growth. The $2.3 billion was incurred and put under

the family's private trust, the Highland Holdings through co-borrowings between Adelphia and other Rigas family entities.

In July 2002, Worldcom Inc also filed for bankruptcy with approximately $107.0 billion in assets. During bankruptcy, it was considered as one of the largest and well-known company in U.S. which were the second largest bankruptcy case resulting from one of the largest corporate fraud scandals. In the year 2000, the telecommunications industry in U.S was in decline. After falling of share prices and a failed share buyback scheme, the chief executive officer, Bernard Ebbers and the accounting director Buford Yates of Worldcom Inc were found guilty that they used fraudulent accounting methods to push up the stock price.

The above cases proved that the capital structure is an essential part in maximizing firm's value and plays an important role in sustaining the companies' growth in the future. As mentioned earlier, the argument made by Stulz (1990) that debt can bring either positive or negative effect on the firm's value. The positive effect is it can increase the company's returns and negative effect is it also can increase the company's risk of bankruptcy. Technology companies should have clear understanding on how to decide on their capital structure and have the ability to identify what are the factors influencing their corporate financing behavior. This is because, technology companies might have higher tendency going for bankruptcy if they are using inappropriate leverage management and having limited knowledge on capital structure. As what happened to giant technology companies in U.S in 2002, it is not possible that the same event might happen to technology companies in Malaysia.

1.4 Research Objectives

The preference for chosen technology sector was inspired by several factors. First, the literature of optimal capital structure is rather limited. Second, to the best of found knowledge, there is no study on the optimal capital structure of the listed technology companies in Malaysia providing a wider sense of knowledge on how the companies in this sector manage their optimal capital structure. Therefore, the specific objectives for the research questions are:

(i) To investigate the optimal capital structure of the listed technology companies for the duration of five (5) years from 2012 to 2016;

(ii) To observe any changes (trend) on the financial ratios of profitability, liquidity and tangibility of the listed technology companies from 2012 to 2016 period;

(iii) To examine the financial health of the listed technology companies in Malaysia using Altman's Z-score test from 2012 to 2016 period;

1.5 Research Questions

In this study, as described in the problem statement before, there are few objectives outlined in this study as the guiding principle. The focus of this study is to answer the five questions below:

(i) What are the optimal capital structure of the listed technology companies in Malaysia?

(ii) Does the financial ratios of profitability, liquidity and tangibility of the listed technology companies showed any changes (trend) from 2012 to 2016 period?

(iii) Does listed technology companies in Malaysia experienced financial distress using Altman's Z-score test during the 2012 to 2016 period;

1.6 Significance of the Study

The purpose of this study is to examine the optimal capital structure of listed technology companies on KLTEC Index. The results of this study might be significant and useful to corporate managers who are keen to achieve the optimal capital structure for their firms and they may modify their debt and equity portion according to their financial objectives and market conditions.

The significance of the study are as follows:

(i) To provide rightful information and valuable knowledge on the optimal capital structure in the context of technology sector in Malaysia;

(ii) The findings of this study may give benefit to corporate managers in Malaysia to see the valuable insights in terms of the complexity and robustness of capital structure decisions;

(iii) As previous studies have focus mainly on the other sector such as construction and properties sector. This study provides the most recent data available so that the idea of optimal capital structure of the listed technology companies could be evaluated in a view of the changing in financial markets and economic conditions.

1.7 Scope of the Study

There are numerous issues encountered by the researcher along with the completion of this study such as data collection issue, the concentration of field study, limited resources, constraints on monetary, timeframe and information availability. The scope of the study is limited which cover the optimal capital structure in the field of corporate finance, the size of the sample and the time period of study. The detailed of the scope of this study are as follows:

(i) The selection of the sample companies were taken from the Kuala Lumpur Stock Exchange Technology Index (KLTEC Index). KLTEC Index is a capitalization-weighted index of both KLSE Main Board and KLSE Second Board Technology sector stocks. The population of listed technology companies on KLTEC Index is 30 companies.

(ii) The period of the study is five years from year 2012 to 2016. They represent the most current data available which are obtained from the Bloomberg database.

1.8 Limitations of the Study

There are three main limitations of this study:

(i) As there are many small and medium-sized technology companies exists in Malaysia, the results may not be a good representative for the population in Malaysia because it may be biased towards big and well established firms. However, it give better representation reflects from large amount in asset capitalization of the listed firms.

(ii) The second limitation of this study is that the focus is not engaged at the practicality of the findings. The financial managers may use the empirical findings and conclusions derived from this study to advise the management on the policy decisions. However, the purpose of this study is not to produce policy-oriented findings for operation purposes.

(iii) Lastly, the study period may be too short, which is from the year 2012 to 2016. However, the motivation of this study is to understand the optimal capital structure of the listed technology companies in Malaysia.

1.9 Organization of the Study

The remaining section of the paper proceeds as follows: Chapter Two will review the main literature and theoretical framework done by the past scholars and researchers on optimal capital structure, capital structure theories such as Modigliani and Miller (MM) Theory, Trade Off Theory, The Pecking Order Theory, Agency Theory and Altman's Z-Score Model. Chapter Three provides the research methodology adopted in this study which includes the operational definition, measurements of the variables, sampling design, data collection and data analysis techniques. In Chapter Four, the results and analysis of this study are presented. Chapter Five concludes this study as well as recommendation to the financial managers and to future researchers.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Capital structure is one of the debt dimensions to the total capital of the firms (Vanhorn, 1989). Meanwhile, in 1991 Brealey and Myers suggest that capital structure encompasses of debt and equity or it can be mix of both debt and equity issued by the firm. Then, in 2005, Pandey defined it as the preferred either internal or external financial instruments made by the firms.

Thus, based on this varied definitions, the term of capital structure can be described as the firm's approach to raise their capital to expand their business activities. Recognizing the optimal combination of the two (capital structure) is a difficult process as companies have to identify which financing are offering the lowest cost of capital. Till now, the debates on the optimal capital structure were focusing more on manufacturing firms. However, the capital structure decisions among service sector firms remain lacking. Thus, this research intends to embrace the basic concept and understanding of the existing knowledge of optimal capital structure.

2.2 Capital Structure Theories

Capital structure issues remain debatable, where it was struggling to explain the debt to equity determinants. Numerous theories and research derived from previous studies comprise of capital structure and firm-specific features. Amongst them are trade-off theory (Modigliani and Miller, 1958; Zhang and Kanazaki, 2007), agency theory (Jensen and Meckling, 1976) and pecking order theory (Myers and Majluf, 1984; Zhang and Kanazaki, 2007).

2.2.1 Modigliani and Miller (MM)

Most of capital structure of the firms influenced by the size and formation of debt or equity that sometimes distinguished as hybrid financing. The company's capital structure frequently measured by the debt-equity ratio, also name as the leverage ratio (Merton, 1974).

In 1958, MM declared that there is no substantial capital structure ever recorded. In which, each structure based on different assumptions. For example, business without taxes, the comprehensive and reliable disclosure of data, no transaction cost, no bankruptcy costs, and the balance of debt in a firm's capital structure does not affect the firm's value (Modigliani & Miller, 1958).

In the earlier development of the capital structure theory, there is no element of taxes, bankruptcy cost, an efficient market, and in asymmetric information (Modigliani & Miller., 1958, Hamada, 1969; Stilglitz, 1972; Hatfield et al., 1994). Indicating that, the value of the firm depended on their real assets and not on the capital structure of the firms itself. Including excluding the dividend from the firm policy and capital growth. However, Harris and Raviv (1991) claimed that the theory is inconsistent and cannot be accepted in reality. In which, it is not relevant to apply in this current economic environment. These inconsistent assumptions were removed when the options of the capital structure of the firm become an essential factor.

After the first proposition of MM-1 (1958), which is the irrelevance theory of capital structure, MM (1963) then enhanced their theory (MM-11). MM-11 proposes that with tax, the companies possess the tax savings on interest payment, in which the capital structure of the firms will need to use a higher debt. They claimed that with 100 per-cent of debt financing, the companies could attain the optimum capital structure by

possessing the tax shield benefits. Some researcher argued that the value of the levered firm (firm with debt) is higher compared to the value of the un-levered firm (firm without debt) (Modigliani & Miller, 1958; Fischer et al., 1989). This situation happened because the value of tax savings is ascending from the debt usage. MM-II scheme (1963) that the required cost of debt, debt-equity ratio and rate of return can provide bases from the firm's value.

Nevertheless, some researcher argued that the theory propose an inconsistent explanation of how the companies must improve their capital structure (Frank & Goyal, 2003). The discrepancy in the irrelevance theory has become one of the mechanisms for other researchers to improve the capital structure and generating other relevant theories such as agency theory, trade-off theory and the pecking order theory. In conclusion, this theories offer a complete understanding of financial managers and academicians to comprehend why the decision of debt to equity possibly relevant to the firms.

2.2.2 Trade-off theory

The trade-off theory reveals that the firms can get the maximum leverage by three determinants including charges of financial distress, taxes and agency costs. Also, the firms can borrow up until the tax benefits precisely equivalent to the costs that come from the increased possibility of financial distress (Myers, 1984). In which recommended the firms to set their target debt to equity ratio as well as progressively moving in achieving towards it. Therefore, the firm value will increase if the optimal capital structure continues.

Baxter, (1967) argued that the firms can increases the chances of bankruptcy if they increased the leveraging. In which, the firms should not use debt exceeding the point

where the cost of debt is higher than the tax advantage. Despite, Kraus and Litzenberger (1973) claimed that if the firm's earnings are much lower than the firm's debt requirements, indicating that the firm's market value is significantly resonating with its debts. On the other hands, Shyam-Sunder and Myers (1999) claimed that the maximal leverage founded when a trade-off between taxes shield benefits consist of costs and debts was found.

Other than that, Graham (2000) stated that the value of the firm's increases when the value of the tax shield rises, as the debt enables the possibilities to diminish the interest charges to maximize the tax shield for higher leverage. In contrary, Damodaran (2001) conveyed that the increase in financial development for managers is a result of higher debt levels and may increase the risks of the firm's bankruptcy. The conflicts between the managers and the owners of the firms heightened when the debt levels increased, and the possibility of rose in agency costs occurred (Myers, 1984). Thus, it can be explained by optimal debt level can maximize the firm's value.

Baker and Martin (2011) imparted that a company could find the balance between the costs and profits of debt. The company has to perform borrowing transaction until the profits from the tax deductibility of interests become lower than marginal bankruptcy costs. One of the advantages of tax deductibility of the interest payments comprises the capability to invest and spend in more projects. Hence, the value of the financial company from the leverage can increase. Though, it could bring bad effect to the company financial status. Whereby poor investment could make the company suffered an insolvent. Apart from that, the additional financing could cause more burden and costly. Hence, Brealey and Myers (2006) suggested that using a specific debt ratio can maximize the company profits and minimizes the cost of company debt.

Similarly, Myers (1984) suggests that by following this theory, the companies can structure the target debt to value ratio and gradually aim towards it. One could determine the target when the weight of bankruptcy against debt tax shield was a balance. Besides, the companies should evaluate the trade-off between costs and profits of borrowing and consistent operating the investment plan and asset to get best debt ratio. On the contrary, by rearranging the equity for debt is required to improve the company value. Therefore, to maximize the company value, the option may be varies depending on how the company was managing their debt.

Afterward, Frank and Goyal (2009) found that the specific financing decision depends typically on the financing margin forecasted by the company in the subsequent period. Supposed the fund might rise in that subsequent period, if not the company might consider paying out money, either in the form of debt or equity. However, consider the combination of the debt and equity might be the solution to gain the optimal financing decision.

2.2.3 The Pecking Order Theory

The Pecking Order Theory (POT) is a theory that tries to justify capital structure determinations by examining the Asymmetric in essential information that exists between various parties. The first researchers who consider the assymetry information in the capital structure were Myers (1984) and Myers and Majluf (1984). The authors indicated that the appropriate capital structure had an opportunity to lessens the inefficiencies in the investment decisions for the company that caused by the information dimension.

Myers (1984) indicated that the firms have a strong preference for internal finance over external finance because it is supposed to possess a cost advantage over new debt and

equity. Furthermore, according to Myers (1984), the Pecking Order Theory implies a strict hierarchy of finance which the company needs to use the internal finance first rather than using the external finance. If the options depleted, then the company can consider using the debt and equity finance. Hence, it is explainable that both internal and external finance cannot be mutual substituted. Besides, the issuance of external financings such as bonds and loans will jeopardize the financials of the company because it involves repayment of capital and interest. Meaning that, the company pledged to pay according to its payment schedule. Also, the issuance of debt or equity would affect the company problems to rise, when was the issuance of debt cause conflicts between managers and debt holders (Myers, 1984). For example, the managers determined investing in the profitable and yet uncertain that the project beneficial to the company. Assuming the project was succeeds, all benefits will go to shareholders; in the meantime, fixed rate of return were deemed stand for debt holder only. Meanwhile, the equity and debt holder would face a conflicts from this equity issuance, as shareholders insist to acquire maximize price of share from their capital investment. Still, regarding to that matter, the debt holder highly concerns about the ample amount of return profit over interest on time and principal. Moreover, each extra risk added to this issuance the bondholders would not have an extra authorization to acquire additional return; yet, have to endure the equal risk took by the management firm. Hence, the preference to employ the internal finance seem to be the best choice rather than external finance.

In contrary, Majluf and Myers (1984) argued regarding pecking order theory that the asymmetric information angle where management was expected to have perk information pertaining the value of the company instead of potential investors. Indeed, regarding about its investment project and internal condition of company performance

supposed to be well known by the managerial level. Thus, in order to fund the future project, the management have to ask the potential investor to pay the premium to embark. The reason because, the degree of asymmetric information over equity is above than debt, because of that the financial intermediaries would be able to gain access to the information. In which, external investors could not able to acquire and monitor the company financial performance. In contrast, the external investors require to stipend higher premium towards equity finance over debt since there is growths possibilities of one company are ambiguous.

While some other researchers suggest that the asymmetric in information increases the cost of debt. However, tax would have an advantages in repelling an effect towards lessens the debt cost that related to equity issues (Myers, 1984). Consider, the equity of finance to be an ultimate expensive source of finance that contemplate the costs associated along the issuance of new equity, and it might vary including taxes and selling, registration fees, underwriting discounts, and administrative expenses. Mostly the company would prefer to issue 'safe' securities as the prime choice that is debt instead of equity. The term 'safe' indicates that the term does not overwhelm by managers inside information (Shyam- Sunder and Myers, 1999). To explain that, debt could not be considered as a 'safe' security, as the reason it has hold the cost of financial distress, yet still substantiated as 'safer' compare to equity.

2.2.4 The Agency theory

Beginning in 1976 Jensen and Meckling have introduced the theory that debt is the significant elements generates conflict between manager and equity holder. Further, the theory has argued about the credibility of distribution the cash flows yield by the company is dependent on its ownership structure. Since, the circumstance may be used

to demonstrate optimum capital structure. The combination of external debt and equity recommended since it was beneficial in reducing total agency costs.

In the meantime, according to Ryen et al. (1997), the company will face two sets of agency conflicts, in which first adumbrated the conflict between stockholders and managers. Second, the dispute between bondholders' ad stockholders. The first conflict occurs when there is an overspend element involved among the manager, where these actions lead to unpromising the stockholders or managers to gain profit. This circumstances happen as an alternative action took by the manager to take smaller leverage to avoid total risk. Instead of concerning the risk of losing the job, reputation and property. While, the second dispute arise, when the shareholders have better opportunities and incentives to increase the property by increasing the dividend rate, claim dilution, asset substitution and underinvestment. However, by drafting a bond covenant and creating agreement regarding limiting the investment, financing, production and dividend payout are seen as beneficial to the bondholder (Ryen et al., 1997).

2.3 Financial Ratios

Financial statements provide a meaningful information about the financial position of the firms which are covered in the numbers. Lasher (1997) stated that the financial ratio analysis requires capturing the numbers out of the financial statements and construct the ratios to enhance the understanding on the firm's financial performance which helps in business decisions. Igben (1999) then suggested that the financial ratios are the proportion, fraction or percentage that indicating the correlation between one part and another part in a set of financial statements.

2.3.1 Profitability Ratio

Profitability ratio act as a measurement to measure the firm ability to earn adequate earnings using its resources. The earnings power ratio (operating income to total assets) was applied to estimate the efficiency of the firm in utilizing the assets in generating the earnings before interest and taxes. Besides, this ratio was a beneficial tool in comparing the firms with various debt and tax circumstances (Bringham & Houstan, 2009). The higher the ratio indicates that the firm was efficiently generating their earnings by utilizing the total assets and vice versa.

2.3.2 Tangibility Ratio

The tangibility implies assets which have a physical form such as fixed and current assets that can be accepted by the creditors for issuing debt as collateral. In this study, the word tangibility refers to the ratio of tangible (fixed) assets to total assets. Rajan & Zingales (1995) claimed that the tangible assets were useful tool as collateral in the event of bankruptcy or financial distress since the tangible assets hold higher liquidity value. Thus, it is expected that the lender prefers company with high level of the tangible assets as compared with fewer tangible assets since the higher the tangible assets the firm hold indicate a low risk premium for giving loans.

2.3.3 Liquidity Ratio

For this study, the liquidity ratio refers to the current ratio where it uses to measure the current assets against the current liabilities. In which, it shows the ability of a firm to meet its short term liabilities by liquidating its current assets in case of the financial crisis. Fraser and Ormiston (2004) claimed that the available sources of cash must come first to satisfy the debt requirement as they become due or the firm need to do a conversion of other current assets to cash. Hence, the indicator of liquidity ratio is the

higher current ratio shows that the firms have high level of liquidity in which lessen the chances of cash tight. In contrast, if firms show a lower current ratio meaning that firms struggling to meet theirs current or short term liabilities.

2.4 Altman's Z-score

The Altman's Z-Score were firstly established and invented in 1968 by Edward Altman from New York University. The model was used to estimate the financial position and to predict the corporate bankruptcy by using the combination of five financial ratios. Using the multivariate analysis, Altman (2000) examined some of the traditional ratio analysis to see the effects of the ratio and on the company's performance. In that study, he founded that half of the 66 companies filed for bankruptcy between 1946 and 1965. As a result, he begins to reinvestigate the ratio and classified them into five categories:

i. Liquidity Ratio

Maintaining a good level of liquidity may help firms carrying its day to day business operations smoothly. Liquidity can be used as a precautionary measure especially during liquidity crisis or credit crunch faced by the firms. A focus on working capital or liquidity management is very important because it involves time contraints and give effects on the firms' profitability (Bei & Wijewardana, 2012). Gitman (2006) assume that working capital or liquidity management plays an important role for the management on business performances and will significantly influence the cash flow of firms' businesses.

ii. Leverage Ratio

The retained earnings total assets ratio is deployed to measure the portion of totsl assets financed by the retained earnings of a firm. The ratio is a gauge to what extend the business is holding its earnings and utilizing it to buy assets instaed of paying out dividends and acquire debt and new capital to fiannce its business activities. Significant diffeerences have found among all investigated mean industry leverage ratios across industries. Brower, Daley & Huber (1982) reported that firms are likely to shift closely to their industry mean leverage level becaus this level is believed to be a valid proxy for an optimum leverage level.

iii. Profitability Ratio

Basic Earning Power (BEP) ratio shows the earningsgenerated by the firm's businesses against its total assets before the consideration of interest and taxes (EBIT). The rule of thumb for this ratio is that the higher the operating income is better since the lower operating income shows that firms bearing higher operating costs. According to Fraser & Ormingston (2004), profitability ratios provides the comprehensive measurement on firm's performance and its efficiency of managing assets, liabilities and equity.

iv. Activity Ratio

This ratio is used as an indicator to measure the ability of firms to turn its sundry assets, liabilities and capital accounts into cash or sales. The efficiency of firm in managing its businesses are indicated by how quickly the businesses can convert its assets into cash. According to Altman (2000), the higher value of this ratio presents less risk of bankruptcy faced by the firms.

v. Solvency Ratio

The solvency ratio is deployed to assess the ability of firm's business to repay its long term liabilities. General rule of thumb is if solvency ratio in more than 20 per cent, then the firm is considered to have a sound financial position. Robinson et al. (2015) stated that solvency ratio refer to the capability of frims to repay its long term financing commitments which includes the payment of loans principal plus its interests. Thus, higher percentage of the ratio reflects greater financial risk faced by the firms.

Using Altman's Z-Score model, Ray (2011) identified that the model could assist management to predict corporate problems early enough to evade financial crisis. Additionally, companies with the financially distressed could ruin the financial health of the company and lead to bankruptcy. Mohammed and Kim-Soon (2012) determined that the Altman model and current ratio are useful tools for the investor in predicting financial failure of the companies by measuring 44 selected listed Companies of Malaysian Stock Exchange.

Moreover, the Altman model is seen as a success when it used in air transport when the prediction of the carrier failures accurately forecasted the bankruptcy filings against Braniff and Continental in early 1980's (Gritta et al., 2011; Abdullah, 2015; Al Amin et al., 2015). According to Altman (2000), the accuracy of Z-score model was around 80 and 90 per cent to classify and to speculate the company financial before bankruptcy. Similarly, Lin et al. (2005) found that the model has an accuracy rate of 93 per cent, and very successful model used to predict failed and non-failed firms. Likewise, Pitrova (2011) discovered 84 per cent accuracy rate of the model on Czech firms four years before the bankruptcy. However, the highest accuracy of the model can predict one year before the bankruptcy (Li, 2012; Mohammed & Kim-Soon, 2012).

Meanwhile, Gritta et al. (2011) found that the model's overall success rate in forecasting firms that ultimately failed was 76 per cent. Li (2012) found that the Altman's model adequately performs in predicting bankruptcy, with an accuracy rate ranging from 80 to 94 per cent. However, Li added the model tends to mis-predict the solvent firms as bankrupt. Furthermore, Alareeni and Branson (2012) reported that the Altman's model still effective in evaluating the financial failure but fail to present solid indicators to distinguish between failed and non-failed companies.

2.5 Chapter Summary

The perfect market term refers to the reliable disclosure of data, no transaction costs, no taxes, or going bankrupt, and any capital structure decisions would not give an effect to the firm's value (Miller & Modigliani, 1958; 1963). The above statement pointing to the irrelevance theory of Modigliani and Miller which suggested the company levered and unlevered must have the same value. However, the theory was unrealistic and giving the revolution of the capital structure theory to rise. The expansion of the capital structure theories such as Tradeoff Theory, Pecking Order Theory, and Agency Cost Theory was to counter the MM theory flawed. All these theories show that the capital structure has been widely explored by both researchers and practitioner to reach an optimal capital structure. For this purpose, the researcher decides to examine the optimal capital structure, financial ratios trends and financial health of the listed technology companies using Altman's Z-Score Model.

CHAPTER 3

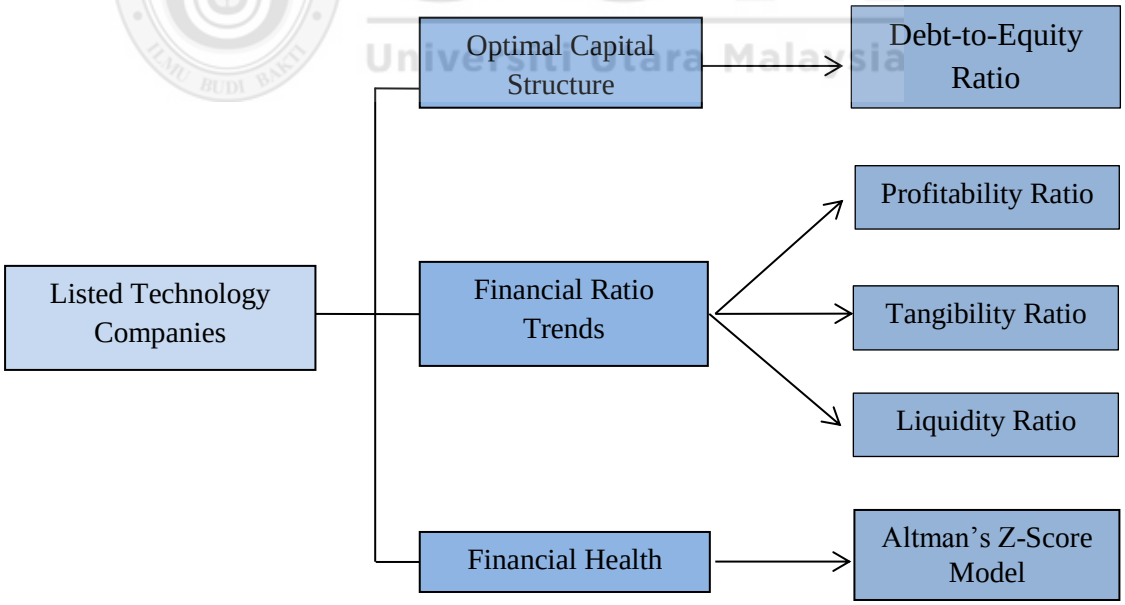
RESEARCH METHODOLOGY

3.1 Research Framework

Figure 3.1 below illustrates the research framework of this study. The framework explains the assessment on the optimal capital structure of th listed technology companies in Malaysia including the financial ratios trends and the financial health using Altman's Z-Score Model.

Figure 3.1

Research Framework



3.2 Measurement of Variables

Below table presents the key concepts and variables that will be used in this study.

Table 3.1

Key concepts and variables

Variable	Indicator	Definition	Measurement
Optimal Capital Structure	Debt-to-Equity Ratio	Ratio of Total Debt to Total Equity	$\frac{Total\ Debt}{Total\ Equity}$
Financial Ratio Trends	Profitability Ratio	Ratio of Operating income to Total Assets	$\frac{Operating\ Income}{Total\ Asset}$
	Tangibility Ratio	Ratio of Tangible Fixed Assets to Total Assets	$\frac{Fixed\ Asset}{Total\ Asset}$
	Liquidity Ratio	Ratio of Current Asset to Current Liabilities	$\frac{Current\ Asset}{Current\ Liabilities}$
Financial Health	Altman's Z-Score Model	Ratio of Working Capital to Total Assets	$\frac{Working\ Capital}{Total\ Asset}$
		Ratio of Retained Earnings to Total Assets	$\frac{Retained\ Earnings}{Total\ Asset}$
		Ratio of Earnings before interest and taxes to Total Assets	$\frac{Earnings\ before\ Interest\ and\ Taxes}{Total\ Asset}$
		Book Value of Equity to To Total Liabilities	$\frac{Book\ Value\ of\ Equity}{Total\ Asset}$

3.3 Data Collection

This study uses two types of data which is primary and secondary data. The primary data obtained from the Bloomberg Database from the year 2012 to 2016. In which, it

consists of the income statement, balance sheet, financial ratios, and other relevant information related to capital structures. While the secondary data are taken from several websites, articles, books, research reports and the annual report of the companies correlated with capital structure and the technology sector.

3.4 Sampling

This study intends to study the optimal capital structure among the technology companies listed on the KLTEC index. Tables 3.2 below depict 30 listed technology companies in the KLTEC Index from 2012 to 2016 that will be used in this study which represents the whole population of the technology companies in Malaysia.

Table 3. 2

30 Technology Companies Listed on KLTEC Index for the period of 2012-2016

No.	Company Name	No.	Company Name
1	ECS ICT Bhd	16	Inari Amertron Bhd
2	Omesti Bhd	17	Malaysian Pacific Industries Bhd
3	Dataprep Holdings BHD	18	Unisem M Bhd
4	Censof Holdings Bhd	19	ViTrox Corp Bhd
5	Trive Property Group BHD	20	Globetronics Technology BHD
6	Cuscapi Bhd	21	JCY International Bhd
7	Grand-Flo Bhd	22	GHL Systems Bhd
8	Key Asic Bhd	23	Elsoft Research Bhd
9	Digistar Corp Bhd	24	Pentamaster Corp Bhd
10	Mesiniaga Bhd	25	Kesm Industries Bhd
11	HeiTech Padu Bhd	26	D&O Green Technologies Bhd
12	PanPages Bhd	27	Excel Force MSC Bhd
13	Theta Edge BHD	28	Notion VTEC Bhd
14	Amtel Holdings Bhd	29	Willowglen MSC BHD
15	Industronics BHD	30	Green Packet Bhd

3.5 Data Analysis Technique

To answer the research questions, this study used three measurements concerning the optimal capital structure, financial ratio trends and financial health of the listed technology companies. The optimal capital structure will be investigated using Descriptive Analysis based on IBM SPSS version 22, financial ratio trends will be analysed using selected financial ratios and the financial health will be examined using Altman's Z-Score Model.

3.5.1 Descriptive Analysis

Descriptive analysis helps in transforming the raw data into a more understandable form, easy to interpret as well as manipulating data to generate descriptive information. Gravetter and Forzano (2012) stated that descriptive analysis is a process used to describe a set of data which is known as descriptive statistical. This descriptive statistic will be used to explain the mean and standard deviation for the variable (debt-to-equity ratio) that has been examined in this study. Debt-to-equity ratio is used to measure the optimal capital structure of the firm as it is believed to be the best tool to reflect the ideal debt-to-equity portion in relation to assets financed by creditors and shareholders.

3.5.2 Financial Ratio Analysis

To perform a quantitative analysis; this study intends to use the financial ratio analysis where the data obtained from the financial statements which are from both income statement and balance sheet. The dataset employed in this study taken from the listed technology company on the KLTEC index from 2012 to 2016. This analysis was beneficial to the users for comparison purposes between companies and crossed the industries. Also, this analysis is one of the most extensive basic analysis techniques used by prior researchers. This study will adopt three ratios namely:

i. Profitability

The needs to see the profitability is because it shows the earning power of a firm. It was fundamental to the shareholder of a firm to see the earning power. In this study, the profitability will measure as below:

Profitability = Operating Income / Total Assets

ii. Tangibility

The tangibility was determined as the ratio of tangible fixed assets to total assets. The tangibility of assets serves as the effect of the assets collateral value of a firm's gearing level. In which, it can be described as assets that can be accepted by the creditors as the security for issuing the debt as collateral. The tangibility will be measure as below:

Tangibility = Fixed Assets / Total Assets

iii. Liquidity

The need to measure liquidity is because it can explain the ability of a firm to meet its short-term commitments with the most liquid assets. As for this study, the liquidity will be measure as below:

Liquidity = Current Assets / Current Liabilities

3.5.3 Altman's Z-score Model

The Altman's Z-Score consists of five performance ratios that combined into a single score. The formula for the Z-Score (for the non-manufacturing and emerging companies) used in this study is:

Z = 6.56 X1 + 3.26 X2 + 6.72 X3 + 1.05 X4

X1 = (Current Assets-Current Liabilities) / Total Assets

X2 = Retained Earnings / Total Assets

X3 = Earnings before Interest and Taxes / Total Assets

X4 = Book Value of Equity / Total Liabilities

Also, the indicator used to interpret the Z-score model in this study as below:

i. **Distress Zone = Z < 1.81 (bankruptcy)**
ii. **Safe Zone = Z > 2.99 (risk free)**
iii. **Grey Zone = 1.81 ≤ Z ≤ 2.99 (at risk)**

The Altman's Z-score model used in this study based on the financial data taken from the balance sheet and income statement of the companies. The model can be used to determine company's financial health where it beneficial to the managers to analyze in the critical areas (such as credit risk analysis, turnaround management, and acquisition and merger target analysis). Meeampol et al. (2014) suggested that bankruptcy could be one of the alternatives when the business seems to fall, but that judgment should be the last option if only the other options become a failure. Meanwhile, Calandro (2007) indicated in his study that the Altman's Z-score could be an excellent indicator to analyze the financial performance of a firm.

3.6 Chapter Summary

This chapter intends to investigate the optimal capital structure, to observe financial ratio trends and to examine the financial health of the listed technology companies by using the research framework. Moreover, this chapter explains the key concepts and variables as an indicator which is employed in this study. The data sample was obtained from Bloomberg database of the technology companies listed on KLTEC Index for the duration of five (5) years from 2012 to 2016. The gathered data will be analysed using the Descriptive Data Analysis, Financial Ratios Analysis and Altman's Z-Score Model.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

In this chapter, the results of the study on 30 listed technology companies for the duration of five (5) year from 2012 to 2016 are selected as target group will be discussed in detail. All data being consolidated by SPSS Software and all assumptions used in the study will be presented. The investigation on optimal capital strucutre will be presented in Descriptive Analysis, the financial ratios trends will be provided in financial ratios analysis while the financial health of the listed technology companies will be showed in Altman's Z-Score Model.

4.2 Descripive Analysis

Table 4.1 below presents descriptive statistics for the debt-to-equity ratio (variables) used in this study for investigating the optimal capital structure of the listed technology companies in Malaysia.

Table 4.1

Descriptive Analysis

Descriptive Statistics	Total Debt to Equity Ratio
Mean	0.671278
Median	0.713077
Maximum	0.901917
Minimum	0.195018
Std. Dev.	0.166696
Skewness	-1.481208
Kurtosis	5.120100
Probability	0.000190
Observations	30

The above table reports the number of observations for variable, minimum, maximum, mean, median and standard deviation. Desirable optimal capital structure should be 1:1 which is at least 50 per cent of total assets should be funded by equity financing. The median of debt-to-equity ratio is 0.713 which presents that most of the technology companies have acquire debt financing around 71.3 per cent to finance its assets. On average, the debt-to-equity ratio is 0.671 which means that 67.1 per cent of the asset belongs to listed technology companies are financed by debt financing and the balance of 32.9 per cent are financed by equity financing. Meanwhile, the maximum debt-to-equity ratio is 0.901 and minimum debt-to-equity ratio is 0.195 which means that the highest debt financing acquired by listed technology companies are 90.1 per cent while the lowest debt financing is 19.5 per cent. The standard deviation of the debt-to-equity ratio is 0.166 at the probability rate of 0.000. Based on the above findings, debt-to-equity ratio of the listed technology companies should be improved.

4.3 Financial Ratio Analysis

Table 4.1 below presents financial ratio analysis for all variables used in this study for analyzing the financial performance of the listed technology companies in Malaysia. It summarized the average ratio for profitability, tangibility and liquidity of the listed technology companies in Malaysia from the period 2012 until 2016.

Table 4.2

Financial Ratio Analysis

Financial Ratios	**2012**	**2013**	**2014**	**2015**	**2016**
Profitability	5.57%	1.33%	3.17%	2.42%	1.04%
Tangibility	0.40	0.40	0.37	0.36	0.38
Liquidity	3.15	3.76	3.12	3.05	3.04

Figure 4.1

Trends of the profitability ratio

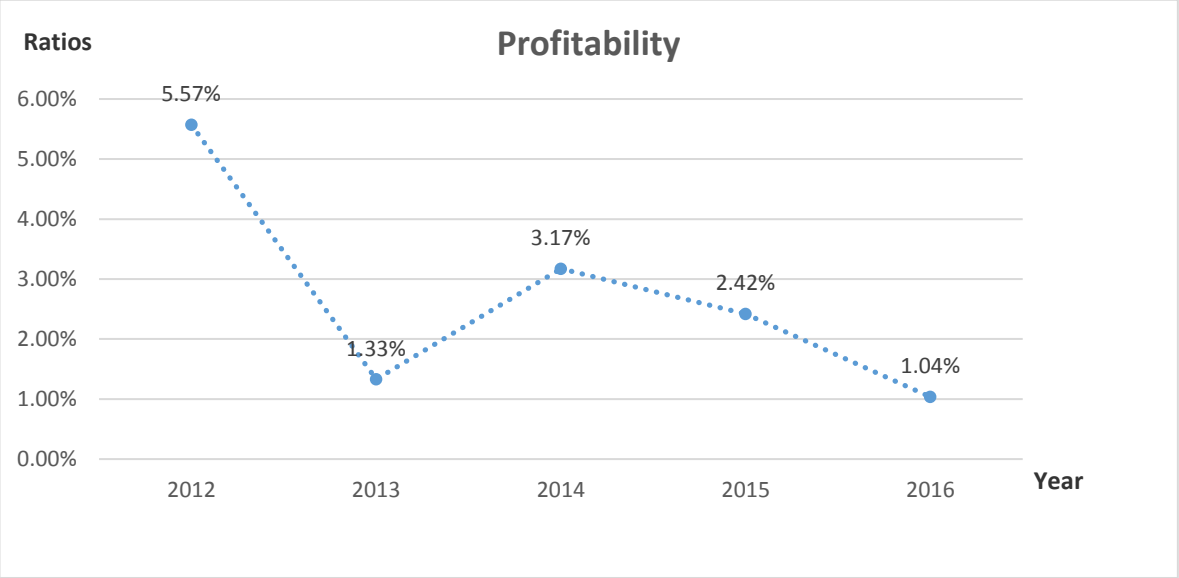


Figure 4.1 presents the profitability trends for the five year period from 2012 to 2016. The above figure shows that technology companies listed on KLTEC Index experienced declining trend in their profitability with range of 5.57% in 2012 to 1.04% in 2016. The lowest average margin recorded by the sector was in 2013 with 1.33%. Technology companies experienced margin compression and the trend showed declines for three (3) consecutive years from 2014 until 2016. Margins compression might be pressured by intense competition among the players in the technology sector amid weak ringgit also affects their revenues.

Figure 4.2

Trends of the tangibility ratio

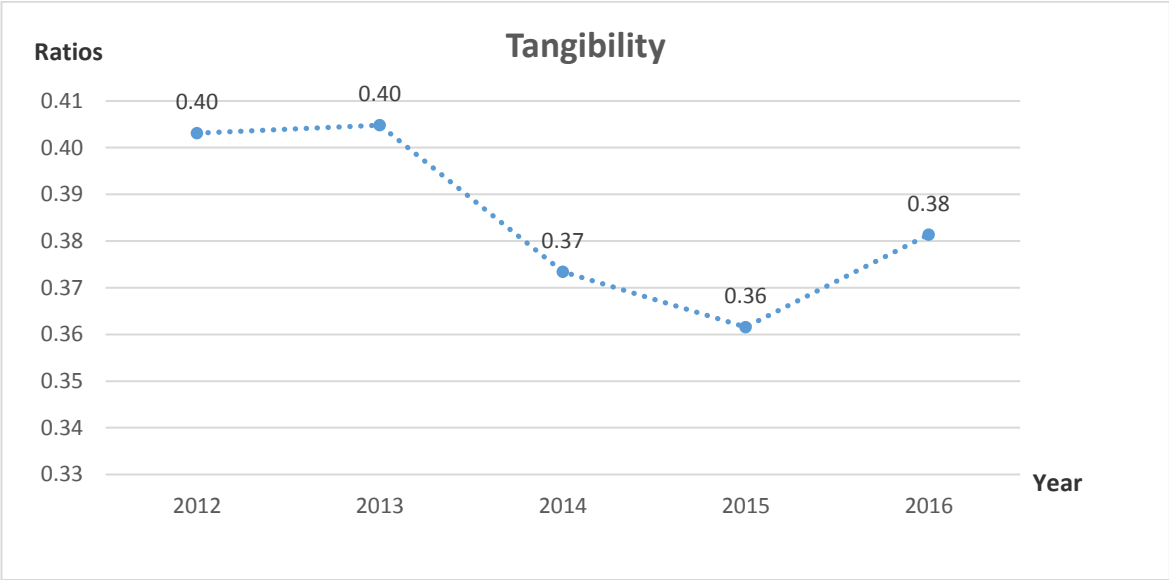


Figure 4.2 presents the tangibility trends of the technology companies listed on KLTEC Index for the five year period from 2012 to 2016. Overall, trends showed moderate-to-healthy range where the tangibility ranged between 0.40 and 0.38 in 2012 and 2016 respectively. This tangibility trend shows a good sign where technology companies listed on KLTEC Index are less vulnerable in the event of recession or credit crunch especially when liquidity is low. Having secured and backed by high level of assets may reduce the struggle of raising funds in such events which could lead to costly external financing or the inability to undertake profitable investment opportunities.

Figure 4.3

Trends of the liquidity ratio

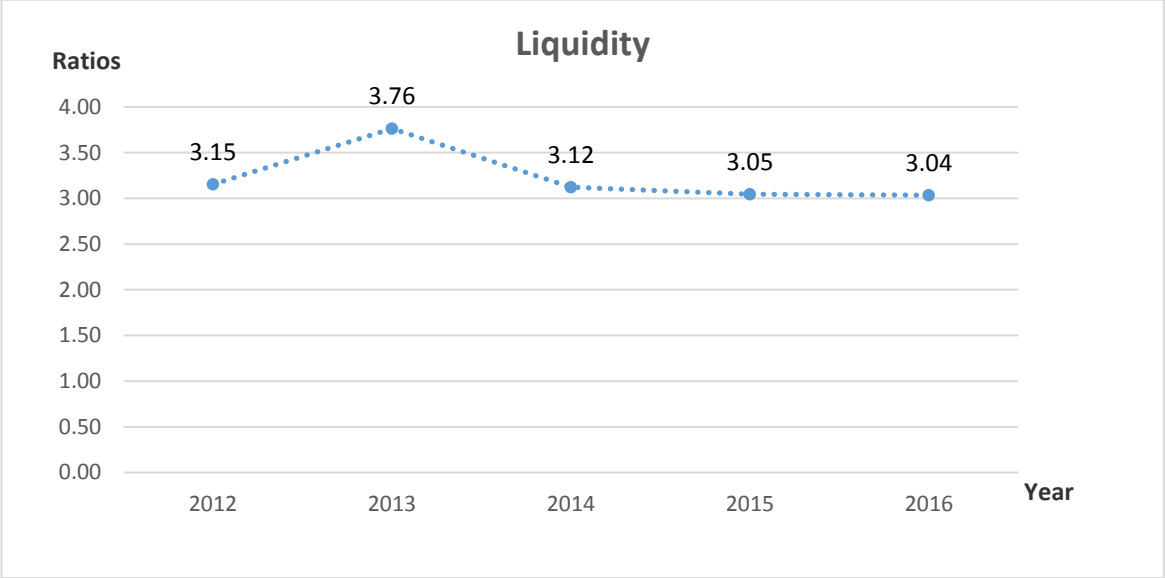


Figure 4.3 shows that technology companies listed on KLTEC Index experienced stable and solid liquidity with liquidity ratio ranged between 3.15x to 3.04x from 2012 to 2016. Technology companies listed on KLTEC Index has been enjoying a net-cash position and a strong liquidity profile for the last five (5) years, underpinned by their healthy cash reserves and relatively low debt level (mostly short-term financing).

4.4 Altman's Z-Score Model Analysis

Table 4.3

Altman's Z-Score Model Analysis

No.	Companies	Z - Score				
		2012	2013	2014	2015	2016
1	Elsoft Research Bhd	16.62	20.34	16.52	15.37	14.89
2	Willowglen MSC Bhd	12.72	13.07	13.54	14.66	14.22
3	Excel Force MSC Bhd	11.82	16.45	9.89	10.30	12.27
4	ViTrox Corp Bhd	10.95	11.03	10.96	12.63	8.94
5	Key Asic Bhd	15.84	8.97	1.82	-2.39	-5.15
6	Digistar Corp Bhd	11.41	6.08	5.64	5.00	2.86
7	PanPages Bhd	10.75	6.02	4.75	7.15	5.72
8	Globetronics Technology Bhd	8.82	10.11	9.80	11.48	11.39
9	Theta Edge BHD	9.29	7.25	5.75	3.03	4.69
10	Censof Holdings Bhd	9.98	3.11	5.64	4.34	3.15
11	Grand-Flo Bhd	5.35	4.71	4.40	5.57	7.02
12	Mesiniaga Bhd	5.60	7.62	4.38	5.70	5.25
13	Amtel Holdings Bhd	5.36	6.16	10.53	5.92	5.62
14	ECS ICT Bhd	6.63	6.95	6.38	6.56	5.94
15	Kesm Industries Bhd	6.52	7.63	7.50	6.84	8.44
16	JCY International Bhd	6.95	6.07	6.92	6.84	7.71
17	Notion VTEC Bhd	4.76	5.17	4.95	5.51	9.17
18	Dataprep Holdings BHD	4.88	3.67	2.53	1.36	1.73
19	Inari Amertron Bhd	4.12	3.70	5.81	6.94	8.84
20	Malaysian Pacific Industries Bhd	2.72	4.10	5.85	6.27	11.13
21	Unisem M Bhd	2.07	2.13	3.65	6.80	6.99
22	D&O Green Technologies Bhd	2.14	1.24	1.50	3.30	3.80
23	GHL Systems Bhd	1.93	3.80	3.74	3.43	3.85
24	Pentamaster Corp Bhd	1.21	2.71	3.93	6.88	7.61
25	Trive Property Group Bhd	7.52	-1.58	0.48	7.96	4.60
26	Cuscapi Bhd	9.05	11.59	8.86	7.43	-4.13
27	Industronics Bhd	5.25	5.53	5.54	2.85	-1.17
28	Green Packet Bhd	-2.25	-3.27	4.61	-4.87	0.73
29	Omesti Bhd	1.76	2.12	3.04	2.38	1.92
30	HeiTech Padu Bhd	2.59	1.93	1.44	2.20	2.48

Table 4.3 above shows the results of Z-Score of all technology companies listed on KLTEC Index for the five years period from 2012 to 2016. The bottom three companies (highlighted in red) have recorded the lowest Z-Score (between grey zone to distress zone) within the given period. While the rest of the listed technology companies were performing good as they achieved Z-Score greater than 2.99 so that the financial position of the twenty-seven (27) listed technology companies were healthy from 2012 to 2016.

Figure 4.4

Z-Score: Distress Zone = Z < 1.81 (bankruptcy)

Z-Score: Grey Zone = 1.81 ≤ Z ≤ 2.99 (at risk)

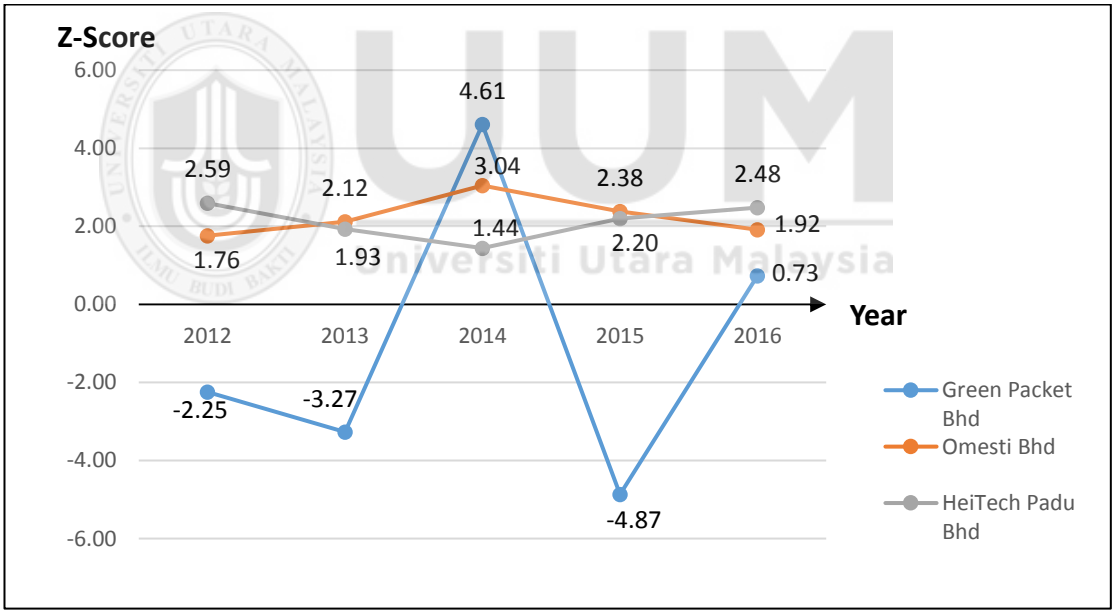


Figure 4.4 above summarizes the three (3) listed technology companies that have poor financial performance from 2012 to 2016. The Z-Score of the Green Packet Bhd showed that the company stayed within Distress Zone (Z < 1.81) and insolvent even though the Z-Score of the company in 2014 was the highest at 4.61. The Z-Score of the company also was volatile within the given period with negative Z-Score (-2.25:2012, -3.27:2013, -4.87:2015). The Z-Score of the Omesti Bhd and HeiTech Padu

Bhd were within the Grey Zone ($1.81 \leq Z \leq 2.99$) which showed that these two companies might be at the risk of bankruptcy. The Z-Score results showed that the overall financial position for these three companies were poor and insolvent and trend showed that their financial performances are getting worse.

4.5 Chapter Summary

Based on the above discussion, the Descriptive Analysis, Financial Ratio Analysis and Altman's Z-Score Model were used to explain the optimal capital strucutre, the financial ratio trends and the financial health of listed technology companies in Malaysia. On average, the listed technology companies are using 67.1 per cent of debt and 32.9 per cent of equity to finance their assets. The profitability ratio shows that the technology companies experienced margin compression and the trend showed declines for three (3) consecutive years from 2014 until 2016. For tangibility trends, it showed moderate-to-healthy which ranged between 0.40 and 0.38 in 2012 and 2016 respectively. And the liquidity trends showed that the technology companies experienced stable and solid liquidity with ranged between 3.15x to 3.04x from 2012 to 2016. And then, the Altman's Z-Score Model were used to examine the financial health of the technology companies within the given period (2012-2016). The value is ranged between $Z > 2.99$ (healthy), $Z < 1.81$ (bankruptcy) and $1.81 \leq Z \leq 2.99$ (grey zone). The result indicates that the Green Packet Bhd, Omesti Bhd and HeiTech Padu Bhd were having poor financial performance with lowest Z-Score (between grey zone to distress zone) during the given period. While the rest of the listed technology companies were performing good as they achieved Z-Score greater than 2.99.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Introduction

The last chapter of the study concludes the summary of the findings based on the significance of the findings to the technology companies in Malaysia, the research objectives, the recommendations to the financial managers as well as the limitations faced by the researcher which potentially could be the opportunity to the other researcher to carry out future possible studies with respect to capital structure decisions. This study investigated the optimal capital structure, the financial ratio trends and the financial health of the listed technology companies in Malaysia. The study have found the optimal capital structure, the financial ratio trends and the financial health of listed technology companies in Malaysia. This study was conducted on 30 technology companies listed on KLTEC Index which represents the whole technology companies in Malaysia. The Descriptive Analysis, the Financial Ratios Analysis and Altman's Z-Score Model were used to invstigate the optimal capital structure, to observe the financial ratio trends and to examine the financial health of these listed technology companies.

5.2 Summary of Findings

Capital structure has become a debatable issue among the academicians and finance scholars since the Modigliani and Miller proposition in 1958. However, it still remains important and relevant until today. Capital structure has been widely researched by the other researchers and many capital structure theories have emerged into the finance

field for instance trade off, pecking order and agency cost theories. Capital structure is very crucial to be taken by financial managers to maximize the value of the firm.

In this study, the main objectives are to investigate the optimal capital structure, to observe the financial ratio trends and to examine the financial health in the context of listed technology companies in Malaysia. To achieve the intended objectives, the researcher has gathered and analyzed the data statically using statistical software which is SPSS, financial ratio analysis and Altman's Z-Score Model. The analysis was conducted based on the historical financial data of the 30 technology companies listed on KLTEC Index in Malaysia for the five (5) years period from 2012 to 2016.

The descriptive analysis summarizes that most of the technology companies have acquired debt financing around 71.3 per cent to finance its assets. While on average, 67.1 per cent of the technology companies' assets are financed by debt financing and the balance of 32.9 per cent are financed by equity financing.

The profitability trends, as depicted in Figure 4.1, shows that the technology companies experienced margin compression and the trend showed declines for three (3) consecutive years from 2014 to 2016. Tangibility trends (Figure 1.5) shows moderate-to-healthy which ranged between 0.40 and 0.38 in 2012 and 2016 respectively. And the liquidity trends as shown in Figure 1.6 indicates that the technology companies experienced stable and solid liquidity which ranged between 3.15x to 3.04x from 2012 to 2016.

And then, the Altman's Z-Score were used to examine the financial health of the technology companies within the given period (2012-2016). Table 4.2 presents the results that the Green Packet Bhd, Omesti Bhd and HeiTech Padu Bhd recorded the lowest Z-Score which portrayed they had poor financial performance. While the rest

of the listed technology companies were performing good as they achieved Z-Score greater than 2.99.

As a conclusion, this study found that most of the listed technology companies in Malaysia is heavily dependent on debt financing which is almost 70.0 per cent to finance their assets. However, there is a room for improvement for the technlogy companies to achieve the optimal capital structure of at least 50 per cent of the assets are financed by the shareholders (equity).

5.3 Recommendations

Based on the findings derived from the analysis conducted in this study and comprehensive discussion done in the preceding chapter, the conclusions give an idea for few recommendations to financial managers of the technology companies to take appropriate decisions as well as providing the room for possible studies of the matter with respect to optimal capital structure in future.

5.3.1 Recommendation for Financial Managers

The recommendations provided to financial managers of the technology companies have been described below:

(i) The researcher recommends that financial managers shall maintain the current practice of capital structure decision whereas technology companies prioritize the equity financing over debt financing, prefer to finance the investment projects with retained earnings first and use the leverage as a last option.

(ii) The researcher also recommends that financial managers utilizing the tax incentives given by the government of Malaysia such as Multimedia Super Corridor (MSC) status company that give hundred percent tax exemption on

statutory income for 5 years so that they can maximize the tax benefits and less dependent on leverage.

(iii) It is also recommended that the financial managers should spend their time and put hundred percent efforts in the variables that have a significant relationship with the capital structure of the firm, so that they can consequently maximize the welfare of shareholders.

5.3.2 Recommendation for Future Researcher

Based on the results of the current study, the recommendations for further possible studies related to optiml capital structure decisions are illustrated below:

(i) Due to time constraints, the optimal capital structure, financial ratios and Altman's Z-Score are not adequately defined. Thus, future researchers are recommended to extend the coverage period from 5-year period to 10-year period for more well defined, precise and reliable results.

(ii) Future researcher are also recommended to add external (macroeconomic) variables such as GDP growth, inflation, interest rate, corporate governance and legal framework other than the optimal capital structure, financial ratios and financial health of the listed technology companies.

(iii) Beside that, future researcher may explore important firm-specific characteristics that is not used in this study as the determinant factors of capital structure of the listed technology companies such as earning volatility, growth and age of the firm.

(iv) Lastly, future researchers are also recommended to analyze the optimsl capital structure of the listed technology companies across developing countries using the comparative analysis. This could give broad picture about the optimsl capital structure of the listed technology companies.

5.4 Implication

The capital structure is a crucial issue for companies to make their strategic financing decisions. Thus, the findings of this study contributes to existing knowledge and provide some useful information about the decisions that are related to capital structure of the companies in the technology industry of the KLTEC Index in Malaysia. While previous theories and empirical studies provided unclear results with regards to optimal capital structure, this study was able to investigate the optimal capital structure, the financial ratio trends and the financial health of the listed technology companies for a particular period of time. It shows that the listed technology companies are using the mixture of financing between equity and debt to finance their business activities. Consequently, the objectives of the study are successfully achieved.

5.5 Research Limitations

No matter how well the study is conducted, it still has some limitations. Research limitations refer to the constraints faced by the researcher when performing the research process. So, in this study, the major limitations encountered by researcher are:

(i) Time constraints and shortage of resources allocated in this study limit the ability of the researcher to perform the research process effectively.

(ii) The current study totally relied on secondary data which is gathered from the historical financial data of the technology companies and obtained from the Bloomberg database. This may lead to lack of control over quality of the data.

5.6 Chapter Summary

To conclude the study, is has been emphasized that the main objective of this study is to investigate the optimal capital structure, the financial ratio trends and the financial health of the listed technology companies. The sample date of 30 technology companies listed on KLTEC Index and the financial ratios variables have been collected for the period of five (5) years from 2012 to 2016. The results acquired from the data analysis process indicated that most of the listed technology companies in Malaysia is heavily dependent on debt financing which is almost 70.0 per cent to finance their assets. Thus, technology companies are recommended to review their optimal capital structure and financial position in their strategic financing decision in the future.

REFERENCES

Abdullah, M. (2015). An Empirical Analysis of Liquidity, Profitability and Solvency of Bangladeshi Banks. Journal of Business & Financial Affairs. Vol. 4(3) pp. 157

Abhishek, B. (2015). An Exploratory Study of Telecommunication Sector for Selected Countries. Indian Journal of Science and Technology, Vol. 8(34)

Abor, J. (2007). Debt policy and performance of SMEs: Evidence from Ghanaian and South African firms. Journal of Risk Finance, 8(4), 364-379.

Alareeni, B. A., & Branson, J. (2012). Predicting listed companies' failure in Jordan using Altman models: A case study. International Journal of Business and Management, 8(1), 113.

Al Amin, M., Arafat Ali, M., Jannat, R., Taher, T., Abdullah, M., Ahmed, R., & Mohammad, N. (2015). A Study on Profitability Analysis of Five Bangladeshi Banks.

Altman, E. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. The Journal of Finance 23: 589-609.

Altman, E. I. (2000). Predicting financial distress of companies: revisiting the Z-score and ZETA models. Stern School of Business, New York University, 9-12.

Anderson. (2002). Capital structure, Firm Liquidity and Growth. National Bank of Belgium working paper No.27 pp. 8-19

Baker, H. K., & Martin, G. S. (2011). Capital structure and corporate financing decisions: theory, evidence, and practice (vol. 15). John Wiley & Sons.

Baxter, N., (1967). Leverage, Risk of Ruin and the Cost of Capital. The Journal of Finance 22, 395-403.

Berger, A. N., & Di Patti, E. B. (2006). Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry. Journal of Banking & Finance, 30(4), 1065-1102.

Brealey, R. & Myers, C. (1991). Principles of Corporate Finance. 4th ed. New York: McGraw-Hill, U.S.A.

Brealey, R. A., S. C. Myers, and F. Allen (2006). Principles of Corporate Finance, 8th Edition, New York McGraw-Hill Irwin.

Brigham, E. F., Houston, J. F. (2009). "Fundamental of Financial Management", 12th ed.

Bufema, F., Banggasa, K., Hodgkinson, L., (2005). Determinnants of Capital Structure: Evidence from Libya, Research Paper Series

Damodaran, A. (2001). Corporate Finance: Theory and Practice (2 ed.). New York: Wiley.

Datta A, Agarwal S. (2004) Telecommunications and Economic Growth: A Panel Data Approach. Applied Economics. 36(15):1649–54.

DeAngelo, H., and Masulis R.W. (1980). "Optimal Capital Structure under Corporate and Personal Taxation. Journal of Financial Economics. pp. 3-29.

Doms M. (2004). The Boom and the Bust in Information Technology Investment. Economic Review-Federal Reserve Bank of San Francisco. pp. 19–34.

Ferri M.G., and Jones W.H., (1979). Determinants of Financial Structure: A New Methodological Approach. Journal of Finance 34(3), 631-644.

Fischer, E. O., Heinkel, R., & Zechner, J. (1989). Dynamic capital structure choice: Theory and tests. The Journal of Finance, 44(1), 19-40.

Frank, M.Z. & Goyal, V.K. (2003). Testing the Pecking Order Theory of Capital Structure. Journal of Financial Economics, 67, 217-248.

Fraser, L., & Ormiston, A. (2004). Understanding Financial Statements. New Jersey: Pearson Prentice Hall.

Golding P (1998), 'Global Village or Cultural Pillage? The Unequal Inheritance of the Communications Revolution' in McChesney RW, Wood EM, and Foster JB (eds), Capitalism and the Information Age: The Political Economy of the Global Communication Revolution. Monthly Review Press, New York, 69, 73-79.

Graham, J. R. (2000). How Big Are the Tax Benefits of Debt? Journal of Finance, 55(5), 1901-1941.

Gritta, R. D., Adrangi, B., Adams, B., & Tatyanina, N. (2011). An Update on Airline Financial Condition and Insolvency Prospects Using the Altman Z Score Model. In Journal of the Transportation Research Forum. Vol. 47(2).

Hamada, R. S. (1969). Portfolio Analysis, Market Equilibrium and Corporation Finance, Journal of finance, Vol. 24(1), pp: 13-31.

Harris M., & Raviv A. (1991). The Theory of Capital Structure. Journal of Finance, 46, pp. 297-355.

Hatfield, G., Cheng, L., Davidson, W., (1994). The Determination of Optimal Capital Structure: The Effect of Firm and Industry Debt Ratios on Market Value. Journal of Financial and Strategic Decisions. Vol. 7, No3, pp.1-14.

Huang, G., & Song, F. M. (2006). The determinants of capital structure: evidence from China. China Economic Review, 17(1), 14-36.

Jeanjean F. (2011). Competition through Technical Progress. 10th Conference of Telecommunication, Media and Internet Techno-Economics (CTTE). pp. 1–15.

Jensen, M. and Meckling, W. (1976). Theory of the firm: Managerial Behaviour, Agency Costs and Ownership Structure. Journal of Financial Economics, Vol. 3, pp: 305-360.

Jensen, M.C. (1986). Agency Costs of Free Cash Flow, Corporate Finance and Takeovers. American Economic Review, Vol. 26, pp: 323-346.Meyers, S.C. (1984). The Capital Structure Puzzle. The Journal of Finance, Vol. 39, No. 3, pp: 575-592.

Koh, H. Magee, C.L., (2006). A functional approach for studying technological progress: Application to information technology. Technological Forecasting and Social Change. 2006; 73(9):1061–83.

Koh, H Magee, C.L. (2008). A functional approach for studying technological progress: Extension to energy technology. Technological Forecasting and Social Change. 75(6):735–58.

Kraus, A. & Litzenberger, R. H. (1973). A State-preference Model of Optimal Financial Leverage. Journal of Finance, 28(4), 911-922.

Mazure, K. (2007). The determinants of capital structure choice: evidence from Polish companies. International Advances in Economic Research, 13, 495-514.

McConnell, J.J. and Servaes H. (1995), "Equity ownership and the Two Faces of Debt. Journal of Financial Economics. Vol. 39 (1), 131-157.

Md-Yusuf M., Mohamad Yunus F., and Md Supaat N.Z. (2013). Determinants of Capital Structure in Malaysia Electrical and Electronic Sector. International Journal of Economics and Management Engineering Vol. 7(6) pp. 1517-1518

Merton, R. C. (1974). On the pricing of corporate debt: The risk structure of interest rates. The Journal of finance, 29(2), 449-470.

Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance and the theory of investment. The American economic review, 48(3), 261-297.

Modigliani, F. & Miller, M. (1963). Corporate income taxes and the cost of capital. American Economic Review, 53, 433–443.

Myers, S. C. (1984). The capital structure puzzle. The journal of finance, 39(3), 574-592.

Myers, S. C. and Majluf, N. S. (1984). Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have. Journal of Financial Economics, Vol. 13, pp: 187-221.

Noor Saarani, & A. Shahadan, F. (2013). The Determinant of Capital Structure of SMEs in Malaysia: Evidence from Enterprise 50 (E50) SMEs. Asian Social Science; Vol. 9(6), pp. 70-71

Pandey, I. M. (2005). Financial Mangemnt. 9th Edition, Vikas Publishing House Pvt. Ltd., India.

Rajan, R.G and Zingales, L. (1995). What Do We Know about Capital Structure? Some Evidence from International Data. Journal of Finance, Vol. 50, No. 5, pp: 1421-1460.

Rawlings, J., Pantula, S. and Dickey, D. (1998). Applied Regression Analysis: A Research Tool. [E-book] 2nd ed. Wadsworth: Springer-Verlag New York, Inc.

Ross, S.A. (1977). "The Determination of financial structure: the incentive signalling approach". Bell Journal of Economics. pp. 23-40.

Ross, S., R. Westerfield, and J.Jaffe (2008). Corporate Finance, 8th Edition, New York McGraw-Hill Irwin.

Roller L.H., Waverman L. (2001). Telecommunications infrastructure and economic development: A simultaneous approach. American Economic Review. pp. 909–23.

Ryen, G. T., Vasconcellos, G. M. and Kish, R. J. (1997). Capital structure decisions: What have we learned? Business Horizons, 40(5), 41-50.

Saarani, A. N., & Shahadan, F. (2013). The comparison of capital structure determinants between Small and Medium Enterprises (SMEs) and large firms in Malaysia. International Journal of Economics and Finance Studies, 5(1), 64-73.

Salawu R.O., Agboola A.A. (2008). The Determinants of Capital Structure of Large Non-Financial Listed Firms in Nigeria. The International Journal of Business and Finance Research, Vol. 2, No. 2, pp. 75-84

Sangeetha, M., & Sivathaasan, N. (2013). Factors determining capital structure: a case study of listed companies in Sri Lanka. Research Journal of Finance and Accounting, 4(6), 236-247.

Saunders, M., Lewis, P. and Thornhill, A, (2009). Research Methods for Business Students. 5th ed. Harlow: Pearson Education Limited.

Shyam-Sunder, L. & Myers, S. C. (1999). Testing Static Tradeoff against Pecking Order Models of Capital Structure. Journal of Financial Economics, 51(2), 219-244.

Stiglitz, J.E., (1972). A Re-Examination of the Modigliani-Miller Theorem. American Economic Review 59, December. 784-793.

Stulz, R. (1990). Managerial discretion and optimal financing policies, Journal of Financial Economics, Vol. 26, pp: 145-158.

Thian, C.L (2012). Determinants of Capital Structure Empirical Evidence from Financial Services Listed Firms in China. International Journal of Economics and Finance, Vol. 4, pp 197

Titman, S., Wessels, R. (1988). The determinants of capital structure choice. Journal of Finance, Vol. 43, pp:1-19.

Van-Horne, J. (1989). Financial Management and Policy. 12th Edition, Upper Saddle River, Prentice-Hall, New Jersey, U.S.A.

Viviani J.L, (2008). Capital Structure Determinants: An Empirical Study of French Companies in the Wine Industry. International Journal of Wine Business Research, Vol. 20 Issue: 2, pp.171-194

Waverman L, Meschi M, Fuss M. (2005). The impact of telecoms on economic growth in developing countries. The Vodafone Policy Paper Series. 2(03):10–24.

Wei K.T and Hooi H.L (2011). Asian Academy of Management Journal of Accounting and Finance Vol. 7, No. 2, 137–156