ENTERPRISE RISK MANAGEMENT (ERM): AN EMPIRICAL ANALYSIS OF FACTOR ASSOCIATED WITH PLC FIRM VALUE IN MALAYSIA

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DECLARATION

We hereby declare that:

(1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the research project.

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LIST OF ABBREVIATIONS

D/E	Debt-to-equity
DPS	Dividend per Share
EPS	Earning per Share
ERM	Enterprise Risk Management
JB	Jarque-Bera
OLS	Ordinary Least Square
PLCs	Public Listed Companies
RESET	Regression Specification Error Test
ROA	Return on Assets
VIF	Variance Inflation Factor

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PREFACE

This research project is submitted as partly to fulfil the requirement of the course of Bachelor of Finance (HONS) having Ms. Hartini Binti Ab Aziz as the project supervisor. The topic chosen was "Enterprise Risk Management (ERM): an empirical analysis of factor associated with PLC firm value in Malaysia". This project was written solely by the authors with supporting facts from research by others which are quoted with reference.

This topic was chosen as we found that there was less researches studied on Enterprise Risk Management (ERM) yet the approaches of risk management need to be developed as the businesses are growing and the world has become more interrelated among each other. For those companies with deep understanding on risk management approach and how the whole companies are affected by it, the companies will be able to cope with difficulties such as recession. Thus, they might be more beneficial and successful in the future. Due to this reason, this research helps us to find out that what the effect of implementing ERM on Public Listed Companies (PLCs) in Malaysia.

This research was considered a success as this research could give contribution to the future studies on ERM. In this research, ERM is a dummy variable and we need to test whether ERM is significant or insignificant affected the firm value. The research could allow future researchers to have better understanding on ERM.

ABSTRACT

The aim of this research was to investigate the impact of selected explanatory variables on firm value of Malaysian Public Listed Companies over the study period in year 2017. The selected explanatory variables are Enterprise Risk Management (ERM), firm size, debt-to-equity, return on assets, dividend per share (DPS) and earning per share (EPS). Ordinary Least Square (OLS) method was implemented to the research to examine the significant relationship among the firm value and explanatory variables by using 500 listed firms from Bursa Malaysia. The empirical results concluded that debt-to-equity, and return on assets, had statistically significant positive effect on firm value. However, firm size had found out a significant negative impact on firm value. Finally, ERM, DPS, and EPS had statistically insignificant positive effect on firm value.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

The purpose of doing this research is to study the Enterprise Risk Management (ERM) that will affect the firm value of Malaysia's Public Listed Companies (PLCs) in several industrial areas while taking control variables into consideration. Control variables include firm size, debt-to-equity (D/E), return on assets (ROA), earnings per share (EPS) and dividend per share (DPS). 500 out of 800 listed companies are selected from Bursa Malaysia to examine the impact of ERM on firm value by using cross sectional data. Tobin Q is used as the proxy of firm value in our research since it is an effective indicator to examine the companies' performance from investment and management perspectives.

Risk management is often seen as a compliance issue since all the rhetoric and money invest in ERM program and the consequences loss associated for not adopting the ERM. Besides, some of companies believe the ERM effectiveness in managing risk because of the recent poor performance in market capitalization of PLCs in Malaysia. It had indicated that the failure of ERM in avoiding and controlling the worst outcome of uncertainties. Although the Malaysian PLCs had adopted the ERM but they are still susceptible to losses due to the wrong decision and miscalculated the risk. Thus, this research will further study on whether the executed of ERM has any impact on the value of companies listed on Bursa Malaysia. This research expects to broaden the way of determinants of ERM sophistication and provides empirical evidences which focus on the effect of ERM practices on firm value.

This chapter covers the background of study, problem statement, research questions, research objective, and significance of study and chapter layout.

1.1 Research Background

1.1.1 Bursa Malaysia

Bursa Malaysia is an exchange holding company, one of the biggest bourses in ASEAN which consists of more than 900 companies throughout 60 economy activities. Bursa Malaysia Berhad was derived from Kuala Lumpur Stock Exchange in 2004 by improving the competitive advantages due to the global trends in the exchange industry. It was launched in 1973 and listed in 2005, facilitating the absolute extent of related exchange services such as trading, clearing, settlement and others. For instance, securities of public listed company are usually traded in Bursa Malaysia. As the favored partner, its values are to service a pleasant and regularly market which is clearly achievable with various and inventive products and services. Bursa Malaysia also provides a variety of products and services which consists of securities, derivatives, offshore listings, bonds and Islamic instrument. In 2016, Bursa Malaysia has been rewarded by having good performance and growth of Islamic capital market over the last five years, "Best Islamic Exchange 2016" at the Global Islamic Finance Awards 2016 (Bursa Malaysia, 2017).

Bursa Malaysia plays a crucial role in assuring high quality of risk management and the degree of disclosure of internal control (Ahmad, Abdullah, Jamel, & Omar, 2015). Information about the corporate governance which consist of internal control and risk management system able to facilitate the companies in satisfying the investors' needs. According to Soltanizadeh, Rasid, Golshan, Quoquab, & Basiruddin (2014), stated that the gross domestic product (GDP) growth of Malaysia increases with 5.6%, becoming the third fastest country in boosting the economy among South East Asian countries. However, a large number of public listed companies were significantly affected during the financial crisis in 1999. The corporate

governance structure in Malaysia was affected during the Asian financial crisis, leading a lot of companies had been bankruptcy (Sulaiman, 2012).

When there was global financial crisis and corporate failures, organizations were facing the negligence of the main risks that might decline the value preservation and growth (Rasid, Golshan, Mokhber, Tan, & Mohd-Zamil, 2017). Because of the weak management system and financial risk management, several of financial institutions and corporations were collapsed and borne the huge losses during the financial crisis (Ng, Chin, & Chong, 2017).

By improving the Bursa Malaysia Listing Requirements (BMLR), Finance Committee of Corporate governance issued the Malaysia Code of Corporate Governance to improve the measurement of risk management. Hence, Malaysia's Public listed companies which integrated with the BMLR are responsible in declaring their Corporate Governance Guidelines and risk management to disclose all available information to stakeholders with transparency. Furthermore, the idea of risk management is linked to the internal control of the organization since because it has become fundamental of corporate governance (Yatim, 2010). Malaysia Code of Corporate Governance suggested that companies listed in Bursa Malaysia should utilize Enterprise Risk Management (ERM) in order to reduce huge losses during the financial crisis (Lai & Samad, 2011). Ergo, public listed companies should recognized the main risks and assure the accomplishment of suitable system to control and manage the risks.

1.1.2 Traditional Risk Management

Traditional risk management is a responsive model which describes as a managerial or administrative or making decision process. Risk management specifies as individuals or organizations are taking any actions on behalf of adjusting the risk arising from the operation of the business s (Cummins,

Phillips, & Smith, 1998). Risk management involves four functional management processes which are planning, organizing, leading, and controlling the company's activities in order to minimize the losses of operational costs of the organization (Bessis, 2011).

The decision-making process of risk management consists of 5 steps which are identifying and analyzing exposures to risk, examining attainable alternative corresponding techniques for handling with those exposures, choosing the best risk management technique, establishing the selected technique, and controlling the results of the selected technique to assure that the risk management program achieve effective and efficiency (Simona-Iulia, 2014). Therefore, the significant impacts of accidental and business losses of company at rational cost can be minimized. Nevertheless, traditional risk management able to control the losses without taking consideration of the offsetting impact of the opportunity (Mohammed & Knapkova, 2016).

Traditional risk management is a risk methodology that is contractual responsibilities among the organizations and administered by various responsible departments in each business unit. Traditional risk management deals with potential descent and exploitation of chances because of dynamic phenomena. It focuses on safeguarding physical assets that are reported in the balance sheet such as property, inventory and cash (Miller & Waller, 2003). Traditional risk management emphasize on credit risk and accidental risk only instead of those evolution risks such as strategic risk, market risk, political risk, and so on. Besides, it is the best described by the companies benefit in terms of transactions cost of risk management and the demand of lessening underinvestment expenses (Lundqvist, 2015). Since the credit risk and accidental risk are transferable risks that are only applicable for traditional risk management.

Traditional Risk Management emphasizes on pure risks that might lead to company's losses and known as individual risk if do not interact. Pure risks are those random events that can be reduced by implementation of insurance.

Traditional risk methodology does not align with the organization's risk management needs based on the risk that treated as a whole. It will result the performances are satisfactory because of the expanded independence of different types of risks to be controlled (D'Arcy, 2001). Beasley and Frigo (2007) found that due to such risks cannot be separated and controlled by individual departments of organizations, hence the fragmented approach does not match within the aggregated approach to risk among the company.

1.1.3 Enterprise Risk Management (ERM)

According to Olson and Wu (2015) the concept of ERM is used to reduce the likelihood of a company going bankrupt in a dynamic environment in the mid-1990s. ERM can be defined as method or process that use to manage risks by identifying, assessing and preparing for any potential dangers, adventures and other calamities that may obstruct the operations and goals of an organization. In addition, ERM not only identify the risk and make a decision to manage risk actively, but also include preparing an action plan which available to all stakeholder such as shareholders, potential investors and employees, as part of their annual reports (Ogutu, Bennett, & Olawoyin, 2018).

On the other hand, ERM provides a framework that benefiting an organization in many way. For instances, ERM provide a systematic approach to identifying all significant risks; improve the ability to manage risk at the overall level; minimize the risk of major risk events that would interfere with the organization's priority objectives; allow the organization to better manage emergent risks; facilitate greater operational efficiency and assist organization to make a wise decision (Dafikpaku, Eng, & Mcmi, 2011).

However, there are still a lot of organization does not implement the ERM program even though it has a lot of benefits. There was only 17% out of 1431 risk managers of US firm have fully implemented ERM program in 2011 (Soltanizadeha, Rasida, Golshanb, Quoquaba, & Basiruddina, 2014). According to Jin (2001) there are 10% out of 800 public listed companies on Bursa Malaysia cited poor risk management as major contributors to their failures during the East Asian financial crisis in year 1997. Furthermore, risky financial structure adopted by the company also attributed to a portion of the crisis, and this has inadvertently awaken the attention of cautious from investors. They want to know the risk management strategies adopted by those company which they may be investing and they will also look for relevant information to help them evaluate the adequacy of such strategies. Good risk disclosures used by company can provide insights for investors in assessing the quality and expected volatility of the respective company's earnings and cash flows (Togok, Isa, & Zainuddin, 2016).

1.2 Problem Statement

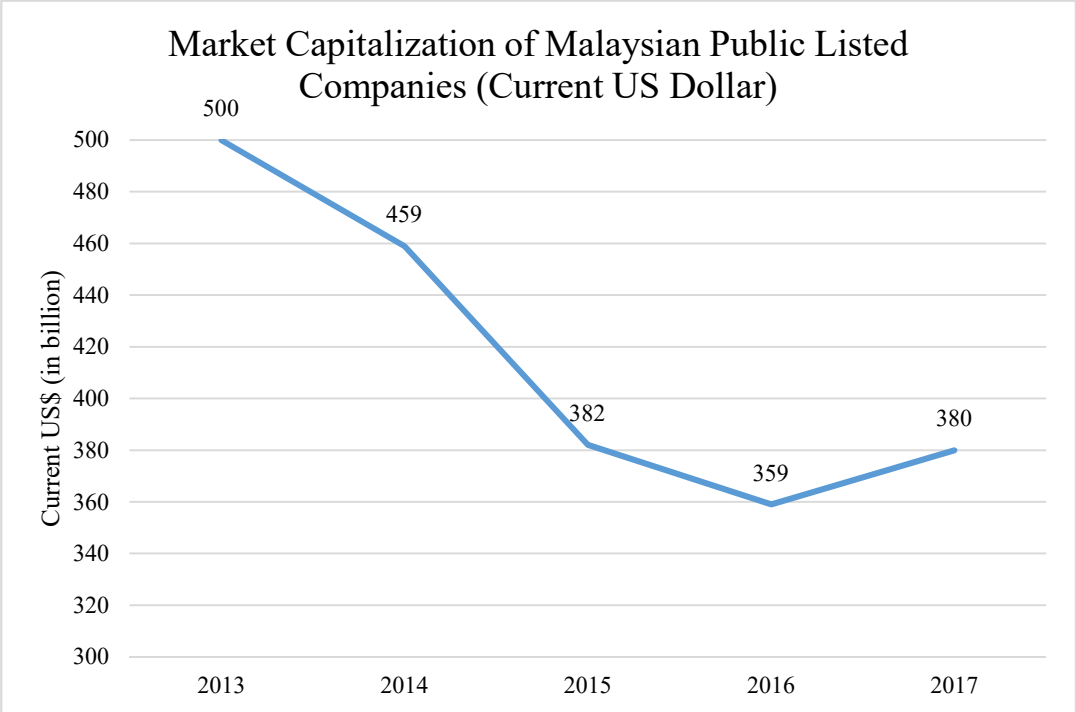


Diagram 1.2: Market Capitalization of Malaysian Public Listed Companies (Current US Dollar)

The implementation of effective ERM is benefit to an organization. Literature show that the company which implement the ERM can reach a better firm value. For instance, Nocco and Stulz (2006) said that ERM can increase value by ensuring that all major risks and risks return trade-offs are carefully evaluated by the company's operations managers and employees (Nocco & Stulz, 2006).

In today's dynamic and emerging risk environment, organization's risk management has become more significant for business. In fact, risk management is an important part of corporate governance and is essential for the company to protect the interests of shareholders and other stakeholders of the company. In recent year, risk management's approach has move from silo (Traditional Risk Management) to holistic approach, which also known as ERM (Gordon, Loeb, & Tseng, 2009). A survey conducted by Soltanizadeh et al. (2014) on Malaysian Firms listed on the Bursa Malaysia found that there is almost 80% of respondents have complete or partial ERM frameworks. Specifically, 32.2% of respondents have fully complete the ERM framework, 47.2% have a partial ERM, 13.1% does not has a formal ERM framework but already had a plans to adopt the ERM, while 4% still investigating the ERM concept and there is only 3 % of respondents had no plan to adopt the ERM in their company.

However, Malaysia's PLCs has performed poorly in recent years although they had invested in ERM implementation. According to the World Bank Group, the market capitalization of Malaysian PLC (the current US dollar) has fallen by about 28% from US$500 billion in 2013 to US$360 billion in 2016. This indicates that the size of the PLCs has shrunk and affect the economic slowdown in Malaysia as Malaysia is one of the countries with the worst GDP performance in ASEAN countries in 2015 (Economic Planning Unit, Prime Minister's Department, 2016). Moreover, in

2017, those PLCs are still continue to use ERM as a strategy to manage their risk, but the market capitalization of Malaysian PLCs still in a poor performance which only US$ 380 billion (from World Bank Group).

Furthermore, different PLCs that adopted the ERM had shown a different result and extremely consequences on their firm value. For example, the Malaysian Airline System (MAS) and Malaysian Airports Holding Berhad (MAHB). The MAS had suffered a continued losses for three consecutive years (2015-2017) as their plane disappeared in 2014, followed by another tragedy in which their plane was being shot down in the same year, which cause their firm value decline. However, the MAHB, which was the take-off grounds for MAS planes, show a stable and continued profitability and increasing in their value for the for the same three year. Both listed company had implemented the ERM for many year, but show a different result and extreme consequences, lead to a desire to investigate the effectiveness of ERM in managing risk and increasing firm value.

As mentioned above, Nocco and Stulz (2006) said that ERM can use to increase the firm value, but there is no any strong evidence to prove that ERM can improve the value of the firm. Although all the rhetoric and money invest in ERM program and the consequences loss associated for not adopting the ERM, risk management is often seen as a compliance issue. Only few people believe the ERM effectiveness in managing risk as the recent poor performance in market capitalization of PLCs in Malaysia had indicated the failure of ERM in avoiding and controlling the worst outcome of uncertainties. Although the Malaysian PLCs had adopted the ERM but they are still vulnerable to losses due to the wrong decision and miscalculated the risk (Togok & Zainuddin, 2016). In addition, PLCs that apply ERM in their company also show a different result and impact on the firm value and performance among them.

To address the above research problem, this research will further study on whether the executed of ERM has any impact on the value of companies listed on Bursa Malaysia.

1.3 Research Questions

The following questions are addressed in the research to gain an insight and understandings between the relationship of ERM and the value of PLCs from Bursa Malaysia.

1. What is a significant relationship between the Enterprise Risk Management (ERM) and value of PLCs in Malaysia?
2. What is the impact of firm size on the value of PLCs in Malaysia?
3. What is the relationship between the debt to equity (D/E) and the value of PLCs in Malaysia?
4. How does the return on asset (ROA) affect the value of PLCs in Malaysia?
5. Is there any relationship between dividend per share (DPS) and the value of PLCs in Malaysia?
6. How does the earning per share (EPS) related to the value of PLCs in Malaysia?

1.4 Research Objectives

1.4.1 General Objectives

To evaluate the effect of ERM, firm size, debt to equity, return on asset, dividend per share, earning per share on the value of companies with a focus on companies listed in Bursa Malaysia for the year 2017. At the same time, this research will help to analyse the association between ERM and firm value in cross-sectional study which is 500 Bursa listed companies for the

year 2017. The precautions and solutions can be taken to manage risks arises from different sources.

1.4.2 Specific Objectives

This research has a tendency to focus on:

1. To examine the relationship between the Enterprise Risk Management (ERM) and value of PLCs in Malaysia.
2. To study the impact of firm size on the value of PLCs in Malaysia.
3. To investigate the relationship between the debt to equity (D/E) and the value of PLCs in Malaysia.
4. To examine the effect of return on asset (ROA) on the value of PLCs in Malaysia.
5. To study the relationship between dividend per share (DPS) and the value of PLCs in Malaysia.
6. To investigate the impact of earning per share (EPS) on value of PLCs in Malaysia.

1.5 Significant of Study

According to Hoyt and Liebenberg (2011), enterprise risk management (ERM) has been the hot topic of various professionals and academics worldwide. However, there is still lack of academic research paper about the ERM accomplishment and its difficulty to further progress. In Malaysia, more and more companies realize the importance of ERM and start to imply in their corporation.

This research expects to broaden the way of determinants of ERM sophistication. Although the foretime researchers had focused on the firm value, this research are

going to investigate accounting, operational and financial market performance in order to explore and identify the PLC's value. In United States, the Committee of Sponsoring Organizations of The National Commission (COSO) has entrusted Price Waterhouse Coopers PLL, one of the biggest accounting firm in the world to develop an "Interna Control ─ Integrated Framework" as a guideline of the implementation of ERM. However, until today, there are no any specific guidelines for the ERM implementation among PLC's in Malaysia as compare to other foreign countries especially in U.S. and Europe countries. At the same time, there are still lack of empirical review which focus on the effect of ERM practices on firm value

Therefore, this research use a cross-sectional sample of 500 Malaysian firms for the year 2017 operating in different industries listed on Bursa Malaysia to identify the effects of ERM implementation on different industry's firm in Malaysia. Thus, the purpose of this research is to fill the research gap, provide a useful analysis to those academic and professionals who are interested in the area of ERM and enable them to reflect on the true ERM adoption rate in order to provide the guideline on ERM implementation and disclosure practices in Malaysia. This research will be contribute to the future professional and academics worldwide as an example. Not only will that it also become a references to those company which not implement ERM in order to decide to implement ERM on their business, and it show a clear relationship between firm value and ERM. Moreover, this research is to let more people know about the effect that implement ERM towards the firm value.

1.6 Hypothesis of the Study

We are going to identify the relationship of Public Listed Company's value and its determinants which are enterprise risk management (ERM), firm size, debt to equity, return on asset (ROA), earnings per share (EPS), and dividend per share (DPS). Thus, there are some hypotheses are shown regarding to the framework:

1.6.1 Enterprise Risk Management (ERM)

H_0: There is no significant relationship between enterprise risk management and Public Listed Company's value

H_1: There is significant relationship between enterprise risk management and Public Listed Company's value

1.6.2 Firm Size

H_0: There is no significant relationship between firm size and Public Listed Company's value

H_1: There is significant relationship between firm size and Public Listed Company's value

1.6.3 Debt-to-Equity (D/E)

H_0: There is no significant relationship between debt to equity and Public Listed Company's value

H_1: There is significant relationship between debt to equity and Public Listed Company's value

1.6.4 Return on Asset (ROA)

H_0: There is no significant relationship between return on asset and Public Listed Company's value

H_1: There is significant relationship between return on asset and Public Listed Company's value

1.6.5 Earnings per Share (EPS)

H_0: There is no significant relationship between earnings per share and Public Listed Company's value

H_1: There is significant relationship between earnings per share and Public Listed Company's value

1.6.6 Dividend per Share (DPS)

H_0: There is no significant relationship between dividend per share and Public Listed Company's value

H_1: There is significant relationship between dividend per share and Public Listed Company's value

1.7 Chapter Layout

The research consists of five chapters. For the first chapter, there is detailed explanation on the overall structure and the idea of this research. The next chapter will discuss the theoretical framework and empirical review of the foretime researches that are appropriate. The empirical review and those hypotheses developed in this research is justified by the foretime researches as well. Chapter three is going to introduce the methodology applied in this research paper, in simple word, it is about how this research is being done and what method has been used. While chapter four is about the analysis result by using the method which has mentioned in Chapter three and the chapter five is generally a summary of the analyses provided in the former chapter and provide justification on the major findings as well as providing the implications, limitations, and recommendations for future researchers who will conduct a study that related to field of personal finance.

1.8 Conclusion

In summary, this paper is going to identify the relationship of enterprise risk management (ERM), firm size, debt to equity, return on asset (ROA), earnings per share (EPS), dividend per share (DPS) and PLC's value. In this chapter, it has explained the background of Bursa Malaysia, traditional risk management and enterprise risk management. Besides that, this chapter also introduce the problem statement, research questions, research objectives, significant of study, hypothesis of study and the chapter layout.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This chapter is going to present the review of literature, the review of relevant theoretical models and the proposed theoretical framework. Various kind of past study are used to introduce the literature review of the dependent variable and independent variables. As mention as above, the dependent variable is Tobin's Q and its independent variables are enterprise risk management, firm size, return on asset, debt to equity, earnings per share, dividend per share. The summaries of those journals which done by previous researchers have provided some knowledge and explanations about the relationship between the dependent variable and its determinants. Thus, it may help the outsiders to be more understanding about this research paper. Furthermore, some relevant theories are also used to show the relationship between the dependent variable and dependent variables.

2.1 Review of the Literature

2.1.1 Firm Value

Firm value is an economic indicator that reflects the market value of the company. In today's complex business environment, the main purpose of a company is to enhance their firm value in order to attract more investor and maximize the shareholder's wealth. Investors and shareholders tend to make a negative decision about the company with low firm value, and thus it will influence the company performance or future growth. Different researcher

may apply different tool to measure the firm value (Marsha & Murtaqi, 2017).

For Asiri and Hameed (2014) study, they measured the firm value by using price-earnings ratio (P/E) and market to book ratio (M/B). They indicated that company with high P/E ratio means their shareholder has a higher confidence in their company and future, while M/B ratio show how the investor value the company. The researchers expressed that the higher the P/E and M/B ratio, the higher the firm value. Moreover, Return on Asset (ROA) also can be used as a proxy of firm value. Sudiyatno, Puspitasari, and Kartika (2012) expressed that the high company's performance will increase the stock price and thus the firm value will increase. Therefore, they use ROA as the measurers to measure the value of the firm. Furthermore, Dimisyqiyani, Suhadak, and Kertahadi (2017) applied earning per share (EPS) and return on equity (ROE) to measure the firm value. ROE is used to measure the company's ability to profit from their shareholder investment in the company. Since maximize the shareholder's wealth is the main goal for every company, thus from an accounting perspective, ROE is the true bottom line for measuring firm value. For market perspective, EPS is frequently used to represent firm value.

On the other hand, Tobin's Q also be utilized by many researchers such as Sucuah and Cambarihan, 2016; Allayannis and Weston, 2001; Desai and Dharmapala, 2009 as a tool to measure the firm value. According to Wernerfelt and Montgomery (1988), Tobin' Q is a good choice to measure the firm value. Tobin's Q often used by the researcher when they conduct empirical research. Based on Bhagat and Black (2002) the high Tobin's Q means that the company's managers produce a greater market value from their assets. A research conducted by Lewellen and Badrinath (1997) indicated that company with a Tobin's Q more than "one" means the company use the scarce resources effectively, while Tobin's Q less than "one" mean the company use the scare resources inefficiency.

Apart from that, there are many researchers examine the relationship between ERM and firm value which measured by Tobin's Q. According to Hoyt and Liebenberg (2011) found that there is a positive relationship between ERM and Tobin's Q. In addition, some researchers found that ERM has a negative impact on Tobin's Q (Bangaan Abdullah, 2017; Lin, Wen, & Yu, 2012). However, Tahir and Razali (2011) found that the ERM is positive but insignificant with the firm value. Therefore, this research examine the impact of ERM on firm value by using the Tobin Q as a proxy of firm value.

2.1.2 Enterprise Risk Management

According to Bangaan Abdullah (2017) ERM have a negative and significant impact to firm value. They found that ERM user firms are about 47% less valuable than non-user firm. This can be explained by two reason. First, ERM practice is still in early stage in Malaysia, their true value and utility have not been understood through trial and error and experimentation, as well as knowledge accumulation and integration (Samanta, 2009). Most of the firms are still lack of expertise in ERM program. The collapse of the American International Group (AIG) in 2008 reinforces this argument as AIG is one of the first companies in the US to adopt ERM. Second, the high implementation cost of ERM program (such as investing in information technology system and human resources) may result to a reduction on firm value of Malaysian firms (Beasley, Pagach, & Warr, 2008). Similar to Lin et al. (2012) study, their findings showed a significant and negative relationships between ERM and firm value. Specifically, the adoption of ERM resulted in a 5% reduction in Tobin's Q (firm value). They believe that the negative correlation may be due to the complexity of ERM and the high cost of ERM.

However, Hoyt and Liebenberg (2011) conducted a research by investigating in the insurance industry in U.S. from 1998 to 2005. They discovered that there is a positive and significant relationship between ERM and firm value (Tobin's Q). Specifically, the firm value of insurance company who adopted the ERM program is 20% higher than the other insurance companies who do not adopted the ERM program. Moreover, Baxter, Bedard, Hoitash, and Yezegel (2013) analysed the effects of ERM in the insurance and banking industry in U.S., and their findings showed a similar result with Hoyt and Liebenberg (2011). They found that ERM lead to a 3.40 % of increase in firm value (Tobin's Q). According to Nocco and Stulz (2006), ERM enhance the firm value because it makes the management aware of the various kinds of risks reviewed and then makes an informed decision. Although ERM cannot avoid risks, but it assist management in preparing or preventing risks, thereby increasing the maximum value of the firm (Altuntas, BerryStolze, & Hoyt, 2011 and Nocco & Stulz, 2006).

In contrast, Tahir and Razali (2011) found that the ERM is positive but insignificant with the firm value. They suggest that the Malaysia's enterprise risk management practices will not have any impact on firm value. Another research conducted by Chen (2012) found that there is an insignificant relationship between the ERM and firm value in Taiwan. This consistent with the study conducted by Pagach and Warr (2010), they cannot prove that ERM can create value for the firm since there is an insignificant relationship between them. Furthermore, Manab, Kassim, and Hussin (2010) found that the main goal of Malaysian financial firm to adopt ERM is to survive rather than create value. McShane et al. (2011) findings show that the ERM has positive but insignificant impact on firm value. The researchers found that ERM does not increase the value of U.S.'s insurance companies, they discovered that the value of the firm increase by adopted traditional risk management (TRM) rather than ERM.

2.1.3 Firm Size

Firm size is often used as a crucial, fundamental company firm characteristic. Firm size is dependent on a diversity of internal and external dynamics. According to Gordon, Loeb, and Tseng (2009), stated that the value of firm which is determined in Tobin's Q was significantly and positively affected by firm size. The relation between enterprise risk management and firm performance was reliant on the match with firm size. Since the larger firm is more complexity with facing a variety of risk, the larger the size of institutional only able to support the administrative costs of an ERM program. Firm size is positively significant with firm value with enterprise risk management program (Zou, Isa, & Rahman, 2017). Hence, it shows that bigger firm has greater competitive competence compared with small firm regarding of their excellent access to resources and better accomplishment (Mule, Mukras, & Mutunga, 2015).

There is a negative relationship between firm size and firm value (Hoyt & Lienbenberg, 2011). By applying the principle of diminishing return, the large corporations had maximized their capacity in utilizing their assets. It only happened when additional of one input brings minor benefits on the marginal of production, ceteris paribus (Reinert, 1996). Also, the increase of value of small firm is faster than big firm since it generates higher profit in order to lure the investors to invest (Tahir & Razali, 2011). The larger of the firm size are having a wide range of risk, but it also faces high regulatory pressure and is monitored by a high-level government, indirectly resulting on the performance of firm's value (Zhao & Singhaputtangkul, 2016). Salim and Yadav (2012) and Maury and Pajuste (2005) found that the firm size has an inverse relationship with firm value by computing the logarithm of total assets. This is because the bigger firms have achieved the mature stage in their life cycle. Firm size displays a significant and adverse effect on Tobin's Q (Dushnitsky & Lenox, 2006 and Daines, 2001).

On the other hand, firm size which set as controlled variable has insignificant relationship with firm performance that is computed by logarithm of total assets. Also, firm size has no significant impact on the value of firm at 10 percent significant level since p-value of 0.114 is greater than 0.1 that reported by Setiadharma and Machali (2017). Mule et al. (2015) found that there is insignificant correlated between firm size and Tobin's Q which means either increase or decrease in firm size would not affect the firm value measured with Tobin's Q. Thus, there is no guarantee that the firm value rise regarding of the size of firm because of the dividend policy. Firms with large assets and loans do not often distribute the profit to stockholders because they preferred to retain the profit instead of distributing dividend which might influence the stock price and firm value (Nwamaka & Ezeabasili, 2017).

2.1.4 Debt-to-Equity

Debt-to-equity is the debt of borrowing capital as a funding source in order to increase the company's asset base and generate returns on risky assets. The value of firm was positively influenced by financial leverage as the expectation of shareholders was met with long term debt to equity of firm (Isshaq, Bokpin, & Mensah Onumah, 2009). Zou et al. (2017) shows that there is a positive relationship between leverage and Enterprise Risk Management Index (ERMI). In other words means that the higher of the leverage, the better performance of firm value with effective enterprise risk management program. Besides, the debt ratio and additional debt capital on tax shields increase which lead to the value of firm also increases (Dolde, 1995). Tahir and Razali (2011) reported that firm favors in reducing of interest expense due to the increase of leverage that facilitates tax advantage. Jensen (1986) found that the financial leverage could increase the value of firm due to lower liquidity for corrupt managers. The firm value has

positively relationship with leverage with weak growth opportunities and vice versa which reported by Aivazian, Ge, and Qiu (2005). Hence, leverage reduces overinvestment and improves the value of firm.

Leverage is computed by total liabilities divided by total assets, restricting the free cash flow in hand which result in the reduction of profit diversion (Maury & Pajuste, 2005). According to Krause and Tse (2016), found that the higher leverage of firm will affect the firm value directly which is the reduction in the investment activity. Hence, there is a negative relationship between firm value and leverage. Besides, the more leverage of companies, the increase of risk of bankruptcy which result in the value of firm declines (Pagach & War, 2010). Mohammed and Knapkova (2016) and Bhabra (2007) found that leverage has negative relationship with firm value since it was arisen from long term debt judgment. The higher leverage displays firms could suffer financial difficulties regardless of the firm size. According to Bertinetti, Cavezzali, and Gardenal (2013), Dushnitsky and Lenox (2006) and Mule et al. (2015), revealed a negative correlation between leverage and Tobin's Q which measures the value of firm. Ergo, firm is encouraged to implement ERM in reducing leverage which is recommended by Liebenberg and Hoyt (2003).

Morck, Shleifer, and Vishny (1988) demonstrated that leverage has an adverse but no significant impact on firm value. This is because managers maintain a greater average degree of ownership in highly leveraged companies. There is a positive but insignificant relationship between leverage and Tobin's Q which measures the value of firm in Thailand (Pal, Driffield, & Mahambare, 2007). Leverage of large-size firms does not have significant relationship with firm performance (Ibhagui & Olokoyo, 2018). Firms with establish ERM programs perhaps have low degree of leverage in the certain situation that they have select to minimize their financial problem. Therefore, the effect of leverage on implementation of ERM is regarded as uncertainty.

2.1.5 Return on Assets

Return on assets measures the ability of a business in generating a return on an investment and determining the range of a company's profit. It is the reflection of companies' activities. According to Agustina & Baroroh (2016), stated that there is a positive and significant relationship between profitability which is determined by return on assets (ROA) and firm value at five percent significant level. It means that there is guarantee on the higher profitability the higher profit was shared. Haugen and Baker (1996) reported that there is correlated between profitability and the firm value in terms of Tobin's Q. Profitability is a crucial creator of value in the firm.

ROA has positive impact with the value of company, showing the effectiveness of company controls the property in generating profits (Daines, 2001). This is because the high profitability shares more profits which affect the company value. Ensley, Pearce, and Hmieleski (2006) shows that there is positive correlation between profitability and firm value. It facilitates management freedom and flexibility for carrying out more social responsibility program to shareholders. The higher the profitability, the more distributable profit, and the greater the value of the firm (Chen & Chen, 2011). ROA exhibits the efficiency of management of the firm's assets with a positive determinant of firm value. Earnings are distributed to shareholders due to the high profitability of firm which results in the increase of firm value (Haugen & Baker, 1996).

According to Tahir and Razali (2011) reported that there is a negatively relationship between profitability and firm value at one percent significant level. This is because firm bears its responsibility to pay fixed income with issuing the debts. Hence, the value of firm will be influenced by interest since it will affect an entire net gain from the company. The result found that there is insignificant relationship between ROA and firm value

(Mohammed & Knapkova, 2016). Tahir and Razali (2011) found that the profitability is uncertainty because of the fluctuations of interest rate.

2.1.6 Dividend per Share

According to Kostyuk (2006) found that the relationship between DPS and firm value is positively and significantly. The researcher explained that those firms who tend to distribute net profit among shareholders will contribute to the firm's value. The fact that dividends are paid attracts a variety of investors, making stocks more popular and thus improving performance and firm value. Furthermore, Budagaga (2017) conducted a research by investigating 44 Irish Stock Exchange (ISE) listed firms from 2007 to 2015, and his findings also show that the DPS has a positive and significant impact on the firm value. When the firm itself pays dividends, investors are willing to pay a high price for the stock, thereby maximizing the value of the firm. The result also similar to Anton (2016); Priya and Mohanasundari (2016); Giang and Tuan (2016) findings, which the firm value is positively correlated with the DPS.

However, a research done by Sprčić, Žagar, Šević, and Marc (2016) found that the dividend has a significant negative impact on the firm value which measured by Tobin's Q. Moreover, a study also conducted in U.S. by Hoyt and Liebenberg (2011) and revealed that dividend per share is negatively related with firm as the dividend paid will hinder the growth opportunities of firms which are not favourable by some investors. Egbeonu, Edori, and Edori (2016) also revealed that DPS has a negative relationship with firm value. This is because buying and selling stocks can offset changes in the dividend policy, and assuming that dividends are paid without taxes, that is,

the dividend policy is irrelevant to the company's value. Under irrelevant theories, dividend payments are not an effective way to raise stock prices.

2.1.7 Earnings per Share

Based on Chowdhury and Chowdhury (2010) posited that the relationship between EPS and firm value is positively significant by examining 77 firms for the period from 1994 to 2003 in Bangladesh. Moreover, a research conducted by Egbeonu et al. (2016) also found that the EPS is positively and significant affect the value of firm. The researchers revealed that EPS shows a major feature in boosting firm value. Similar to Velankar, Chandani, and Ahuja (2017) has analysed the impact of EPS on firm value. They found that on 5% significance error level the EPS has a significantly positive effect on share price, thus enhance the firm value.

Furthermore, Islam, Choudhury, and Adnan (2014) stated that there is a insignificant positive relationship between EPS and firm value. They found that the firm value has not increased with the trend of EPS, or it can be said that firm value does not increase as much when the EPS increase. Similar to Nwamaka and Ezeabasili (2017) findings which show that EPS is positive but insignificantly affected the value of the firm.

Furthermore, Rosikah, Prananingrum, Muthalib, Azis, and Rohansyah (2018) analyse the impact between the EPS and firm value by investigating 114 manufacturing companies for the period from 2006 to 2010 in Indonesia. They argue that there is a negative and insignificant relationship between EPS and firm value. In other words, the firm with high EPS are not balanced by high firm value. In contrast, low EPS does not reflect low firm value. This is because not all of the net profit earned by the firm is distributed as

dividend to shareholders, however net profit is given priority to fund their new activities or investments. The relationship is consistent with the findings of Narang (2018), which the EPS does not contribute to the performance and value of the firm at 5% of significance level.

Other than this, Bayanjargal (2015) discovered that there is a negatively significant relationship between EPS and firm value (Tobin's Q). This means that if EPS increase then the firm value will decrease.

2.2 Review of Relevant Theoretical Models

2.2.1 Traditional risk management versus Enterprise Risk Management

As mentioned above, risk management are used by individuals or cooperation to reduce and evaluate the uncertainties. Risk management also is a process to facilitate risk classification and provide effectiveness actions with the purpose of controlling the risk (Luia, 2014). Hundreds years after the industrial revolution, the economic environment has changed to more complex and more volatility. Thus, the traditional risk management approach is necessary to change or remove as it is no longer sufficient for managing the risk. According to the National Association of Corporate Directors (NACD), they consider that the shareholders have to increase their awareness of risk and often review their enterprise risk management (ERM) more seriously as the number and type of business risks incline nowadays.

Based on the research from Kraus and Lehner (2012), the following table is the summary of the differences between traditional risk management and ERM.

Traditional risk management	Enterprise risk management
Risk is considered an individual hazard	Risk is part of the strategy
Risk identification, analysis and reduction	Risk portfolio development, risk optimization
Risk random quantification	Risk monitoring and measurement
Target individual risk	Target critical risk
Risk limits (Focus is on preventing loss within the business unit)	Risk strategy (Focus is on lowering risk, increasing sustainability and providing value across the entire organization)
Risks without individual tasks, individual responsibility	Determination of risk responsibilities, collective responsibility

Table 2.2.1: Traditional risk management versus Enterprise Risk Management

Source: The Nexus of ERM and Value Creation: A Systemic Literature Review (Kraus & Lehner, 2012)

2.2.2 Different Type of Risk

Risk is the possibility of having an unexpected outcome in future. Every business must have their own facing risk. However, it is not said that risk always harm to business as the higher risk always follow by higher return. There are various type of risk in the business world such as competitive risk, market risk, legal risk, compliance risk, reputation risk, credit risk, interest rate risk, exchanger rate risk and so on. However, according to Tahir and Razali (2011), the four main type of risks are financial risk, strategic risk, operational risk and hazard risk.

Operational risk can be defined as human risk because it is resulting from failure internal processes, people and systems, or from external events (Basel Committee on Banking Supervision, 2004). This risk is also including fraud risk, security risk, conduct risk, geopolitical risk and so on.

Hazard risk means that any agent that can threat to the life, health or the environment. In general, hazard risk are dormant risk, which means that it has the potential with only a theoretical risk of harm, however, when hazard becomes active and reality, it can lead to an emergency condition to a company.

Financial risk is a risk faced by a company in terms of handling its finance. It is a specific risk that includes many types of risks which related to a company's capital structure. Those involved risks include default risk, liquidity risk, market risk and exchanger rate risk. One of the example of financial risk in the real world is the bankruptcy of Barings bank. The bank had suffered a loss of USD 1.3 billion because of unexpected losses in futures and options trading (Jorion, 2000).

Strategic risks can be defined as some internal or external events that inhibit the company to achieve their company's objectives (Frigo & Anderson, 2011). It can arise from certain adverse business decisions by management, improper application of decisions and lack of awareness and responsiveness about industries and market changes (Rawls III & Smithson, 1990). It is a risk that associated with the future plans such as the launching of new product line, entering new industries and the expansion of new geographies

Hazard risk and operational risk are classified as pure risk, which means that the result are a loss or no loss occur, and will not have any chance for gain. However, financial risk and strategic risk are classified as speculative risk, which is a risk that provides the opportunity of gain or loss when it exist.

2.2.3 Corporate Governance

Nowadays, corporate governance has become an important managing method in the business world. According to Abdullah and Valentine (2009), there is no any professional and accepted definition of corporate governance, but in the Cadbury Report in year 1992, it stated that corporate governance as a system for a firm which is controlled directly by the rules and regulations. Corporate governance can considers as an issue that involved all the company's stakeholders such as managers, shareholders, and customers because it has essentially require all the stakeholders' interest are balanced. Hence, in order to balance the stakeholder's interest by reducing losses, risk management is important to help the company to understand and manage risk in a proper way (Ghazali & Manab, 2013). Besides that, one of the purposes of corporate governance is to provide an effectiveness management that can ensure the company meet their long term goal. Thus, it is very important to apply the corporate governance and risk management in an enterprise (El-Masry, 2016).

2.2.4 Malaysian Code on Corporate Governance

The Bursa Malaysia had announced that the Malaysia Code on Corporate Governance had become a new contains under Bursa Malaysia Listing rules in 2001. It required all the public listed companies follow the MCCG in their annual reports in the following years. According to Aswadi, How, and Verhoeven (2007), this policy has a large impact on shareholders' wealth, which has to lead to an increase of 4.8% in the share prices.

A new Malaysian Code on Corporate Governance (MCCG 2017) was released by the Securities Commission of Malaysia (SC) on April 2017. MCCG 2017 is the fourth version of the Malaysian Code on the Corporate Governance and it has replaced the previous 2012 version nowadays. The first Malaysian Code on Corporate Governance was issued on year 2000, and superseded by 2007 version, 2012 version, and the latest 2017 version. Although those MCCG are following the U.K style in drafting the corporate governance code, Malaysia ranks as 4th in the direction of attracting foreign investors among the world's top countries growing. (Alnasser, 2012)

As compare to the 2012 version, MCCG 2017 has more focus on the internalisation of corporate governance culture. According to Chia and Wong (2017), the MCCG 2017 is applied for all public listed companies, which means that all the public listed company are required to follow the MCCG in their annual reports. While the other non-listed company/ business such as state-owned enterprises, partnership and licensed intermediaries are also encouraged to adopt the MCCG 2017 in order to increase their accountability, transparency and sustainability (Louis, 2017).

The new MCCG includes 36 practices with the core principals of:

(a) Board leadership and effectiveness

(b) Effective audit and risk management

(c) Integrity in corporate reporting and meaningful relationship with stakeholders.

Those practices will assist the companies to achieve their intended results and objectives. (Kok, 2017) Besides that, the new code mentioned that some practices are only applied to those large companies with at least RM 2 billion market capitalization and rank in the FTSE Bursa Malaysia Top 100 Index. The MCCG 2017 emphasizes on the concept of "apply or explain an alternative" instead of using the old concept which is "comply or explain". A new approach which name as Comprehend, Apply and Report had been introduced in order to assist the companies' management to be more understanding of the application of MCCG.

2.3 Theoretical Perspective

2.3.1 The Modigliani and Miller (MM) Theory

Modigliani and Miller theory, also known as capital structure theory was designed by Modigliani and Miller, who were the first to come out the study of relationship between company's value and its capital structure in 1958. They proposed that under some assumptions of a frictionless perfect market, a firm's market value is unaffected by its company leverage level. These are the assumptions of Modigliani and Miller theory approach:

1. There is no bankruptcy cost, transaction cost, and tax
2. Equivalence in borrowing costs for both companies and investors, companies and investors can borrow at the equal interest rate.
3. Symmetry of market information, which means that information are freely available for both companies and investors.

4. No effect of debt on a company's profit before interest and taxes

They further explain that a firm's market value is depend on its earning power and risk of the company's underlying asset. Modigliani and Miller (1958) also argued that this theory is suitable for non-growth companies, especially when the investors can estimate the expected return and the risks of the company. Modigliani and Miller (1963) had contended that in the same risk class, the change of debt-equity is irreverent to the cost of capital. Thus, Bose (2010) gives more illustration based on the assumptions of Modigliani and Miller. He pointed out that the company's value is unaffected by its costs of capital and its capital structure. He also mentioned that the cut-off rate for investment objective is not depend on the form finance will carry (Bose, 2010).

Although the MM theory is widely accepted, a firm's capital structure or financial decisions are not totally irrelevant to the firm's value. Ahmeti and Prenaj (2015) pointed out that this theory was designed based on a non-real market condition. According to the research of Tudor, Andrei, Bădescu, and Georgescu (2014), they stated that the effect of firm's leverage level on firm's value is not clearly as the market is imperfect.

2.3.2 Agency Theory

Agency theory is a hypothesis that defines the relationship between principals and agents in business. It has been agreed by several scholars in many disciplines. Agency theory extended the risk sharing literature to involve known as the agency problem when they have different interests (Roslan, Yusoff, & Dahan, 2017). In general, the principals are risk-neutral while agents are risk averse, assuming they are inspired by their own interest which causes contradicting with each other. Managers with stock ownership mostly are establishing risk management due to the increase of risk aversion

while managers with option holdings are less likely to implement corresponding when the value of option rise with increased risk (Smith & Stulz, 1985). Ergo, the conflict of interest arises since the principal's interests is to maximize the returns on capital that they have invested and the management such as agents is to desire compensation based on the performance level (Morellec & Smith, 2007).

It emphasize on solving the problems that occur in agency relationships because of unaligned goals or different aversion degree to risk. Agency theory recommended a series of mechanism to handle the agency problem involved the utilization of internal control mechanisms by implementing governance mechanisms (Desender, 2007). Mafrolla, Matozza, and D'Amico (2016) demonstrated that agency conflicts happened that impacted on the adoption of ERM when ownership diffusion declined. Security is provided regarding to agency theory with ERM mechanisms before the existing risks that possibly occur in advance upon funds deposited by principal party. Therefore, the existence of ERM provide the guidelines to agent in establishing the future activities which result in the enhancement of company financial performance (Agustina & Baroroh, 2016).

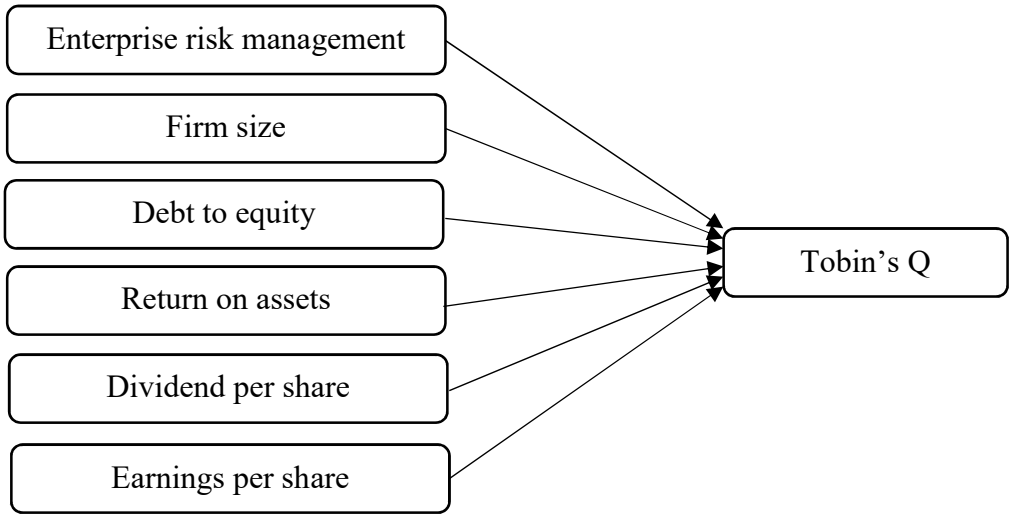
Agency costs such as cost of forming contracts, managing the behavior of agents and loss suffered due to decision made by management had arisen when the asymmetry information is created by the disagreement of agents and management (Farrer & Ramsay, 1998). Since management bears the agency cost, supposing the information between management and principals is asymmetric, hedging will expand the value of firm. Risk management technique acts as hedging is expected to decline the agency cost and financial distress in order to grow the potential and value of firm (Sprčić, Kožul, & Pecina, 2015). Agency costs of modern capitalism had arisen when the adequate controlling mechanism is implemented to avoid the conflict of interest between shareholder and management which brings the impact of corporate governance from an agency theory perception.

The value of firm performance can be improved and decreases the costs from divergence of management and shareholders' objectives by lowering the cost of monitoring of managers (Fama & Jensen, 1983). Desender (2007) stated that the agency costs are paid to principal acted on organization's behalf could be declined and enhance governance structure if board of directors establish the enterprise risk management. Fauver and Naranjo (2010) stated that when the agency cost is greater, handling difficulty and vulnerable corporate governance exhibit a negative relationship between the use of derivatives and Tobin's Q. By eliminating the agency costs and taxes, risk management able to increase firm value in market imperfection condition (Garven & MacMinn, 1993). Also, agency costs can be declined for enhancing the performance of firms when the boards are larger enough. This is because the Chief Executive Officer (CEO) domination is decreased which result in monitoring of management more efficiency (Hermalin & Weishbach, 1998). The effect of implementing better risk management increase the value of firm through reduction in agency costs, financial distress, cash flow and others (Krause & Tse, 2016).

Lam (2003) suggested that agency theory can be solved and performance of organization can be enhanced in order to achieve its business objectives and maximize the interest of shareholder if the Enterprise Risk Management (ERM) was implemented. Therefore, the conflict of interest between owners and management are absent since agents have lower rights on formal control systems especially ERM (Paape & Speklé, 2012). Based on the agency theory, profitability has the intension in mediating the impact between ERM and company value. The better the performance of firm will reduce the cost of agency (Uadiale, 2010). Since operational risk management contributes in measuring the profitability of the company, hence ERM is obligated to be established by the company. Ergo, public listed companies are encouraged to reveal additional complimentary information in minimizing information asymmetry gaps and decreasing agency costs (Togok, Isa, & Zainuddin, 2016) and (Watts & Zimmerman, 1983).

2.4 Proposed Theoretical Framework

Diagram 2.4: Proposed theoretical framework



The dependent variable on the board is Tobin's Q and the independent variables are enterprise risk management, firm size, return on asset, debt to equity, earnings per share, dividend per share. The board shows the connection between the dependent variable and its independent variables clearly.

2.5 Conclusion

Literature review, theoretical review and theoretical framework have been carried out in this chapter. For the literature review, some research gaps had been found based on the previous study of researchers. For instant, ERM has been found significant positively, significant negatively and insignificant positively relationship from different researchers. As for dividend per share (DPS), some researchers found that it has significant and positively effect to the dependent variables but some people obtain different outcome which is significant and negatively impact. For the Earnings per share, four possible outcomes have been

found from the previous research, which are positively significant, positive but insignificant relationship, negative and insignificant relationship, and negatively significant. Besides that, previous researchers have found that positively significant relationship, negatively relationship and insignificant relationship from the impact of firm size to PLC's value. Furthermore, leverage has been found positive, negative, and negatively insignificant relationship, three different possible results from the past studies. Lastly, the profitability also has totally different outcome from the previous research, which are positively significant and negatively insignificant relationship. Besides that, some relevant theories such as agency theory and Modigliani and Miller theory have been used to present the relationship between firm value and its determinants. The theoretical framework has provide a clear picture to outsiders about the connection and relationship of the dependent and independent variables.

CHAPTER 3: METHODOLOGY

3.0 Introduction

Chapter three is going to show and explain the method that will be used in this research paper. In this chapter consists of the research design, the method of data collection, the sampling design, variable specification, the data processing and analysis. The methodology is playing an important role to this research paper because the following testing and final outcomes will be based on the methods which has been mention in this chapter.

3.1 Research design

The objective of this research paper is to examine the relationship of Tobin's Q and its determinants such as enterprise risk management, firm size, debt to equity, return on asset, dividend per share and earnings per share. Thus, the cross-sectional sample of 500 public listed company from different industries in year 2017 such as industrial products and services, properties, finance services and other industries had been used in this paper. Year 2017 had been use in this research is because some of the data in year 2018 yet to be completed during beginning of the year 2019. According to Lavrakas (2008), the cross sectional data means that the data are collected for some independent variables at the same time. The data may be single observations from a sample survey or from all units in a population (Biørn, 2013). In general, cross section data is often used for micro unites such as individuals, households, firms, corporations and so on. However, it may also use for macro units such as for cities, states or even countries (Biørn, 2013).

Besides that, quantitative data approach also had been used for the data collection. Quantitative data means the information which can be measured and delivered by number. For example, the student's height, the number of student in UTAR and so on. Thus, it is suitable for the conditions where systematic, standardized comparisons are needed. According to the research of Bryman (2012), he introduced quantitative research as a research method which focus on the quantification in data collection and analysis.

There are a few advantages by using quantitative research approach. One of the benefits of using quantitative data approach is that the result and outcome of the re Outcome of the research will be more valid, reliable and generalizable, especially when the sample size are large. (Dowd, 2018) Thus, the interpretation of the research will be easier to understand. Besides that, another advantages is saving times and resources. (Bryman, 2001) Nowadays, according to Lichtman (2013), major of the research papers are depended on the hypothesis testing, thus the researches no need to do intelligent guesswork, and they just need to follow the guidelines and steps. According to Shank and Brown (2007), quantitative research approach was often used in a general research because of clear objective and steps, and can be repeated at any time or any other place and still can get the unchanged results.

3.2 Data Collection Method

The sources of data can be applied in conducting research as a method are primary source and secondary source. Typically, primary data required the researchers retrieved the data by own. For secondary data is the data that retrieved from researchers which available in the public. Secondary data to be applied in this research with a view to study the Tobin's Q to evaluate the firms' value in the sectors of trading/services, industrial products, construction, technology, finance, consumer products, REITs, properties, plantations, and hotels. The determinants for

the firms are Enterprise Risk Management (ERM), firm size, debt-to-equity, return on assets (ROA), dividend per share (DPS) and earnings per share (EPS) which the data sources can be adapted from annual report in Bursa Malaysia and Bloomberg of the listed companies for the year 2017. Dummy variable is a kind of variable that take on the value in one or zero (Suits, 1957). The ERM implementation of the firms consists of two categories, in this research includes only one dummy variable for the ERM implementation of the firms. One is indicating the firms implemented ERM while zero is indicating the firms does not implemented ERM.

3.3 Sampling Design

3.3.1 Cross-Sectional Sampling

Category	No. of firms	No. of firm implement ERM	No. of firm not implement ERM
Industrial Products	122	38	84
Trading and Services	93	35	58
Consumer Products and Services	73	27	46
Properties	56	18	38
Technology	40	10	30
Constructions	26	6	20
Plantation	21	7	14
Finance Services	20	8	12
Energy	18	3	15
Transportation and Logistics	13	2	11
REITS	9	3	6

Health Care	5	0	5
Utilities	4	0	4
Total	500	157	343
Total in percentage (%)	100	31.40%	68.60%

Table 3.3.1: Sample of the Firms by Category

Note: ERM is Enterprise Risk Management, REITS is Real Estate Investment Trusts

Source: Bloomberg Software

Cross-sectional sampling has been applied in this research with a view to obtain the data due to efficient and easy to access. The authors Lohr (2000) and Reitermanová (2010) declared that cross-sectional sampling shows a low bias for the overall model performance. The researchers Tahir and Razali (2011) also implemented the cross-sectional sampling to collect the database.

The table 3.3.1 shows the sample of firms' value of the listed companies for the year 2017 by thirteen sectors which the data sources retrieved from Bloomberg software. There are industrial products which is the largest sample size among thirteen sectors of the firms while utilities is the smallest sample size. The second largest sample size is trading and services while consumer products and services is the third largest sample size among the thirteen sectors of the firms. For properties, it is the following largest sample size of consumer products and services. There is 40 sample sizes had been chosen for the technology sector. Constructions, plantation, and finance services, having twenty-six, twenty-one, and twenty sample sizes for each sector. Energy sector contain eighteen sample sizes, and transportation and logistics contain thirteen sample sizes. REITS and health care

are the third and second last smallest sample size among the thirteen sectors of the firms.

The total sample size in this research is 500 number of listed companies. The sample size in percentage for thirteen sectors of the firms which the companies implement the ERM is 31.40 percentage while the companies not implement the ERM is 68.60 percentage.

From the 31.40 percentage, which is the percentage for the companies implement the ERM, industrial products is 7.60 percent, trading and services is 7.00 percent, consumer products and services is 5.40 percent, properties is 3.60 percent, technology is 2.00 percent, construction is 1.20 percent, plantation is 1.40 percent, finance service is 1.6 percent, energy is 0.60 percent, transportation and logistics is 0.40 percent, REITS is 0.60 percent, and health care and utilities are 0 percent.

From the 68.60 percentage, which is the percentage for the companies implement the ERM, industrial products is 16.80 percent, trading and services is 11.60 percent, consumer products and services is 9.20 percent, properties is 7.60 percent, technology is 6.00 percent, construction is 4.00 percent, plantation is 2.80 percent, finance service is 2.40 percent, energy is 3.00 percent, transportation and logistics is 2.2 percent, REITS is 1.20 percent, health care is 1.00 percent and utilities are 0.80 percent.

3.4 Variable Specification

3.4.1 Dependent Variable

Dependent variable is the variable that influenced by independent variable. Tobin's Q set as a dependent variable in this research. Tobin's Q also used to indicate the firms' value and how the firms' performance.

3.4.1.1 Tobin's Q

Tobin's Q is the combination of market value of the firms on the stock market. Tobin's Q also measures the firm value and growth of the firms. Kaldor (1966) is the first author introduced the concept for Kaldor's V also known as Tobin's q. After that, Tobin (1969) continuously in studying the research of Kaldor's V concept and devising the Tobin's Q. In 1981, Tobin (1969) won Nobel Memorial Prize in Economic Sciences for the proposal of the model of Tobin's Q. Chung and Pruitt (1994) also developed the approximation of Q which used to calculate the market value of the firms.

Calculation formula:

$$\text{Approximate Q} = \frac{(\text{MVE} + \text{PS} + \text{DEBT})}{\text{TA}}$$

Where:

MVE is representing market value of equity.

PS is representing liquidity value of preferred stock.

DEBT is representing total debts.

TA is representing total assets.

Sometimes Tobin's Q is prone to get a negative value due to some of the firms did not applied the long-term liabilities and applied more short-term liabilities in order to operate its business. Thus, there is high possibility for Tobin's displays a negative value for the firms since the liabilities is more than the firms' market value.

3.4.2 Independent Variable

In this research, independent variable is the variable that influences the dependent variable. There are six independent variables to be applied in this research which comprises of Enterprise Risk Management (ERM), firm size, debt-to-equity, return on assets (ROA), dividend per share (DPS), and earnings per share (EPS).

3.4.2.1 Enterprise Risk Management (ERM)

Enterprise Risk Management (ERM) is a methods to identify and manage the organisation's risk in order to achieve the organisation's goals and objectives. ERM emphasizes on evaluating the organisation's risk. ERM

implementation reflects the firms' performance and firms' value. ERM is one of the determinants to indicate the firms' value. There is positive relationship between ERM and firms' value in the model (Hoyt & Liebenberg, 2011). However, Sayilir and Farhan (2017) claimed that there is negative relationship between ERM and firms' value in the model.

3.4.2.2 Firm Size

Firm size to denote the total assets for the whole organisation which implies of the value of the firm. According to the authors Asiri and Hameed (2014) mentioned that there is significant relationship between firm size and firm's value in the model. Nevertheless, Mule, Mukras, and Nzioka (2015) declared that there is insignificant relationship between firm size and firm's value in the model.

3.4.2.3 Debt-to-equity (D/E)

Debt-to-equity (D/E) ratio expresses the relationship between the contributions of capital for creditors and shareholders. Debt-to-equity ratio is a financial ratio to indicate how much the debt that the firms used to finance its assets which is according to the proportion of debt and shareholders' equity. Typically, the firms have higher debt-to-equity to denote the firms unable to generate sufficient cash to settle its debt obligations. According to Akhtar, Khan, Shahid, and Ahmad (2016) stated that the research shows there is positive relationship between debt-to-equity and firm value.

Calculation formula:

$$\text{Debt to equity (D/E)} = \frac{\text{Total debt}}{\text{Total equity}}$$

3.4.2.4 Return on assets (ROA)

Return on assets (ROA) indicates that how the profitability of the firms in generating revenues which is relative to total assets of the firms. In other words, ROA shows how the efficiency for the firms' management by using the total assets to generate the profits. The higher the ROA, the higher the profitability of the firms. The researchers Pirzada, Mustapha, and Wickramasinghe (2015) and Gamayuni (2015) points out that there is significant relationship between ROA and firm value.

Calculation formula:

$$\text{Return on Asset} = \frac{\text{Net income}}{\text{Total assets}}$$

3.4.2.5 Dividend per share (DPS)

Dividend per share (DPS) is the dividends paid to common stockholder which issued by the firms based on every common stock outstanding. DPS can be a reward for risk takers in investment (Velankar, Chandani, & Ahuja, 2017). The study of Hoyt and Liebenberg (2011) had carried out a research and claimed that there is positive relationship between DPS and firm value.

By contrast, the research carried out by Chaudhry, Mehmood, and Mehmood (2014) pointed out the DPS and firm value illustrates that there is no significant correlation.

Calculation formula:

$$\text{DPS} = \frac{\text{Dividend paid to common stockholder}}{\text{No. of common stock outstanding}}$$

3.4.2.6 Earnings per Share (EPS)

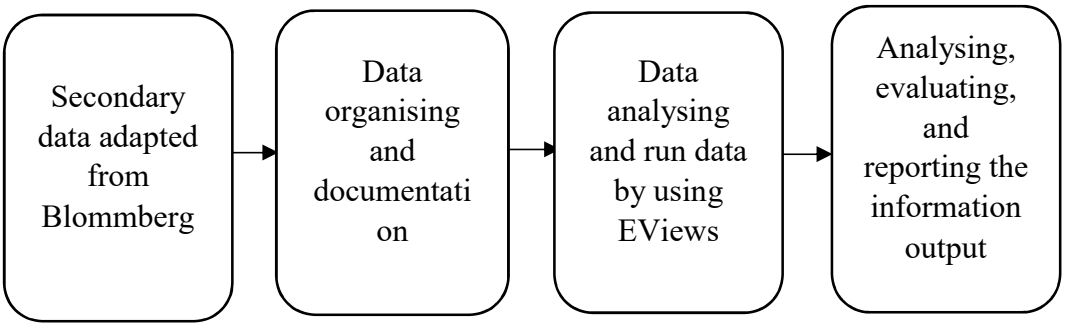
Earnings per share (EPS) is a market prospect ratio that evaluates the earnings made reflected by the number of shares issued. With simply means, the amount of income received based on the distribution of outstanding shares at the end of the year. EPS also considered as an indicator of firm's profitability based on shareholder basis. According to Pirzada et al. (2015) determined that the firms' value is significant affected by EPS. However, Islam, Khan, Choudhury, and Adnan (2014) argues that there is no positive relationship between EPS and firm value.

Calculation formula:

$$\text{EPS} = \frac{\text{Net income} - \text{Preferred dividends}}{\text{No. of common stock outstanding}}$$

3.5 Data Processing

Diagram 3.5: The flows of data processing



The figure 3.5 illustrates that the flows of data processing. Firstly, the secondary data retrieved from Bloomberg. Secondly, the secondary data will be reorganised and rearranged for the purpose of conducting the empirical analysis and the hypothesis testing. After rearranged the secondary data, the data will be conducted whereby the EViews software. Lastly, the information output obtained from EViews to be analysed, evaluated, and reported.

3.6 Data Analysis

This research will discuss the detail of the data by using data analysis, it is used to analyses the data that have collected from the Bloomberg software by applying different type of test to evaluate whether the independent variables have significant effect toward the dependent variable and test the relationship between the independent variables which had been chosen in chapter 2 and dependent variable. The research will use the EViews software to analyses and interpret data. All test use for the research are Ordinary Least Square (OLS). For model specification, we will conduct Ramsey Reset Test.

3.6.1 Ordinary Least Square (OLS)

Ordinary Least Square (OLS) can be explained as constant coefficients model. OLS is the data have different units are pooled together which is assumption on individual differences. According to the findings of Akbar et al. (2011), while using OLS, the assumption is all coefficients are constant across individuals and time. Neither significant country nor significant temporal effects. Furthermore, we assume that intercepts are constant across companies, slopes are constant across companies, and there is time invariant (no time effect). There are two condition when use OLS model. For the first condition is no time effect when using panel data. It means time do not affect some characteristic. For the second condition is independent variables are uncorrelated with the error term. Sometime it does not rely on current, past and future values of the error term. The repressor shows strictly exogenous. It also shows independent and identically distributed with zero mean and constant variance in error term. As a result, it is normally distributed and the result of hypothesis testing is valid. Thus, by using OLS estimation, OLS must achieve BLUE and consistent estimator.

3.6.2 Normality Test

Normality test is to examine whether the data that have collect will be normally distribution towards the model and test whether normally distribution of the error term. The data which will show a bell shaped frequency distribution when it is normally distributed. There is a test call Jarque-Bera (JB) test (Osborne & Waters, 2002), is use to test whether the model is normally distributed or not.

Error term must be normally distributed is one of the assumptions on multiple regressions. When the error term are normally distributed, all the

points in the plot of residuals will show an approximate normal curve. It will help to forecast a new sample by using thee sampling distribution of the mean (Keith, 2006).

The hypotheses for Normality Test are as follow:
H_0: Error terms are normally distributed.
H_1: Error terms are not normally distributed.

Decision rule:
Reject H_0, if the p-value is less than the significant level or the test statistic value is more than the critical value. Otherwise, do not reject H_0. If we rejected H_0 it means that there is enough evident to make the conclusion about the error terms are not normally distributed.

3.6.3 Individual Partial Regression Coefficient Test (T-test)

T-test is use to examine whether the independent variable is significantly effect on dependent variable (DeCoster, 2006). In this research, we are going to use the t-test to examine the significantly effect of ERM, firm size, debt to equity, dividend per share, earning per share, and return on assets can influence the firm value or not.

Hypothesis testing for T-test are as follow:
H_0: $\beta_n = 0$
H_1: $\beta_n \neq 0$, where, n =1, 2, 3, 4, 5, 6

Decision rule:
Reject H_0 if the p-value is less than the significance level or the t-test statistic value is less or more than the critical value, otherwise, do not reject H_0. If we rejected H_0 it means that there is enough evident to conclude that the independent variable is significantly affect the dependent variable.

3.6.4 F-test

The objective for the F-test is to test the difference among all the sample variance (Gujarati & Porter, 2009). In other words, it is a type of statistical test which use to show the normal distribution between two samples are having same variance or standard deviation, it can act as a measurement to test the significance of the whole model (Fisher, 1924). Other than that, it also can use to determine the general relationship between the dependent variable and a group of independent variables is significance or not.

The hypotheses for F- test are as follow:
H_0: The overall model is insignificant.
H_1: The overall model is significant.

Decision rule:
Reject H_0 if the p-value is smaller than the significance level or the F-test statistic value is less or more than the critical value, otherwise, do not reject H_0. If we rejected H_0 it means that there is enough evident to conclude that the model is significant to explain the dependent variable.

3.6.5 Multicollinearity

Multicollinearity is defined as over lapping in the independent variables. In other words, it can happened due to two or more independent variables is interacting each other over the model, therefore the analysis cannot differentiate the effect. When multicollinearity happened, it arises some or all independent variables are highly related with each other, and the result show will very difficult to explain which independent variable are really influences the dependent variable (Voss, 2004).

Multicollinearity can be detect by few methods. Firstly, the R^2 and the significant of the individual test is one of the indicator to estimate whether

is the model is multicollinearity or not. To determine the multicollinearity problem, the model will consist of high R^2 but only few significant in individual test.

Next, Variance Inflation Factor (VIF) is also one of the indicator to measure the multicollinearity. VIF can be denote as the reciprocal of the tolerance, it show the estimate variance of coefficient is being inflated by multicollinearity by how much. The result interpretation for VIF is when the output figure is greater than ten then the model will have a very serious multicollinearity between the independent variables.

3.6.6 Heteroscedasticity Test

In order to fulfil the Classical Normal Linear Regression Model (CNLRM), the model should not exist heteroscedasticity problem or constant variance of error terms. Of course, the model must achieve the assumption of Gauss-Markov theorem, also called BLUE (best, linear, unbiased, and efficient estimator). If Classical Linear Regression Model (CLRM) assumes the disturbances should have constant and equal variance of the error term, there is homoscedasticity problem in the model. Which simply means there is equal spread of variance and the variance may not be accurately measured. However, if the variance of the error term is not constant and relies on observation exactly, the model show that there is heteroscedasticity problem. It is unequal spread of variance. Furthermore, heteroscedasticity arises shows a serious consequences on Ordinary Least Squares (OLS) estimator. If the heteroscedasticity appears in the OLS estimation, the OLS estimator still constant and unbiased, but the estimated standard error is incorrect (Long & Ervin, 2000). The fact of the matter that there is no explanatory variables or independent variables is correlated with the error term. In addition, the OLS estimator is no longer minimum variance. In other words there is inefficient for the OLS estimator and violates the minimum variance

since heteroscedasticity influences the increases variances of coefficients distribution. Hence, the OLS estimator is said to be not BLUE.

Indeed, heteroscedasticity problems arises in cross-sectional data frequently. The cross-sectional data is collected at the overall observations at single point in time or in the period of time but the overall observations results the different entities (White, 1980). In addition, White test can be consider the easiest method to practice but it does not rely on the normality assumption. Especially the White test detection for cross-sectional data more prone to increase the normal distribution of standard error.

Hypothesis testing for White test in the model:

H_0: There is no heteroscedasticity problems in the model.

H_1: There is heteroscedasticity problems in the model.

Critical value for White test in the model:

Critical value = $X^2_{\alpha,k}$

Where:

α is representing significant level.

k is representing the number of independent variables.

Decision rule for the White test in the model:

Reject H_0, if the test statistic is larger than critical value. Otherwise, do not reject H_0.

Test statistic for Chi-square test (X^2) in the model:

Test statistic = n. R^2

Reject H_0 since the p-value is less than significant level or test statistic is more than critical value. There is homoscedasticity problems in the model. Nevertheless, do not reject H_0 since the test statistic is less than critical value or p-value is less than significant level. There is heteroscedasticity problems in the model.

3.6.7 Breusch-Pagan Lagrange Multiplier (LM) Test

Breusch-Pagan Lagrange Multiplier (LM) Test was developed by Trevor Breusch and Adrian Pagan in 1979. It can be applied in linear model and used to test for autocorrelation (Breusch & Pagan, 1979). However, it used to test for random effects in linear model which is based on pooled OLS residuals. For alternative model, generalized least squares to be estimated either based on maximum likelihood or two step procedure (Breusch & Pagan, 1980). Typically, it used in likelihood based to compute LM statistic to use the result of restricted model is simpler than unrestricted model.

3.6.8 Model Specification Test

Model specification is a sort of the process for the conversion a theory into a regression model. If the analysis suffered from impure, there is high chance to confront a specification bias due to the fact that shares of same reason to get the problems such as omits the important variables, chooses

the wrong model, and includes the unnecessary variables (Ramsey, 1969). Moreover, model specification error occurs when relevant independent variables that are vital in the determination of the dependent variable to be omitted. Model specification error also arises when includes the irrelevant independent variables in the determination of the dependent variable. Wrong functional form of dependent and independent variables able to lead the model specification error.

Ramsey's Regression Specification Error Test (RESET) is developed by Ramsey (1969). Ramsey's RESET is the most common test for model specification test for the model.

Hypothesis testing for Ramsey's RESET in the model:

H_0: The model specification is correct.

H_1: The model specification is incorrect.

Critical value for F-test in the model:

Critical value = $F_{(\alpha, \text{d.f.}, \text{n-k-1})}$

Where:

α is representing significant level.

d.f. and k are representing the number of independent variables.

n is representing the number of observations.

Decision rule for the F-test in the model:

Reject H_0, if the test statistic is larger than critical value. Otherwise, do not reject H_0.

Test statistic for F-test in the model:

$$\text{Test statistic} = F = \frac{(R^2_{\text{unrestricted}} - R^2_{\text{restricted}}) \,/\, (k_{\text{unrestricted}} - k_{\text{restricted}})}{(1 - R^2_{\text{unrestricted}})/(n - k_{\text{unrestricted}})}$$

Reject H_0 since the test statistic is larger than critical value or p-value is less than significant level. The model specification is incorrect. Whereas, do not reject H_0 since the test statistic is smaller than critical value or p-value is less than significant level. The model specification is correct.

3.7 Conclusion

This chapter has introduced some research methodology with the aim of determine the relationship between Tobin's Q and its independent variables such as enterprise risk management, firm size, debt to equity, return on asset, dividend per share and earnings per share. The adopted method has been discussed in this chapter and all the hypothesis testing will be going to carry out in the next chapter. Those hypothesis testing will follow the methodologies which mention in chapter 3 and all of the outcome of testing will be showed and interpreted in chapter 4.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

The main purpose for this chapter is to analyse the data that been collated by using the diagnostic checking and hypothesis testing. EViews 10 is the tool that use in this research in order to analyse data and conduct the hypothesis testing. The hypothesis testing included the Individual Regression Coefficient test (T-test), Overall Significance of Model test (F-test), Jarque-Bera Normality test (JB Test), Multicollinearity test, Heteroscedasticity test (White test), and Model Specification test (Ramsey's RESET test). Therefore, the output result from the EViews 10 will be interpreted in this chapter.

4.1 Diagnostic Testing and Hypothesis Testing

4.1.1 Model Estimation

$$\hat{Y}_i = \hat{\beta}_0 + \hat{\beta}_1 D_{1i} + \hat{\beta}_2 X_{2i} + \hat{\beta}_3 X_{3i} + \hat{\beta}_4 X_{4i} + \hat{\beta}_5 X_{5i} + \hat{\beta}_6 X_{6i}$$

$$\widehat{TQ}_i = 110.5745 + 2.348153ERM_i - 5.686783lnFS_i + 0.008567DE_i + 9.538256ROA_i + 5.715071DPS_i + 3.789096EPS_i$$

SE = (20.26795) (4.193133) (1.007883) (0.377645)
(0.087884) (7.738264) (0.175038)

P-value = (0.8556) (0.5757) (0.0158) (0.4651)
(0.0005) (0.0023) (0.8912)

Prob (F-statistic) = 0.001362 n = 500 R^2 = 0.588572

$\overline{R}^2$ = 0.536312

Where:

$\widehat{TQ}_i$ is representing Tobin's Q ratio

ERM_i is representing Enterprise Risk Management, dummy variable: 1 if implemented ERM; 0 = otherwise

$lnFS_i$ is representing firm size (Total assets in natural logarithm form)

DE_i is representing debt-to-equity (%)

ROA_i is representing return on assets (%)

DPS_i is representing dividend per share (RM)

EPS_i is representing earnings per share (RM)

For the intercept of 110.5745 indicates that if there is zero Enterprise Risk Management, zero firm size, zero debt-to-equity, zero return on assets, zero dividend per share, and zero earnings per share, the estimated Tobin's Q ratio is 110.5745 percent. ERM set as dummy variable in this research. 2.348153 ERM indicates that on average, the Tobin's Q ratio for the firms implemented ERM is 2.348153 times higher than the firms does not implemented ERM, with holding other variables constant. -5.686783 lnFS indicates that if the firm size increased by 1 percent, on average, the Tobin's Q ratio decreased by 0.05686783 times, with holding other variables constant. 0.008567 DE indicates that if the debt-to-equity increased by 1 percent, on average, the Tobin's Q ratio increased by 0.008567 percent, with holding other variables constant. 9.538256 ROA indicates that if the return on assets increased by 1 percent, on average, the Tobin's Q increased by 9.538256 percent, with holding other variables constant. 5.715071 DPS indicates that if the dividend per share increased by RM 1, on average, the

Tobin's Q ratio increased by RM 5.715071, with holding other variables constant. 3.789096 EPS indicates that if the earnings per share increased by RM 1, on average, the Tobin's Q ratio increased by RM 3.789096, with holding other variables constant.

Moreover, 0.588572 R^2 indicates that 58.8572 percent of the variation in the estimated Tobin's Q ratio is explained by the variation in Enterprise Risk Management, firm size, debt-to-equity, return on assets, dividend per share, and earnings per share. 0.536312 $\overline{R}^2$ indicates that 53.6312 percent of the variation in the estimated Tobin's Q ratio is explained by the variation in Enterprise Risk Management, firm size, debt-to-equity, return on assets, dividend per share, and earnings per share, after included the degrees of freedom (n-k-1).

4.1.2 Normality: Jarque-Bera Test (JB Test)

Jarque-Bera	5.245671
Probability	0.064793

Table 4.1.2 Jarque-Bera Normality Test obtained from EViews 10's output

JB test was conduct in this research to test the model's error term is normally distributed or not. For the null hypothesis (H_0), the error term is normally distributed. For the alternative hypothesis (H_1), the error term is not normally distributed. Assume that reject null hypothesis, if the probability value is less than significant level in Jarque-Bera test statistic, otherwise, do not reject null hypothesis. From the Jarque-Bera test shows that the p-value is 0.064793. Thus, not reject null hypothesis since the p-value is larger than

the significant level (α) of 0.05 in Jarque-Bera test. The model meets the normally assumption on the error term at α of 0.05.

4.1.3 T-test and F-test

Variable	t-Statistic	Prob.
ERM	0.459999	0.5757
LNFS	-1.964230	0.0158
DE	0.014521	0.4651
ROA	2.457930	0.0005
DPS	0.902003	0.0023
EPS	0.724247	0.8912
F-statistic		2.768215
Prob(F-statistic)		0.001362

Table 4.1.3 T-test and F-test obtained from EViews 10's output

T-test to be applied in this research to test for individual significance of the model. Assume significant level is 0.05. There is significant effect on Tobin's Q ratio if p-value of the determinants for firms is smaller than significant level of 0.05. According to T-test result shows that lnFS, ROA, and DPS have significant effect on Tobin's Q ratio which p-value of 0.0158, 0.0005, and 0.0023 respectively. By contrast, ERM, DE, and EPS have no significant effect on Tobin's Q with the p-value of 0.5757, 0.4651, and 0.8912 respectively.

Furthermore, the probability of F-test in OLS is 0.001362. It denotes that at least one independent variable (Enterprise Risk Management, firm size, debt-to-equity, return on assets, dividend per share, earnings per share)

affect the dependent variable (Tobin's Q ratio) at α of 0.05. Thus, there is a significant model.

4.1.4 Multicollinearity

$$VIF = \frac{1}{1 - R^2}$$

Variable	VIF
ERM	$\frac{1}{1-0.057549}$ = 1.06106
LNFS	$\frac{1}{1-0.079201}$ = 1.08601
DE	$\frac{1}{1-0.019367}$ = 1.01975
ROA	$\frac{1}{1-0.405116}$ = 1.68100
DPS	$\frac{1}{1-0.040357}$ = 1.04205
EPS	$\frac{1}{1-0.400172}$ = 1.66714

Table 4.1.4 Multicollinearity obtained from EViews 10's output

Multicollinearity was carried out in this research for determining whether there is serious multicollinearity problem in the model. If VIF is more than 10 will tend to have a serious multicollinearity problem. Otherwise, there is no serious multicollinearity problem. According to Multicollinearity result shows that the VIF of ERM, lnFS, DE, ROA, DPS, and EPS is less than 10 with the VIF 1.06106, 1.08601, 1.01975, 1.68100, 1.04205, and 1.66714 respectively. As a result, to conclude that there is no serious multicollinearity problem by sufficient evidence.

4.1.5 Heteroscedasticity

F-statistic	7.658030	Prob. F(26,473)	0.0000
Obs*R-squared	148.1224	Prob. Chi-Square(26)	0.0000

Table 4.1.5 Heteroscedasticity Test: White Test obtained from EViews 10's output

For the null hypothesis, there is no heteroscedasticity problem in the model. For the alternative hypothesis, there is heteroscedasticity problem in the model. Assume that reject null hypothesis (H_0), if the p-value is smaller than significant level, otherwise, do not reject null hypothesis (H_0). From the heteroscedasticity test shows that the p-value is 0.0000. Thus, reject null hypothesis since the p-value is smaller than the significant level of 0.05 in heteroscedasticity test. As a result, there is sufficient evidence to conclude that there is heteroscedasticity problem in the model at α of 0.05.

The reasons of heteroscedasticity occurs might be due to there is a large difference among the observation size. Even by applying the log for the figure, but it still have large difference among the size of observation. In addition, heteroscedasticity has more severe consequences in non-linear model such as Logit model and Probit model. This indicates that heteroscedasticity is not an issue in cross-section studies which the sequence of the data is arbitrary (Armstrong, 2011). In addition, Robust Standard Errors will be suggested for future researcher to apply it to improve the heteroscedasticity problem (Bartalotti, 2018).

4.1.6 Autocorrelation

F-statistic	0.028682	Prob. F(1,112)	0.8656
Obs*R-squared	0.029147	Prob. Chi-Square(1)	0.8644

Table 4.1.6 Breusch-Godfrey Serial Correlation LM Test obtained from EViews 10's output

For the null hypothesis, there is no autocorrelation problem in the model. For the alternative hypothesis, there is autocorrelation problem in the model. Assume that reject null hypothesis (H_0), if the p-value is smaller than significant level, otherwise, do not reject null hypothesis (H_0). From the autocorrelation test shows the p-value is 0.8656. Thus, not rejecting null hypothesis since the p-value is larger than the significant level (α) of 0.05 in autocorrelation test. As a result, there is insufficient evidence to conclude that there is autocorrelation problem in the model at α of 0.05.

4.1.7 Model Specification Test: Ramsey Reset Test

	Value	df	Probability
F-statistic	113.0584	(1, 492)	0.0000
Likelihood ratio	103.4231	1	0.0000

Table 4.1.7 Ramsey Reset Test obtained from EViews 10's output

Ramsey Reset test was carried out in this research to determine whether the model specification is correct. For the null hypothesis, the model specification is correct. For the alternative hypothesis, the model

specification is incorrect. Assume that reject null hypothesis, if the probability value is less than significant level in Ramsey Reset test statistic, otherwise, do not reject null hypothesis (H_0). From the Ramsey Reset test shows that the p-value is 0.0000. Thus, reject null hypothesis since the p-value is smaller than the significant level of 0.05 in Ramsey Reset test. As a result, there is sufficient evidence to conclude that the model specification is incorrect at significance level of 0.05.

4.1.8 CUSUM Test

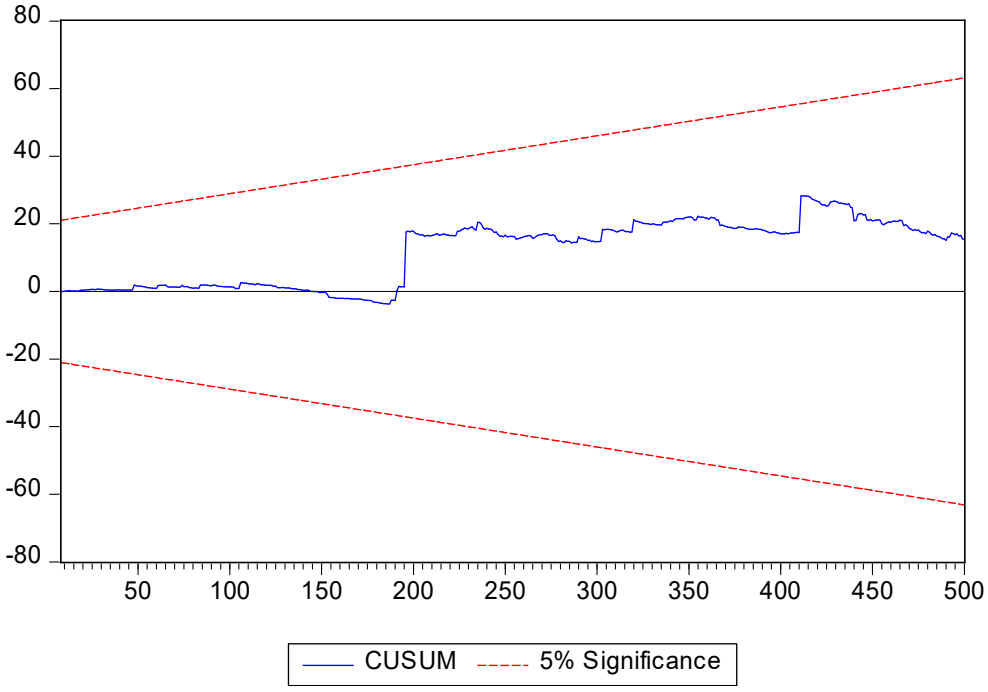


Table 4.1.8 CUSUM Test obtained from EViews 10's output

Based on the result of Ramsey Reset Test shows that the model specification is incorrect. It means that the model is not stable. However, there is alternative way to solve the stability of the model which is using CUSUM test. CUSUM or cumulative sum control chart was introduced by the

researchers Brown et al. (1975). CUSUM test of recursive residuals to be used to indicate the structural change and the original test statistic. Furthermore, the purpose to conduct CUSUM test in this research to indicate that the stability of the model. From the result of CUSUM test shows that the plot of CUSUM does not crosses within the range of upper critical line or lower critical line at significant level of 0.05. Thus, there is sufficient evidence to conclude that the coefficient and model is stable. The reason might be due to there is irrelevant independent variable included in the model.

4.2 Conclusion

This chapter has introduced some diagnostic checking and hypothesis testing. In this research, the result show that in this research there are three significant independent variable and three insignificant independent variable. The three significant independent variable are the firm sizes, return on assets, and dividend per share, while the three insignificant independent variable are Enterprise Risk Management, debt-to-equity, and earnings per share. Furthermore, some of the findings and the policy implementation of the variable will be discuss in the next chapter, which is chapter 5.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction

In this chapter, the conclusion will be made based on the previous chapter, which is chapter 4, to summarize the output result from EViews. Not only that, this chapter will going to discuss about the major finding and the implementation of policy, limitation of study, and give some recommendations base on the limitation of the study. In addition, a summary of the whole research will be conclude at this research paper.

5.1 Summary of Statistical Analysis

Independent Variables	Relationship with the Firm Values	Result
ERM	Positive	Insignificant
Firm Sizes	Negative	Significant
Debt-to-Equity	Positive	Insignificant
Return on Assets	Positive	Significant
Dividend per Share	Positive	Significant
Earnings per Share	Positive	Insignificant

Table 5.1.1: Summary of Statistical Analysis

The table 5.1.1 show the summary of statistical analysis which is output from EViews for 500 samples sizes of the listed companies in Malaysia. As the results

show, ERM, debt-to-equity, return on assets, dividend per share, and earning per share have a positive relationship with the dependent variable, which is the firm values. But for firm sizes, there is a negative relationship between the firm sizes and firm values. Moreover, even ERM, debt-to-equity, return on assets, dividend per share, and earning per share have a positive relationship with the firm values but it cannot represent the significant level toward the firm values.

ERM have a positive relationship with firm values but it does not significantly affect the firm values, but for firm sizes, which has a negative relationship with the firm value is significant affect it. Furthermore, return on assets, and dividend per share both have are significantly affect the firm values with a positive relationship, but debt-to-equity, and earning per share both are insignificantly affect the firm values although they have a positive relationship.

Diagnostic Checking	Probability	Result
Normality	0.064793 > 0.05 (significant level)	Model is normal.
Multicollinearity	All output are less than 10	Model do not have a serious multicollinearity.
Heteroscedasticity	0.0000 < 0.05 (significant level)	Model is heteroscedasticity.
Autocorrelation	0.8656 > 0.05 (significant level)	Model is not autocorrelation.
Model Specification Test	0.0000 < 0.05 (significant level)	Model specification is incorrect

Table 5.1.2: Summary of Statistical Analysis (Diagnostic Checking)

The table 5.1.2 show the summary of statistical analysis which is about the diagnostic checking which obtain from the EViews 10's output. The diagnostic checking included the normality test, multicollinearity, heteroscedasticity, autocorrelation, and model specification test. For the normality test, this research is

using Jarque-Bera test to carry out, as the result show that the model is a normally distributed. Variance Inflation Factor (VIF) is the tool that use to calculate the multicollinearity, and the result show a unify figures for each variable which all figure is less than 10, so there is no multicollinearity in this model. White test is use to examine the heteroscedasticity, and the result had shown that there is a heteroscedasticity in the model. For autocorrelation, this research is using the Breusch-Godfrey Serial Correlation (LM Test) as the tool, and the result show that the model do not have autocorrelation. For model specification test, this research is using the Ramsey reset Test as the tool, and the EViews result show that the model specification is incorrect.

5.2 Discussion of Major Findings

Independent variables	Previous studies	Results	Supported by
Enterprise Risk Management (ERM)	Positive but insignificant	Positive but insignificant	Tahir and Razali (2011); Chen (2012); McShane et al. (2011); Manab, Kassim, and Hussin (2010)
Firm size	Negative and significant	Negative and significant	Zhao and Singhaputtangkul (2016); Salim and Yadav (2012); Daines (2001); Reinert (1996)
Debt-to-Equity	Positive but insignificant	Positive but insignificant	Ibhagui and Olokoyo (2018); Pal, Driffield, and Mahambare (2007)

Return on Assets	Positive and significant	Positive and significant	Agustina and Baroroh (2016); Daines (2001); Ensley, Pearce, and Hmieleski (2006)
Dividend per Share (DPS)	Positive and significant	Positive and significant	Kostyuk (2006); Budagaga (2017); Giang and Tuan (2016); Anton (2016); Priya and Mohanasundari (2016)
Earnings per Share (EPS)	Positive but insignificant	Positive but insignificant	Choudhury and Adnan (2014); Nwamaka and Ezeabasili (2017); Islam et al. (2014)

Table 5.2: Comparison between Previous Studies and Empirical Results

5.2.1 Enterprise Risk Management (ERM)

The result showed in Chapter 4, ERM shows a positive but insignificant relationship towards firm value of Malaysian PLCs. This result show a consistency with the finding of Tahir and Razali (2011); Chen (2012) which showed that ERM is insignificant and have a positive relationship on the firm value added. This can be explained by the fact that the ERM implementation of the Malaysian PLC is still in its early stages and must take time for the ERM practice to show the impact of ERM on firm value. The researcher concluded that the knowledge about the benefit to involve in the ERM implementation is still inadequate for the Malaysian PLCs.

McShane et al. (2011) findings also support that the ERM has positive but insignificant impact on firm value. The researchers found that ERM does not increase the value of U.S.'s insurance companies, they proposed that the firm value were increased by applying the traditional risk management (TRM), and applying ERM are no significantly improve the firm value.

However, the result obtained from this research is inconsistent with the finding of Nocco and Stulz (2006); Hoyt and Liebenberg (2011), and Baxter et al. (2013). They found out that ERM is significant and has a positive impact on the firm value as it make the firm management to aware various kinds of risk. They suggested that although ERM cannot avoid risk, but it helps the firm management to prepare and prevent risk, and make an informed decision, thus maximize the value of the firm.

Other than this, the result also in contrast with the findings of Bangaan Abdullah (2017); Beasley, Pagach, and Warr (2008); Lin et al. (2012); which show a negative and significant relationship between the ERM and firm value. They explained that the high implementation cost of ERM program may result to a reduction on firm value of Malaysian firms.

The result shown a positive and insignificant relationship between the ERM and firm value which is consistent with the previous studies. This research concluded that the knowledge on practicing the ERM for the Malaysian PLCs are still inadequate. Thus, Malaysian PLCs cannot carry out the true value of ERM in improving the firm value as they are not fully understood the implementation of ERM during the early stages of ERM.

5.2.2 Firm Size

Based on the empirical results, it reports a significant and negative relationship between firm size and firm value. It was consistent with the previous studies that were supported by Hoyt and Lienbenberg (2011) and Salim and Yadav (2012). According to Zhao and Singhaputtangkul (2016), reported that the bigger the firm size is bearing more variety of the risks and facing high regulatory stress that was supervised by high-level government, leading to the performance of the firm's value.

The negative sign of coefficient is carried out by the maturity of firm's stage in the life cycle, displaying the firm's size has a significant and inverse impact on firm value (Daines, 2001). By implementing the principle of diminishing return, the capacity of utilizing firm's assets had been maximized by large corporation (Reinert, 1996).

5.2.3 Debt-to-Equity

The result from the Chapter 4 which done a series of the test had showed that leverage has a positive but insignificant relationship impact on firm value. Pal, Driffield, and Mahambare (2007) recommended that there is a positive but no significant relationship between leverage and firm value. This is because those companies that implement ERM programs may have low level of leverage in the particular circumstance in order to reduce its financial issues. Thus, it was uncertainty on the effect of leverage in establishing ERM. Besides, leverage of big companies do not have significant relationship with firm performance (Ibhagui & Olokoyo, 2018).

However, previous studies show that there is an adverse relationship between leverage and firm value which were suggested by Mohammed and Knapkova (2016) and Bhabra (2007). The higher the leverage, the more difficulties would be faced which result the value of the firm. This is because the risk of bankruptcy increases when the leverage of firm increase, resulting the value of firm declines (Pagach & War, 2010). They found that ERM should be established by the companies in order to reduce the leverage and increase the companies' value (Liebenberg and Hoyt, 2003).

5.2.4 Return on Assets

Furthermore, the result of this study displayed that the profitability which is measured by ROA has a positive and significant impact on firm value. It was consistent with several studies and supported by Agustina and Baroroh (2016). They discovered that there is a positive sign between profitability and firm value. This is because the higher the profitability, the more profits will be shared in purchasing the additional assets, resulting in the increases of firm value (Daines, 2001). According to Ensley, Pearce, and Hmieleski (2006), reported that profitability has positive correlation with firm value in order to assist management freedom and flexibility in organizing more social responsibility program to shareholders.

On the other hand, few of studies found that the firm value is negative and insignificant with profitability Tahir and Razali (2011). It means that the result was inconsistent with the studies, showing an opposite relationship between the profitability and firm value. They explained that the interest of issuing the debts is unknown which will affect the firms' profitability.

5.2.5 Dividend per Share (DPS)

Referring to the regression result, the DPS is positively significant towards the firm value of Malaysian PLCs. This result is on par with the research conducted by Kostyuk (2006) and Budagaga (2017); Anton (2016); Priya and Mohanasundari (2016), they found out DPS has significant and positive impact on the value of the firm. They explained that the firm who willing to distribute part of their net profit as a dividend to their shareholder will attracts a variety of investor, this will make the firm stock price become more popular and thus improve the value of the firm.

Besides that, the positively significant result is also consistent with the Giang and Tuan (2016). The researcher suggested that dividend can help to maintain the relationship between the shareholders and the firm. They explained that most of the shareholders are very concerned about dividend payments because it reflects the company's financial performance. Therefore, distribute dividend has a significant impact to increase the value of the firm.

However, the result show an inconsistent compare to the findings of Hoyt and Liebenberg (2011); Sprčić, Žagar, Šević and Marc (2016); Egbeonu, Edori and Edori (2016) stated that there is a significant negative relationship between DPS and firm value. They argue that dividend paid will limit the growth opportunities of firms which are not favourable by some investors.

5.2.6 Earnings per Share (EPS)

According to the regression result, EPS is positively insignificant to firm value of Malaysian PLCs. The result is in accordance with result of Choudhury & Adnan (2014); Nwamaka & Ezeabasili (2017); Rosikah et al. (2018) and Islam et al. (2014) who found that EPS is not an effective factor to maximize firm value in Malaysia. They found that the firm value has not increased with the trend of EPS, or it can be said that firm value does not increase as much when the EPS increase. This is because not all of the net profit earned by the firm is distributed as dividend to shareholders, however net profit is given priority to fund their new activities or investments. They proposed that the firm value only increased if the shareholder has a capital gains in their investment while EPS is only an indicator that showing the firm has utilize their shareholder's money in earning the profit.

However, the positive and insignificant result is inconsistent with Chowdhury and Chowdhury (2010), Egbeonu et al. (2016), and Velankar et al. (2017). They found out that ERM is significant and has a positive impact on the firm value as they believe the higher ERM will increase the firm share price thus enhance the firm value, vice versa. Some investor will depend on the financial ratio of the company including EPS to decide whether to invest in the company as EPS is one of the indicator of company performance. Therefore, they believe higher EPS represent the firm have a high ability to generate profit for the shareholder and enhances the firm value.

5.3 Implementation of Policy

5.3.1 Enterprise Risk Management

This research shows that the Enterprise risk management has insignificant and positively relationship with the firm value. Tahir and Razali (2011) pointed out that the practice of ERM is still at a beginning stage for Malaysian public listed companies as the knowledge and the benefits of implementing ERM is still not clearly. Therefore, academics and ERM professionals are suggested to expand the knowledge about risk management and the recent developed ERM concept. Since there are no any specific guidelines for the ERM implementation among PLC's in Malaysia, policymakers are suggested to come out a guidelines in order to facilitate widely adoption and implementation of ERM in business enterprises.

Furthermore, according to the research of Paape and Speklé (2012), they found that the implementation of ERM is influenced by the regulatory environment, company internal factors, the ownership structure, and firm and industry-related characteristics. Thus, those policymakers and company managers who advocate ERM adoption are suggested to recognise and consider these kind of factors before making decision about implementing an ERM framework in a business enterprise.

5.3.2 Firm Size

This research may provide some useful guidelines to corporate management, regulators and governments. Corporate management plays an important role

in deciding the firm size that will result the firm value. Without this implication, the value of firm will be severely affected by the increase of the firm size if corporate management does not properly handle the firm size. The additional of the size brings little benefits on the marginal of the firm size by implementing the principle of diminishing return (Reinert, 1996). This is because firms had achieved its maturity stage and optimized their capacity of utilizing their assets. Besides, regulators and government should increase the rules and restriction on the large companies. High risks and high fees are faced by large companies compared with small companies, resulting they faced more stress and difficulties in expanding their firm sizes.

5.3.3 Return on Assets

The implication of this study towards investors is to consider the profitability capital returns when making investment decision since the profitability is significantly and positively influence the company value (Agustina & Baroroh, 2016). Not only higher profitability positively influenced the firm value by expanding their operation, but it also able to attract more investors to invest on their firm since those remaining profits can be distributed to investors and carried out the corporate social responsibilities program to citizen. Furthermore, Investors able to understand well on financial indicators especially ROA that causes the firms' value in making investment decision. They are acknowledged to evaluate company performance based on ROA that has a positive relationship with firm value.

5.3.4 Dividend per Share

The findings of study implicate greatly to company managers, who can gain better understanding of the important of dividend. As we all know, the distribution of dividend to shareholders is made from the earnings of the firm by according to the company's dividend policy. Hashim, Shahid, Sajid, and Umair (2013) pointed out that the distribution of dividend not only can solve the agency problem between managers and shareholders, but it also a method to decrease the uncertainty of the investors of the firm. Investors are more likely to invest in companies who usually pay dividends on a continuous basis. Therefore, the company managers should study the way of offering higher dividend on a continuous basis in order to attract the more investors. Besides that, company will distribute dividend to shareholders when the company has good performance in the past financial year. Thus, the managers should concern on how to improve the firm's financial performance.

5.4 Limitation of Study

There are some restrictions exist in this research paper, where the future researchers can improve it. One of the limitations is related to the sample size. Our research paper only collects the performance data of 2017 of 500 companies which have listed at Bursa Malaysia as our sample size. Sample size plays an important role in a research because it may influence the result. The importance of sample size was indicated by Kline (1979) who said that the sample size should be at least 100, while Cattell (1978) argued that the minimum desirable sample size should be 250. Comrey and Lee (1992) advocated researchers should obtain at least 500 samples or more sample whenever possible in the research. Thus, the sample size of our research may still not sufficient in order to provide the best result.

Besides that, this research is using secondary data to analysis the relationship between firm value and the other six independent variables. Thus, the second limitation is relevant to the disclosure of data. The data of this research paper is obtained data from 500 companies in the year of 2017 from Bursa Malaysia. If there is any problems of the secondary data which was provided by those selected companies, it will cause some limitations on the validity of this research, and this research may become meaningless.

Furthermore, this research model had leave out some qualitative variables which should be considered in the research model. Those qualitative variables are international diversification, corporate governance, competitive advantage, industry growth trends and so on. We only use six independent variables to identify and investigate the relationship of them and firm value, therefore the results may not so precise.

5.5 Recommendation of Study

Some recommendations had been recommended to the future researchers in the case of future study.

First is to increase the sample size. The larger sample size will enable the mean more precise and the findings will be more accurate. When the mean value is more accurate, the researchers will easier to pinpoint outliers. Tinsley and Tinsley (1987) used the sample size to indicate the result. They pointed out that the result seem to excellent if sample size up to 1000.

Secondly, it is recommended that the findings may include with the primary data such as interview, mail questionnaires, and survey as well as to improve the result. From the previous study, it was found that majority of the researchers used primary data and secondary data to conduct the research on ERM (Yusuwan, Adnan, & Omar, 2008 and Karunaratne, 2017)

For the future researchers, it is suggested to take into account the qualitative variables such as corporate governance, geographic competitive advantage and international diversification. Ntim, Opong and Danbolt (2013) had found that the relationship between corporate governance and firm value are positive and significant. Besides that, some researches such as Hoyt and Liebenberg (2011) and also Tahir and Razali (2011) had found that the international diversification has positive and significant impact to the firm value. In addition, Boasson, Boasson, MacPherson, and Shin (2005) examined the relationship of competitive advantage and firm value. According to their research, the geographic competitive advantage plays a significant role to the firm value. The result would be more meaningful if our research consider those qualitative variables in our model.

5.6 Conclusion

This research has a main objective which is to determine Enterprise Risk Management (ERM): An empirical analysis of factor associated with PLC firm value in Malaysia. The dependent variable in this research is the firm value, and there are six independents variable had been apply into this research is use to determine the dependent variable, which are ERM, firm size, debt-to-equity, return on assets, dividend per share, and earning per share. Moreover, the result for this research found out that there are three significant independent variables are the firm size, return on assets, and dividend per share. In addition, some of the findings, policy implementation of the variable, and recommendations had also been provided.

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APPENDICES

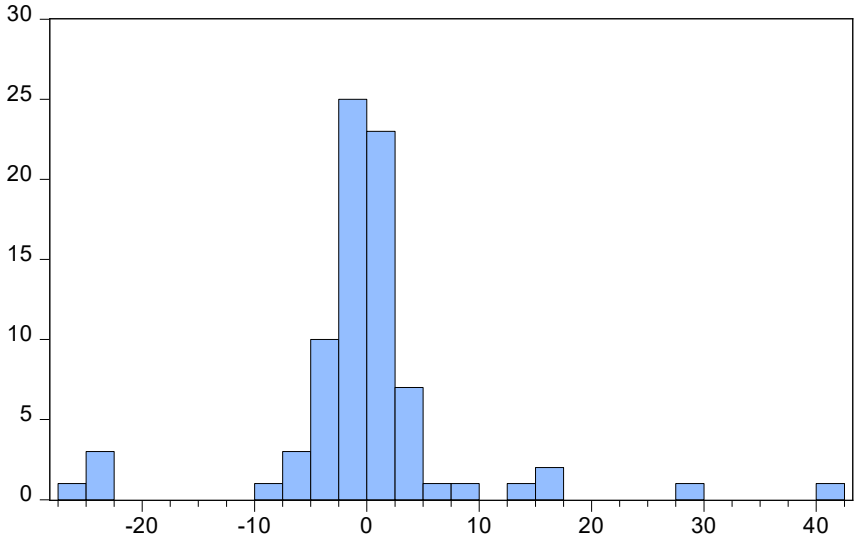
Appendix 4.1: Ordinary Least Squares

Dependent Variable: TQ
Method: Least Squares
Date: 02/22/19 Time: 01:42
Sample: 1 500
Included observations: 500

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ERM	2.348153	4.193133	0.459999	0.5757
LNFS	-5.686783	1.007883	-1.964230	0.0158
DE	0.008567	0.377645	0.014521	0.4651
ROA	9.538256	0.087884	2.457930	0.0005
DPS	5.715071	7.738264	0.902003	0.0023
EPS	3.789096	0.175038	0.724247	0.8912
C	110.5745	20.26795	2.065677	0.8556

R-squared	0.588572	Mean dependent var	7.163098
Adjusted R-squared	0.536312	S.D. dependent var	44.05743
S.E. of regression	42.46024	Akaike info criterion	10.34891
Sum squared resid	888815.8	Schwarz criterion	10.40792
Log likelihood	-258.2285	Hannan-Quinn criter.	10.37207
F-statistic	2.768215	Durbin-Watson stat	1.984886
Prob(F-statistic)	0.001362		

Appendix 4.2: Normality: Jarque-Bera Test



Series: Residuals	
Sample 1 500	
Observations 500	
Mean	1.11e-16
Median	-0.315598
Maximum	42.15834
Minimum	-25.43896
Std. Dev.	8.944132
Skewness	0.966726
Kurtosis	11.10444
Jarque-Bera	5.245671
Probability	0.064793

Appendix 4.3: Multicollinearity

Dependent Variable: ERM
Method: Least Squares
Date: 02/24/19 Time: 00:06
Sample: 1 500
Included observations: 500

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNFS	0.043713	0.010634	4.110593	0.0000
DE	0.011812	0.004017	2.940297	0.0034
ROA	0.001212	0.000941	1.287004	0.1987
DPS	-0.062997	0.082983	-0.759156	0.4481
EPS	0.001878	0.001876	1.000755	0.3174
C	-0.582760	0.215888	-2.699365	0.0072

R-squared	0.057549	Mean dependent var	0.320000
Adjusted R-squared	0.048010	S.D. dependent var	0.466943
S.E. of regression	0.455596	Akaike info criterion	1.277509
Sum squared resid	102.5387	Schwarz criterion	1.328084
Log likelihood	-313.3772	Hannan-Quinn criter.	1.297355
F-statistic	6.033037	Durbin-Watson stat	2.081050
Prob(F-statistic)	0.000020		

Dependent Variable: LNFS
Method: Least Squares
Date: 02/24/19 Time: 00:07
Sample: 1 500
Included observations: 500

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ERM	0.756600	0.184061	4.110593	0.0000
DE	-0.021408	0.016831	-1.271977	0.2040
ROA	-0.008313	0.003905	-2.128551	0.0338
DPS	1.513464	0.338660	4.468979	0.0000
EPS	0.002080	0.007813	0.266203	0.7902
C	19.97059	0.106131	188.1694	0.0000

R-squared	0.079201	Mean dependent var	20.26443
Adjusted R-squared	0.069881	S.D. dependent var	1.965348
S.E. of regression	1.895434	Akaike info criterion	4.128701
Sum squared resid	1774.780	Schwarz criterion	4.179276
Log likelihood	-1026.175	Hannan-Quinn criter.	4.148546
F-statistic	8.498088	Durbin-Watson stat	2.154826
Prob(F-statistic)	0.000000		

Dependent Variable: DE
Method: Least Squares
Date: 02/24/19 Time: 00:07
Sample: 1 500
Included observations: 500

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ERM	1.456182	0.495250	2.940297	0.0034
LNFS	-0.152487	0.119882	-1.271977	0.2040
ROA	-0.002014	0.010470	-0.192377	0.8475
DPS	0.820102	0.921189	0.890265	0.3738
EPS	-0.007423	0.020851	-0.356012	0.7220
C	4.005252	2.407965	1.663335	0.0969

R-squared	0.019367	Mean dependent var	1.421103
Adjusted R-squared	0.009441	S.D. dependent var	5.082712
S.E. of regression	5.058661	Akaike info criterion	6.092008
Sum squared resid	12641.48	Schwarz criterion	6.142583
Log likelihood	-1517.002	Hannan-Quinn criter.	6.111854
F-statistic	1.951231	Durbin-Watson stat	2.062345
Prob(F-statistic)	0.084501		

Dependent Variable: ROA
Method: Least Squares
Date: 02/24/19 Time: 00:08
Sample: 1 500
Included observations: 500

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ERM	2.758145	2.143073	1.287004	0.1987
LNFS	-1.093294	0.513633	-2.128551	0.0338
DE	-0.037192	0.193327	-0.192377	0.8475
DPS	-0.356283	3.961552	-0.089935	0.9284
EPS	1.247359	0.069860	17.85518	0.0000
C	21.79782	10.32967	2.110214	0.0353

R-squared	0.405116	Mean dependent var	1.756635
Adjusted R-squared	0.399095	S.D. dependent var	28.04173
S.E. of regression	21.73741	Akaike info criterion	9.007874
Sum squared resid	233422.4	Schwarz criterion	9.058449
Log likelihood	-2245.968	Hannan-Quinn criter.	9.027719
F-statistic	67.28273	Durbin-Watson stat	1.987706
Prob(F-statistic)	0.000000		

Dependent Variable: DPS
Method: Least Squares
Date: 02/24/19 Time: 00:09
Sample: 1 500
Included observations: 500

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ERM	-0.018497	0.024366	-0.759156	0.4481
LNFS	0.025675	0.005745	4.468979	0.0000
DE	0.001953	0.002194	0.890265	0.3738
ROA	-4.60E-05	0.000511	-0.089935	0.9284
EPS	0.000469	0.001017	0.461104	0.6449
C	-0.455062	0.116050	-3.921241	0.0001

R-squared	0.040357	Mean dependent var	0.062488
Adjusted R-squared	0.030644	S.D. dependent var	0.250746
S.E. of regression	0.246874	Akaike info criterion	0.052050
Sum squared resid	30.10771	Schwarz criterion	0.102626
Log likelihood	-7.012570	Hannan-Quinn criter.	0.071896
F-statistic	4.154950	Durbin-Watson stat	2.047368
Prob(F-statistic)	0.001046		

Dependent Variable: EPS
Method: Least Squares
Date: 02/24/19 Time: 00:09
Sample: 1 500
Included observations: 500

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ERM	1.077534	1.076721	1.000755	0.3174
LNFS	0.068960	0.259050	0.266203	0.7902
DE	-0.034554	0.097058	-0.356012	0.7220
ROA	0.314448	0.017611	17.85518	0.0000
DPS	0.916965	1.988632	0.461104	0.6449
C	-1.255541	5.209410	-0.241014	0.8096

R-squared	0.400172	Mean dependent var	1.047268
Adjusted R-squared	0.394101	S.D. dependent var	14.02125
S.E. of regression	10.91407	Akaike info criterion	7.629910
Sum squared resid	58843.75	Schwarz criterion	7.680485
Log likelihood	-1901.477	Hannan-Quinn criter.	7.649756
F-statistic	65.91398	Durbin-Watson stat	1.990264
Prob(F-statistic)	0.000000		

Appendix 4.4: Heteroscedasticity Test

Heteroskedasticity Test: White
Null hypothesis: Homoskedasticity

F-statistic	7.658030	Prob. F(26,473)	0.0000
Obs*R-squared	148.1224	Prob. Chi-Square(26)	0.0000
Scaled explained SS	12894.13	Prob. Chi-Square(26)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 02/22/19 Time: 16:36
Sample: 1 500
Included observations: 500
Collinear test regressors dropped from specification

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	128178.4	106458.9	1.204017	0.2292
ERM^2	-7597.492	26379.16	-0.288011	0.7735
ERM*LNFS	391.5771	1318.027	0.297093	0.7665
ERM*DE	-946.7314	1515.907	-0.624531	0.5326
ERM*ROA	-11294.02	12056.76	-0.936737	0.3494
ERM*DPS	14435.59	19301.80	0.747888	0.4549
ERM*EPS	2356.412	4191.473	0.562192	0.5743
LNFS^2	267.2152	265.2993	1.007222	0.3143
LNFS*DE	543.0215	355.7974	1.526210	0.1276
LNFS*ROA	-87.26197	1104.176	-0.079029	0.9370
LNFS*DPS	20279.33	7724.433	2.625349	0.0089
LNFS*EPS	-233.1418	1334.537	-0.174699	0.8614
LNFS	-11741.08	10639.58	-1.103528	0.2704
DE^2	83.51504	109.7363	0.761052	0.4470
DE*ROA	-502.7220	2136.302	-0.235323	0.8141
DE*DPS	17458.71	6433.500	2.713719	0.0069
DE*EPS	-1125.567	1418.322	-0.793591	0.4278
DE	-11956.50	7425.184	-1.610262	0.1080
ROA^2	4.174774	22.54262	0.185195	0.8532
ROA*DPS	99403.67	79337.73	1.252918	0.2109
ROA*EPS	-36.15595	203.2048	-0.177929	0.8589
ROA	10465.36	24761.38	0.422648	0.6727
DPS^2	-8366.245	8968.874	-0.932809	0.3514
DPS*EPS	-11196.02	7977.528	-1.403445	0.1611
DPS	-450908.6	169869.6	-2.654439	0.0082
EPS^2	30.83761	171.5623	0.179746	0.8574
EPS	4380.412	27531.60	0.159105	0.8737

R-squared	0.296245	Mean dependent var	1777.632
Adjusted R-squared	0.257561	S.D. dependent var	23812.23
S.E. of regression	20517.79	Akaike info criterion	22.74846
Sum squared resid	1.99E+11	Schwarz criterion	22.97605
Log likelihood	-5660.115	Hannan-Quinn criter.	22.83777
F-statistic	7.658030	Durbin-Watson stat	1.998017
Prob(F-statistic)	0.000000		

Appendix 4.5: Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 1 lag

F-statistic	0.028682	Prob. F(1,492)	0.8656
Obs*R-squared	0.029147	Prob. Chi-Square(1)	0.8644

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 02/22/19 Time: 16:41
Sample: 1 500
Included observations: 500
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ERM	-0.003637	4.197324	-0.000867	0.9993
LNFS	0.009250	1.010355	0.009156	0.9927
DE	0.001185	0.378082	0.003135	0.9975
ROA	0.000587	0.088039	0.006667	0.9947
DPS	-0.030376	7.747975	-0.003921	0.9969
EPS	-0.004161	0.176925	-0.023517	0.9812
C	-0.182854	20.31665	-0.009000	0.9928
RESID(-1)	0.007740	0.045704	0.169358	0.8656

R-squared	0.000058	Mean dependent var	8.04E-15
Adjusted R-squared	-0.014169	S.D. dependent var	42.20419
S.E. of regression	42.50213	Akaike info criterion	10.35286
Sum squared resid	888764.0	Schwarz criterion	10.42029
Log likelihood	-2580.214	Hannan-Quinn criter.	10.37932
F-statistic	0.004097	Durbin-Watson stat	2.000131
Prob(F-statistic)	1.000000		

Appendix 4.6: Model Specification Test: Ramsey Reset Test

Ramsey RESET Test
Equation: UNTITLED
Specification: TQ ERM LNFS DE ROA DPS EPS C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	10.63289	492	0.0000
F-statistic	113.0584	(1, 492)	0.0000
Likelihood ratio	103.4231	1	0.0000

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	166080.0	1	166080.0
Restricted SSR	888815.8	493	1802.872
Unrestricted SSR	722735.8	492	1468.975

LR test summary:

	Value
Restricted LogL	-2580.229
Unrestricted LogL	-2528.517

Unrestricted Test Equation:
Dependent Variable: TQ
Method: Least Squares
Date: 02/22/19 Time: 16:38
Sample: 1 500
Included observations: 500

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ERM	-3.224810	3.821095	-0.843949	0.3991
LNFS	-2.888113	1.215753	-2.375574	0.0179
DE	-1.556990	0.409646	-3.800822	0.0002
ROA	-0.008849	0.079419	-0.111417	0.9113
DPS	-17.15837	7.373539	-2.327019	0.0204
EPS	0.043380	0.158127	0.274337	0.7839
C	55.68020	24.06640	2.313607	0.0211
FITTED^2	0.067799	0.006376	10.63289	0.0000

R-squared	0.253825	Mean dependent var	7.163098
Adjusted R-squared	0.243209	S.D. dependent var	44.05743
S.E. of regression	38.32721	Akaike info criterion	10.14607
Sum squared resid	722735.8	Schwarz criterion	10.21350
Log likelihood	-2528.517	Hannan-Quinn criter.	10.17253
F-statistic	23.90896	Durbin-Watson stat	2.013811
Prob(F-statistic)	0.000000		