
LISTED COMPANIES IN MALAYSIA AND SINGAPORE BY
MARKET CAPITALIZATION - A COMPARATIVE RISK,
RISK DIVERSIFICATION BENEFITS AND PERFORMANCE
ANALYSIS

BY

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DEDICATION

I would like to dedicate this research to my family and friends. This research would not be possible without their love and support.

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TABLE OF CONTENTS

	Page
Copyright Page.....	ii
Declaration.....	iii
Acknowledgement	iv
Dedication	v
Table of Content	vi
List of Table	ix
List of Mathematical Formulas	x
List of Abbreviations	x
Preface	xi
Abstract.....	xii
CHAPTER 1 RESEARCH OVERVIEW.....	1
1.0 Introduction	1
1.1 Research Background	1
1.2 Problem Statements	3
1.3 Research Objectives	4
1.4 Research Questions	5
1.5 Research Significance	6
1.6 Chapter Layouts	7
CHAPTER 2 LITERATURE REVIEW	9
2.0 Introduction	9
2.1 Review of Literature on Market Capitalization	9
2.2 Measuring the Investment Performance	11
2.3 Measuring the Risk and Risk Diversification Benefits...	13

	I. Risk Features	13
	II. Risk Diversification Benefits	16
2.4	Hypotheses Development	17
CHAPTER 3	RESEARCH METHODOLOGY	22
3.0	Introduction	22
3.1	Research Design	22
3.2	Data Collection Method	23
	3.2.1 Secondary Data	22
	3.2.1.1 Ranking of Companies based on Market Cap.....	25
	3.2.2 Mathematical Formulas	23
	3.2.2.1 Calculating Weekly Returns	26
	3.2.2.2 Calculating Performance of Listed Companies	27
	3.2.2.3 Calculating Risk Features of Listed Companies	30
3.3	Method of Analysis	33
3.4	Conclusion	34
CHAPTER 4	DATA ANALYSIS	35
4.0	Introduction	35
4.1	Empirical Findings and Discussions	35
	4.1.1 Summary Statistic	36
	4.1.2 Analysis of Performance Measure	40
	4.1.3 Analysis of Risk Features	45
4.2	Conclusion	51
CHAPTER 5	CONCLUSION.....	53
5.0	Introduction	53

5.1	Discussion on Major Findings	53
5.2	Implications of the Study	58
5.3	Limitations of the Study	59
5.4	Recommendations for Future Research	61
5.5	Conclusion	62
	References.....	63

LIST OF TABLES

	Pages
Table 3.1 : Ranking of Listed Companies based on Market Capitalization	25
Table 4.1 : Summary Statistics for Listed Companies in Malaysia.....	36
Table 4.2 : Summary Statistics for Listed Companies in Singapore.....	37
Table 4.3 : Sharpe Ratio, Treynor Ratio and Jensen Alpha of Malaysia Listed Companies	40
Table 4.4 : Sharpe Ratio, Treynor Ratio and Jensen Alpha of Singapore Listed Companies	42
Table 4.5 : Risk Features of Malaysian Listed Companies by Market Capitalisation	45
Table 4.6 : Risk Features of Singapore Listed Companies by Market Capitalisation	47
Table 4.7 : Comparison of Risk Features between Malaysia Listed Companies and Singapore Listed Companies	51
Table 4.8 : Comparison of Performance between Malaysia Listed Companies and Singapore Listed Companies	52
Table 5.1 : Major Findings on Hypotheses Testing	56

LIST OF MATHEMATICAL FORMULAS

	Page
Formula 3.1: Companies' Weekly Returns.....	26
Formula 3.2: National Market Indices' Weekly Returns.....	26
Formula 3.3: Companies' Sharpe Ratio.....	27
Formula 3.4: Companies' Treynor Ratio.....	28
Formula 3.5: Companies' Jensen's Alpha.....	29
Formula 3.6: Companies' Beta.....	30
Formula 3.7: Companies' Total Risk.....	30
Formula 3.8: Diversifiability Measure (Method 1).....	31
Formula 3.9: Diversifiability Measure (Method 2)	32
Formula 3.10: Companies' R-Squared Value.....	32

LIST OF ABBREVIATIONS

SR	Sharpe Ratio
TR	Treynor Ratio
α_i	Jensen's Alpha
Rd	Diversifiability Measure
β	Beta (Market Risk)
R	R-Square
REIT	Real Estate Investment Trust
M-REITs	Malaysia Real Estate Investment Trust
J-REITs	Japan Real Estate Investment Trust
S-REITs	Singapore Real Estate Investment Trust
Bhd.	Berhad
Ltd.	Limited
STI	Strait Time Index
KLCI	Kuala Lumpur Composite Index
CAPM	Capital Asset Pricing Model

PREFACE

This research study is considered as a fulfillment of the requirements under the Faculty of Accountancy and Management in Universiti Tunku Abdul Rahman (UTAR) of the course of Bachelor of International Business (Hons).

Equity market has been popular due to globalization. Market Capitalization has become one of the most helpful tools in determining the stocks that investors are interested in by knowing the activities and market value of company. In the financial markets, monitoring the performance and reducing the risk of an investment has been a major concern for them. Investors will also tried to invest in stocks or shares that are able to provide a higher performance and benefits and possess a lower risk. Therefore, the information has been adapted and extracted from literature review on past studies in order to investigate against the performance, risk and risk diversification benefits between the Malaysia Listed Companies and Singapore Listed Companies.

The research method and processes in this study have been used and conducted in prior studies as well. In order to increase the accuracy and reliability, Secondary data collection method has been utilized in order to create a more accurate and reliable insights for investors. Besides, relevant data analysis tool also has been used to analyse data and the figures will be tabulated in the table to make a direct and clear-cut comparison between the performance and risk of two countries. Hopefully, this research study may be helpful for investors in deciding which stocks/shares to be included in their portfolio.

ABSTRACT

This study investigates the performance index, risk features and risk diversification benefits of Malaysia Listed Companies and Singapore Listed Companies from January 2009 - December 2018. The performance measures employed in this study are Sharpe Ratio, Treynor Ratio and Jensen Alpha. However, the risk evaluation methods are Beta, R-Square, Total Risk, Systematic Risk and Unsystematic Risk. The Diversifiability Measure has also been employed to measure the risk diversification benefits of the investments. The total risk of Singapore listed companies is higher than Malaysia listed companies, while the Beta values for both countries are less than one. This implies that listed companies in both countries are less risky when compared against their respective national market indexes. The lower R-squared values in Malaysia Listed Companies as compared to Singapore suggest that Malaysia Listed Companies has a more opportunities for diversification according to the formulas by Diversifiability Measures. The results conclude that the listed companies in Malaysia performed better than the listed companies in Singapore in terms of its Sharpe Ratio and Treynor ratio. In terms of Jensen Alpha, although both of the countries listed companies yielded a negative value, but the Malaysia Listed Companies still marginally performed better than the Singapore Listed Companies. The total risk of Singapore listed companies is higher than Malaysia listed companies, while the Beta values for both countries are less than one. This implies that listed companies in both countries are less risky when compared against their respective national market indexes. The lower R-squared values in Malaysia Listed Companies as compared to Singapore suggest that Malaysia Listed Companies has a more opportunities for diversification according to the formulas by Diversifiability Measures. The best/worst performers in both countries is also determined in this study. The findings provide good insights to investors who are considering the addition of the countries' shares into their portfolio investments.

Keywords: Market Capitalization, Risk Features, Performance, Risk Diversification, Malaysia, Singapore

CHAPTER 1 : RESEARCH OVERVIEW

1.0 Introduction

This research investigates the performance, risk and risk diversification benefits of listed companies by Market Capitalization in both Malaysia and Singapore. This research is conducted by studying a total of 10 years of their weekly share price from the year 2009 to year 2018. The research is conducted by gathering the secondary data on weekly share prices, financial analytic tools. Beta measure, R-squared, Systematic Risk, Unsystematic Risk, Total Risk, Sharpe Ratio, Treynor Ratio and Jensen's Alpha will be calculated and be used as a measuring tool for this research. Clear distinguished differences between the two countries (Malaysia and Singapore) will be analyzed at the end of this research. In Chapter one, research background, research problem, research objective and research significance will be included.

1.1 Research Background

Equity market activity has been popular due to globalization. In order to invest in the equity market, investors are required to invest their money into particular stocks or shares in the market. Market capitalization has become one of the most helpful tools in determining the stocks that investors are interested in by knowing the activities and market value of company. In addition, this study provided investors a better idea of the companies whose sizes are different and given its effectiveness of risk assessment. This research is conducted by comparing and

analyzing the listed companies by market capitalization. The risk where exists in the equity market may then lead to more risk averse investors which intends to avoid the uncertainty of financial condition. The investors may be sometimes confused to determine which stock should be taken and include in their portfolio. Hence, this current research is conducted to assist investors by comparing the risk features such as Beta, R-square, Total Risk, Systematic Risk and Unsystematic Risk as well as the risk diversification benefit - Diversifiability Measure in both countries.

By evaluating portfolio performance by using the Sharpe Ratio, Treynor Ratio and Jensen Alpha, it can provide the information about the circumstances of the stocks or shares in the capital market. Not only risk, the performance metrics is also needed to analyze and evaluate before the investors decide which stocks to invest into. Sometimes the individual investor confuses to determine which evaluation method they should take to analyze the portfolio. Therefore, a study by Zakarias & Tumewu (2015) suggested that three of the performance evaluation method must be used simultaneously in order to create an effective and accurate result for better decision making.

Based on studies of past literature on REITs' risk & performance analysis by Choo & Tan (2019), it concluded that the M-REITs performed better. Additionally, in the research of Ng, Leong, Lau and Abdul Rahim (2018), it also found that the M-REITs in performed better than the S-REITs. Therefore, this study intends to investigate whether the Malaysia Listed Companies actually performed better in comparison to the Singapore Listed Companies by analyse and compare through the same performance and risk measures as the past studies mentioned above.

1.2 Problem Statement

First and foremost, a comparison between listed companies in Singapore (a model for a developed country within the ASEAN region) and listed companies in Malaysia (developing economy) provides an interesting contrast that is worth studying in depth.

Other than that, the studies on listed property companies, REITs, mutual funds and unit trust has been widely done locally (Low & Johari, 2014). But, there is still limited research that analyse and compare the listed companies between countries by market capitalization. Despite having few studies like Chong, Gey, Tan, Tey & Yap (2014) and Azmi, Rosman, Razali & Ali (2017) that focusing on risk-adjusted performance, but majority of them are focusing on listed property companies.

In addition to that, there are limited research that analyses and compares the performance of the Top 30 listed companies in Malaysia and Singapore. Similarly, there has been very little research conducted that analyses the risk and risk diversification benefits between Malaysia and Singapore.

Additionally, there is not much research has examined the benefit for investors when selecting the shares to be included in their portfolio investment. Hence, this study may narrow the gap by providing investors with such information.

1.3 Research Objectives

The first primary research objective of this study is to examine and compare the investment performance of Malaysia listed companies and Singapore listed companies by assessing their risk-adjusted returns using the tried and true methods of investment performance measurement such as the Sharpe Ratio, Treynor Ratio and Jensen's Alpha.

The secondary objective of the first primary research objective is as follows :

1. To compare and contrast the investment performance of the selected Malaysia listed companies and Singapore listed companies using the **Sharpe Ratio**.
2. To understand and compare the investment performance of the selected Malaysia listed companies and Singapore listed companies using the **Treynor Ratio**.
3. To determine and compare the investment performance of the selected Malaysia listed companies and Singapore listed companies using **Jensen's Alpha**.

The second primary research objective of this study is to examine and compare the risk as well as risk diversification benefits of Malaysia listed companies and Singapore listed companies by assessing their "diversifiability" through Diversifiability Measure.

The secondary objective of the second primary research objective is as follows :

1. To determine and compare the **Beta value** for each of the selected Malaysia listed companies and Singapore listed companies.
2. To determine and compare the **R-Square value** for each of the selected Malaysia listed companies and Singapore listed companies.
3. To determine and compare the **Total Risk** for each of the selected Malaysia listed companies and Singapore listed companies.
4. To determine and compare the **Systematic Risk** for each of the selected Malaysia listed companies and Singapore listed companies.
5. To determine and compare the **Unsystematic Risk** for each of the selected Malaysia listed companies and Singapore listed companies.
6. To determine and compare the **Diversifiability Measure** for the selected Malaysia listed companies and Singapore listed companies.

1.4 Research Questions

The research questions are as follows. These were developed based on the research objectives :

1. Are Top 30 listed companies in Malaysia (by market capitalization) has better performance as compared to the Top 30 listed companies in Singapore ?
 - (a) Do Malaysia listed companies have a higher **Sharpe Ratio** compared to Singapore listed companies ?

- (b) Do Malaysia listed companies have a higher **Treynor Ratio** compared to Singapore listed companies?
- (c) Do Malaysia listed companies have higher **Jensen's Alpha** compared to Singapore listed companies?

2. Does Malaysia's Top 30 listed companies by market capitalization possess lower/higher risk compared to Singapore's Top 30 listed companies ?

- (a) Do Malaysia listed companies have lower **Beta** compared to Singapore listed companies?
- (b) Do Malaysia listed companies have lower **R-square** compared to Singapore listed companies ?
- (c) Does Malaysia listed companies have lower **Total Risk** compared to Singapore listed companies ?
- (d) Does Malaysia listed Companies have lower **Systematic Risk** compared to Singapore listed companies ?
- (e) Is Malaysia listed companies have lower **Unsystematic Risk** compared to Singapore listed companies ?
- (f) Is Malaysia listed companies more **diversifiable** compared to Singapore listed companies ?

1.5 Research Significance

This present study offers valuable contribution on theory and practice, it might as well be value to corporate managers, policy-makers, bankers and most importantly investors who are involved in the financial transaction with ASEAN economies and financial markets.

Since this study investigates and assesses the historical performance and risk diversification benefits of Malaysia listed companies and Singapore listed companies, it will then provide potential investors or shareholders with greater knowledge and insight into the real-world investment's risk, risk diversification benefits and performance of including Malaysia listed companies and/or Singapore listed companies into their portfolios.

In addition, it also provides a direct and obvious comparison of Top 60 listed companies by market capitalization in both countries (30 each). Furthermore, this research intends to expand and build upon existing literature by assessing the benefits and significance of listed companies in general.

Apart from that, this study can be helpful to scholars and academicians, the findings of this present study would be significant in establishing areas for further study where future scholars can further understanding the knowledge in areas of market capitalization.

1.6 Chapter Layout

This research comprises a total of 5 chapters. In Chapter 1, it provides a general introduction of the topic and the problem statement is also presented in this chapter. Besides, the research questions, research objectives, research hypotheses and research significance as well as chapter layout also clearly define the subjects under discussion in each chapter of the study.

In Chapter 2, it incorporates the literature review of the study. This chapter aims to inspect the past studies of the Malaysia listed companies' and Singapore listed

companies' performance, risk and risk diversification benefits based on the findings from scholastic publications like books and journal articles. Furthermore, the development and justification of the hypotheses will be included.

Moreover, Chapter 3 consists of 60 listed companies in total by market capitalization from both Malaysia and Singapore. A 10-year range study from January 2009 to December 2018 was used to ensure the sufficiency of comparison between both countries. The methods of secondary data collection and the mathematical formulas will also be applied to obtain the necessary data.

Last but not least, in Chapter 4, the weekly share price data has been collected from Bloomberg Terminal and calculated with given mathematical formulas. Therefore, the final results will be tabulated into few table and will be analyzed.

Finally, Chapter 5 will discuss major findings. The limitations, implications and suggestions will also be included in this chapter of the research.

CHAPTER 2 : LITERATURE REVIEW

2.0 Introduction

In Chapter 2, it incorporates the literature review of the study. This chapter aims to inspect the past studies of the Malaysia listed companies' and Singapore listed companies' performance and risk diversification benefits in their respective worldwide, regional and national contexts. The study is based on the findings from scholastic publications like books and journal articles. Furthermore, this chapter also includes the development of hypotheses and justification of those hypotheses.

2.1 Review of Literature on Market Capitalization

Market capitalization, commonly referred to as “market cap” is a measure refers to the total market value of a company whose shares are publicly listed on Stock Exchange Market like Bursa Malaysia. Market Cap is calculated by multiplying the companys' share outstandings by the current share price. It is also used to determine the size and value of the company by the investment community. The publicly listed companies is ranked according to the criterion of “market cap”. This criterion provides a general idea of how these companies cope on the stock market, and what is the result of their activities (Krsytev, 2014). Besides, it allows investors to compare companies whose stocks are similar in price by the time they bought and their return on investment (Eriemo, 2014). For the stock or shares which is bought and sold in public markets, capitalization can be useful as a proxy for the public opinion of a company's net worth as well as a determining factor in some forms of stock valuation (Skamo, 2012).

Market Capitalization can then be a helpful metric in determining the stocks investors are interested and in determining how to diversify your portfolio with companies which sizes are different given its simplicity and effectiveness of risk assessment. Companies are usually sorted in few categories as follows; large - cap (\$10 - 100 billion), mid-cap (\$ 1 - 10 billion); Small-cap (\$100 million - 1 billion) and micro-cap (\$10 - \$ 100 million) (Oslon, 2005). However, according to Chessar (2015), due to several factors such as inflation, market valuation and population changes, the categorization cuts need to be adjusted over time. Usually, the figure of market cap varies on a daily basis depending on changes in market prices of the respective shares. Therefore, by identifying appropriate indicators, it will assist players of the stock market to monitor the changes, and allow them to be able to make informed investment decisions.

One of the most liquid forms of investment would be to invest in equity shares. In the past, researchers have aimed to develop further understanding of the significance of market capitalization to the equity market as a whole by launching many studies and analyses around the world, thus providing valuable knowledge, data and insight to potential investors and other stakeholders. However, while the research has discovered numerous studies covering risk, performance and diversification benefits, few have empirically and directly compared listed companies in different countries against each other using common measurement standards.

In the study of Reinganum (1983) mentioned that market capitalization is one of the important determinants of the return on investments. Besides, day-to-day fluctuations of the market price of the share provide freely available information on the health of a publicly traded company such as risk. According to DeAngelo (2006), companies with different market caps tend to perform differently over time. Hence, diversifying among companies with various market caps would be useful in further reducing the risk and volatility in a portfolio as well as maximizing the investment returns over the long run. By understanding and

assessing the market capitalization of companies can definitely help investors to make a smart investment choices.

2.2 Measuring the Investment Performance (Sharpe Ratio, Treynor Ratio, Jensen Alpha)

In 1966, Sharpe developed Sharpe Ratio that is commonly used to measure the performance of a portfolio or investment. Based on the study by Sharpe (1966), it compute the return generated by a portfolio by dividing the risk premium of the portfolios by total risk or standard deviation. It is considered as a trustworthy method of investment performance measure that computes the return generated by a portfolio in excess of the risk-free rate of return for every unit of standard deviation (Ng, Leong, Lau & Abdul Rahim, 2018). The three key components in Sharpe Ratio are the portfolio return, risk-free rate of return and standard deviation. (Sharpe, 1966). According to Shahid (2007), the Sharpe Ratio uses the capital market line as a benchmark. In the study of Grable & Chatterjee (2014) also mentioned that the Sharpe Ratio is a helpful way in measuring the portfolio performance on a risk-adjusted basis. The higher the value of Sharpe ratio, the more attractive the company return is as compared to the risk-free rate of return. In general, the greater number of Sharpe Ratio indicates a better performance because greater total risk (standard deviation) is rewarded with greater excess return (Shadid, 2007). Schmid and Rafael S. (2009) also concluded that the return and risk taken by the investors is higher with higher Sharpe Ratio. Grinblatt and Titman (1989) have shown in the study that with the use of a shorter time periods, the more effective the performance ratings is. Therefore, weekly returns are used for estimation of performance in this study.

Besides, Treynor Ratio which developed by Jack Treynor in year 1965, is similar to the Sharpe Ratio, which is used to determine the excessive profits as more risk is taken on. However, the only difference is that Treynor Ratio utilizes market risk

(Beta) to measure volatility instead of total risk (standard deviation) (Treynor, 1965). According to Choo & Tan (2019), it is also proven its viability to be used as a measure of REIT performance. Generally, the greater the Treynor Ratio, the more attractive the return is, adjusted for the level of risk taken. While there is a high and positive value of TR indicates a superior risk adjusted performance of a company. However a low and negative value of Treynor Ratio shows an unfavorable risk adjusted performance of a company. In addition to that, according to Shahid (2007), when there is a negative Treynor Ratio due to r_p (portfolio rate of return) $<$ r_f (risk free rate of return), it indicates that there is a poor portfolio performance. Similarly, when β_p (portfolio Beta) $<$ 0, there is a superb performance. Consequently, when $r_p - r_f$ and β_p are both negative it will cause the Treynor Ratio to be positive value. In order to qualify the performance as good or bad, it depends whether r_p lies above or below the market line.

Furthermore, Jensen Alpha is developed by Michael Jensen in 1968 which also commonly used to calculate the excess return generated of the theoretical return predicted by the CAPM (Jensen, 1968). Not only Sharpe Ratio and Treynor Ratio, Jensen's Alpha is also a commonly known method in measuring portfolio performance. In short, it is used to determine the return by utilizing the CAPM to determine whether a company outperformed the market index (Shahid, 2007). It then also allows investors to test whether a portfolio produced an abnormal return. Moreover, a study by Zakarias & Tumewu (2015) mentioned that an investor must focus not only at the overall return but also the risk taken to understand if the investment's return compensates for the risk it takes

There were some previous studies that have used Sharpe Ratio, Treynor Ratio and Jensen Alpha to measure the company's performance. (Benefield, Anderson, & Zumpano (2009), Ng, Leong, Lau, & Abdul Rahim (2018), Azmi, Rosman, Razali, Ali (2017), Fei, Ding, & Deng (2010) as well as Ooi & Liow (2014). Moreover, the findings from previous studies shows that the REITs in Malaysia would result in a higher Sharpe Ratio, Treynor Ratio and Jensen Alpha due to its higher

performance as compared to the REITs in countries like Singapore. (Ng, Leong, Lau, Abdul Rahim, 2018) Besides, the findings from the study by Choo & Tan (2019) also shows that the REITs in Malaysia performed better than the REITs in Japan. Furthermore, the results of the study by Aik (2012), who employed the 3 performance measures in the studies concluded that the Malaysian REITs overperformed the market portfolio during the 2008 US sub-prime mortgage crisis. According to Kim Hiang Liow (2001), it evaluated the property companies performance by Sharpe index and concluded that it is performed better than the S-REITs. In addition to that, the study by Kok and Khoo (1995) also examined the property trust in Malaysia by employing the 3 performance measure (Sharpe, Treynor, Jensen Alpha) have concluded that property trust in Malaysia generally performed well during a falling market but underperformed during the a rising market. Besides, Olanrele, Said, Daud (2015) found that the Malaysia REITs is outperformed the Nigeria REITs in terms of its superior risk-adjusted performance.

2.3 Measuring the Risk and Risk Diversification Benefits

I. Risk Features (Beta, R-squared, Total Risk, Systematic Risk, Unsystematic Risk)

Beta is often used to measure market-related risk. It measures the amount of non-diversifiable risk an individual shares or stocks has relative to the whole stock market. Besides, Stock Beta is a measurement used in this research in calculating the volatility or risk of a stock. In fact, a higher Stock Beta indicates that the stocks is carrying a greater risk (Karthika & Karthikeyan (2011). In addition, Beta also being used to measure the Treynor Ratio. It is proven that the beta is a good measurement of risk and also a reliable tool for portfolio selection in the study by and Estrada & Vargas (2012). According to a research by Karacic & Bukvic (2014), it mentioned that if the Beta shows a negative value, it implies that it is a negative correlation with market and vice versa. The Beta measure has been

employed in numerous past studies on REITs as a measure of the systematic risk, for example, Kim, Gu, & Mattila (2002), Choo & Tan (2019), Low & Johari (2014) as well as Ong, Teh & Chong (2011). Additionally, the result of a study by Chai et al. (2011) concluded that the M-REITs have a lower risk or volatility in comparison to property market. According to Low & Johari (2014), the all the selected REITs in Malaysia has a Beta lower than one which implies that there is a lower level of market risk.

R-square is a statistical tool that is used to examine the market movement of a portfolio. It can also be defined as the percentage of a share's movements which can be explained by the movements of a market index. R-squared is not the performance measure but the measure of the correlation between each stock's return and the benchmark's return. Therefore, being aware of this measure would be able to help investors in building an investment portfolio that satisfy their needs. However, in this study, R-Square is being utilized in measuring the Diversifiability Measures. Generally, the larger the R-square value, the higher the portfolio moves along with the market index. If the value of R-square is high (85%-100%) it indicates that the stock is following the movements of the index. The study by Low & Johari (2014) mentioned that the R-square for the REITs in Malaysia are very low due to poor diversification.

For total risk, it is computed by adding both systematic risk and unsystematic risk on an investment. It also can be measured by the standard deviation of a return. The reason of examine the total risk is to ensure that the investors would be able to make a better planning and decision that will lead to a good outcome. There have been few past studies that examine risk in various industries by using total risk and systematic risk. For example, the study by Mao and Gu (2007), Kim and Gu (2003) and Madanoglu, Lee, and Kwansa (2008) performed a risk-return analysis on the restaurant industry by using total risk. A study by Low & Johari (2014) and the most recent study on REITs by Choo & Tan (2019) also utilize these measures. The results in the previous studies shows that the total risk are lower in M-REITs (Ng, Leong, Lau, Abdul Rahim, 2018 ; Choo & Tan, 2019). Similary, based on the study by Gan & Ban (2019), it also conclude that the M-

REITs have a lower total risk as compared to the Malaysia Public Property Listed Companies (M-PPLCs).

Systematic risk is described as “market risk” or “undiversifiable risk” that defined as the threats for a market segment. Systematic risks are significantly affecting sectors like financial institution. It is associated with the market that it will affect the overall market of the stocks. Additionally, it is unable to eliminate through diversification and it is unpredictable. Systematic risk is denoted as beta (Gu and Kim, 2002). In CAPM it suggest that systematic risk is considered as a relevant factor in determining the required return. For instance, the source of the systematic risk may include war, recessions, hazard to an industry or business, political factors, economic crashes, foreign investment policy and so forth. According to Gu and Kim (2002), by understanding the information of systematic risk would be able to help investors in analyzing the nature of risk associated with investment. The findings of the study by Choo & Tan (2019) shows that M-REITs have shown a low volatility against the market movement (lower systematic risk) as compared to J-REITs.

Reducing portfolio risk has always been a major concern for most investors. Therefore, most of the investors will be focusing on unsystematic risk which are the simplest and easiest risk to be diversify away. The unsystematic risk, also well-known as “specific risk” or “diversifiable risk” is the risk that specifically inherent in a company or a certain investment. This type of risk can be eliminated largely or reduced through diversification, which is to multiply the investor’s investment by buying shares from different sectors, companies or countries. The source of unsystematic risk is related to such factors like inventions, labor strikes, research and developments, and other macroeconomic factors that has the chance to be diversify away (Hotvedt & Tedder, 1978). Based on few prior studies, the unsystematic risk took up a vast majority of the total risk (Low & Johari, 2014 ; Choo & Tan, 2019 ; Ban & Gan, 2019). However, most of the countries’ REITs have a lower unsystematic risk than the M-REITs as it implies that all the REITs

in other countries is highly diversified (Choo & Tan, 2019 ; Ng, Leong, Lau & Abdul Rahim, 2018).

II. Risk Diversification Benefits (Diversifiability Measure)

Risk diversification is significant to all equity investors. A portfolio's risk diversification benefits is an additional metric in determining its attractiveness to investors. A portfolio's risk diversification benefits can be determined by the ratio of unsystematic risk to total risk to measure the portfolio's "diversifiability" (Kim, Gu, & Mattila (2002). Besides, according to a study by Levy and Sarnat (1984), it also mentioned that the desirability of diversification is also considered as the ratio of unsystematic risk to total risk. It shows the potential benefits of including the particular shares into an investment portfolio and also the proportion of risk that can be eliminated by diversification. Hence, the Diversifiability Measure serves as an indication of a portfolio's risk diversification benefits widely. However, the systematic risk must be determined beforehand in order to determine the Diversifiability Measure of a portfolio. Apart from systematic risk, a total risk must also be determined to compute the Diversifiability Measure of a portfolio.

For instance, this method has been applied in past literature, such as those by Ban & Gan (2019) and Choo & Tan (2019) as well as Low & Johari (2014). The formula and in depth method of use will be shown in Chapter 3 of this study. Based on the study by Low and Johari (2014), the findings shows that the lowest and highest value ranges are closes to one, hence, there are tremendous opportunities for diversification for the REITs in Malaysia. The research by Choo & Tan also shows that there are more risk diversification benefits in Malaysia REITs than the Japan REITs. This results also applies to the research by Ng, Leong, Lau, Abdul Rahim (2018), which shows a higher diversifiability measures in M-REITs as compared to S-REITs.

2.4 Hypotheses Development

Hypothesis 1: Malaysia listed companies' SR > Singapore listed companies' SR (Malaysia listed companies have higher Sharpe Ratio in comparison to Singapore listed companies)

Sharpe ratio is a measure of the average return earned in excess of the risk-free rate per unit of volatility or total risk (Sharpe, 1966). The ratio is measuring of each company's performance which is adjusted for risk. Generally, it is helpful in accurately determine the additional profits earned as more risk is taken on. A stock with the higher Sharpe Ratio, the more attractive the return is, adjusted for the level of risk taken. The ratio is a tried and true performance measure and has been used in many past studies. For example, the research done by Choo & Tan (2019) and Ng, Leong, Lau, & Abdul Rahim (2018) also hypothesized that there a higher Sharpe Ratio as compared to other countries like Singapore and Japan.

Hypothesis 2: Malaysia Listed Companies' TR > Singapore Listed Companies TR (Malaysia Listed Companies have higher Treynor Ratio in comparison to Singapore Listed Companies)

The Treynor Ratio is a measure of the returns earned in excess of the risk-free return at a given level of systematic risk (Treynor, 1965). Treynor Ratio is also used to accurately determine the additional profits earned as more risk is taken on. However, unlike the Sharpe ratio, Treynor Ratio utilizes market risk (β) to measure volatility instead of total risk (standard deviation). Generally, the greater the Treynor ratio, the more attractive the return is, adjusted for the level of risk taken. The ratio is a tried and true performance measure and has been used in many past studies. For example, a research by Low and Johari and Ng, Leong, Lau, & Abdul Rahim (2018). Moreover, there are higher frequency in showing that there is a higher Treynor Ratio in Malaysia based on prior studies (Choo & Tan, 2019 ; Ng, Leong, Lau, & Abdul Rahim, 2018).

Hypothesis 3: Malaysia Listed Companies' $\alpha_i >$ Singapore Listed Companies' α_i (Malaysia Listed Companies have higher Jensen's Alpha in comparison to Singapore Listed Companies)

The Jensen's Alpha is calculated to determine the abnormal return on each REIT over the expected or required return suggested by the capital asset pricing model (CAPM), given the beta and the average market return (Jensen, 1968). It represented by the symbol, α . Basically, the CAPM is used to determine the expected return, while Jensen's Alpha is used to compute how much excess return is generated of the theoretical return forecasted by the CAPM (Fama & French, 2004). The Jensen's Alpha is a tried and true performance measure and has been used in many past studies. For example, in the research by Kim, Gu, & Mattila (2002), Low & Johari (2014) and Ng, Leong, Lau, & Abdul Rahim (2018) also shown that there are higher Jensen Alpha in Malaysia Listed Companies.

Hypothesis 4: Malaysia Listed Companies' $\beta <$ Singapore Listed Companies' β (Malaysia Listed Companies' have smaller Beta [market risk] in comparison to Singapore Listed Companies)

In order to measure the market risk of each individual listed company, the β (Beta) value must be computed. It allows us to measure the volatility of each listed company in comparison to the market risk, as β is a measure of the tendency of the return to change in relation to the market. Generally, a positive β indicates a positive correlation with the market; while a negative β indicates a negative correlation with the market. Past studies that have utilized β as a measure of systematic risk includes Low & Johari (2014), Ng, Leong, Lau, & Abdul Rahim (2018), Ong, Teh & Chong (2011) and Kim, Gu, & Mattila (2002). Besides, there are higher frequency in showing that there is a lower beta in Malaysia based on prior studies (Choo & Tan, 2019 ; Ng, Leong, Lau, & Abdul Rahim, 2018).

Hypothesis 5: Malaysia Listed Companies' R^2 < Singapore Listed Companies' R^2 (Malaysia Listed Companies' have smaller R-square in comparison to Singapore Listed Companies)

R-square is an analytical tool that describes how much a portfolio or stock movement can be attributed to a benchmark index. R-square can be thought as a percentage from 1 to 100. Generally, the larger the R-square value, the higher the portfolio moves along with the benchmark. If the value of R-square is high (85%-100%) it can be implies that the stock is following the movements of the benchmark index and vice versa. This useful measures not only being employed in few studies of REITs such as Ng, Leong, Lau, & Abdul Rahim (2018), and Choo & Tan (2019). It also employed in the study of corporate governance and firm performance by Oguz & Dincer (2016). In sum, there are higher frequency in showing that there is a lower R^2 in Malaysia based on prior studies (Low & Johari, 2014, Choo & Tan, 2019 ; Ng, Leong, Lau, & Abdul Rahim, 2018).

Hypothesis 6: Malaysia Listed Companies' total risk < Singapore Listed Companies' total risk (Malaysia Listed Companies' have lower total risk in comparison to Singapore Listed Companies)

For total risk, it is the combination of both systematic risk and unsystematic risk on an investment. Generally, if there is a lower systematic risk and unsystematic risk, there will be a lower total risk. Therefore, the lower the total risk, the better. Ban & Gan (2019), Choo & Tan (2019) has been using total risk in measuring the risk features for REITs and Listed Property Companies in Malaysia and Japan. For instance, the findings of the research mentioned above conclude that there are higher frequency in showing that there is a total risk in Malaysia and majority of its total risk comes from high unsystematic risk.

Hypothesis 7: Malaysia Listed Companies' systematic risk < Singapore Listed Companies' systematic risk (Malaysia Listed Companies' have lower systematic risk in comparison to Singapore Listed Companies)

Systematic risk is so called “market risk” or “undiversifiable risk” affects a large

number of assets as it has the market-wide effects. According to (Gu and Kim, 2002), Systematic risk is denoted as beta(Gu and Kim, 2002). Like aforementioned, it is a risk that could not be diversify away. Hence, the lower the systematic risk, the better for investors. Past research that have utilized β as a measure of systematic risk includes Ong, Teh & Chong (2011), Choo & Tan (2019), Kim, Gu, & Mattila (2002), as well as Low & Johari (2014). For instance, the findings of the research mentioned above conclude that there are higher frequency in showing that there is a lower systematic risk in Malaysia.

Hypothesis 8: Malaysia Listed Companies' unsystematic risk < Singapore Listed Companies' unsystematic risk (Malaysia Listed Companies' have lower unsystematic risk in comparison to Singapore Listed Companies)

The unsystematic risk also well-known as specific risk or diversifiable risk is the risk that relates to a particular investment or a company. To eliminate or reduce such risk, investors will construct diversified portfolios by investing shares from different companies, different sectors or even in different countries in order to allocate the risk over different classes of investment. With the greater diversification, investors would be able to lower the unsystematic risk in the overall position. Generally, the lower the unsystematic risk, the easier the investors in eliminating such risk. The most recent past literature that have been utilized the unsystematic risk was Choo and Tan (2019) and Ban & Gan (2019) which hypothesized that the Malaysia investments is carried lower unsystematic risk as compared to other countries.

Hypothesis 9: Malaysia Listed Companies' R_d > Singapore Listed Companies' R_d (Malaysia Listed Companies have greater risk diversification benefits in comparison to Singapore Listed Companies)

Risk diversification benefits are one of the metrics in determining the attractiveness of a stocks to investors. The ratio of unsystematic risk to total risk can be used as a measure of risk "diversifiability" (Kim, Gu, & Mattila, 2002). It can be calculated by using the following formula: $1 - R\text{-squared}$. Generally, the

further the ratio is from 0, the more unsystematic risk remains in the portfolio to be diversified away. However, if a portfolio's diversifiability measure has a ratio that is close to 0, it then has little unsystematic risk remaining and it is not diversifiable. Therefore, the R-Squared of each listed company is used to calculate the risk diversifying measure. It also serves as an indication of risk diversification benefits. For example, a research done in the past by Low & Johari (2014) and Ng, Leong, Lau, & Abdul Rahim (2018). Moreover, the research done by Choo & Tan (2019) and Low & Johari (2014) also hypothesized that there a higher Sharpe Ratio as compared to other countries like Singapore and Japan.

CHAPTER 3 : METHODOLOGY

3.0 Introduction

In this chapter, it discusses about the research methodology adopted in this research. The sampling data consists of 60 listed companies in total by market capitalization from both Malaysia and Singapore (30 each). It is a 10-year range study from the period January 2009 to December 2018 was used to ensure the most consistent comparison between both countries.

Beside that, this chapter shows the methods of secondary data collection and the mathematical formulas applied to obtain the necessary data. Finally, it also discusses the way in which the accumulated data is processed and analyzed.

3.1 Research Design

The research design that was used in this study is the **quantitative** research design. This research design was implemented where it is crucial for a researcher to generate a statistical conclusions in order to collect actionable insights. In addition, numbers can provide a better perspective and it's more reliable when making business decisions.

This study used an **exploratory** research design. Based on the study by Neuman (1997), exploratory research is mainly used to seek more new insights and obtain more new information about a relatively unknown subject.

3.2 Data Collection Method

3.2.1 Secondary Data

This study was conducted by using secondary data in order to answer the described research questions and hypotheses as aforementioned. The secondary data is then collected from credible and verified sources in a quick, easy and inexpensive way in comparison to primary data. In this research, Bloomberg Terminal is being utilized in obtaining the required data such as share prices of the listed companies. In addition to that, several databases were being accessed in order to obtain the documentary data, such as the prior studies. For example, EBSCOhost, Scopus, ScienceDirect and Google Scholar. Besides, well-justified and tested mathematical formulas is also being applied in order to generate the data that will be shown in Chapter 4 later.

Moreover, the weekly stock prices of all the 60 listed companies in Malaysia and Singapore from January 2009 to December 2018 were collected from the Bloomberg Terminal at University Tunku Abdul Rahman (UTAR), Sungai Long Campus. Bloomberg is a computer software which provides a real-time financial market data regarding companies around the world and is the primary method of data collection. The weekly share prices of Malaysia Listed Companies and Singapore Listed Companies were used to compare against the indexes from FTSE Bursa Malaysia KLCI and Singapore Straits Time Index (STI). The reason FTSE Bursa Malaysia KLCI is being used is because it is a capitalization-weighted stock market index which form by Top 30 market capitalization listed companies in Bursa Malaysia, same goes to the STI. It also commonly used by investors to gauge the economic development and the overall market performance. In addition, the indexes is considered as the best alternative that can be used as a

market benchmark to compare with the listed companies.

3.2.1.1 Ranking of Companies based on Market Capitalization

Table 3.1 List of Companies in Malaysia & Singapore by Market Capitalization

Listed Companies in Malaysia	Ranking by Market Capitalization	Listed Companies in Singapore
Malayan Banking Berhad	1	DBS Group
Public Bank Berhad	2	Jardine Matheson Holdings Limited
Tenaga Nasional Berhad	3	Jardine Strategic Holdings Limited
CIMB Group Holdings Berhad	4	Singapore Telecommunications Limited
Axiata Group Berhad	5	Singapore Telecommunications Limited
Hong Leong Bank Berhad	6	Oversea-Chinese Banking Corporation Limited
Digi.com Berhad	7	United Overseas Bank Limited
Nestle (M) Berhad	8	Wilmar International Limited
Petronas Gas Berhad	9	Thai Beverage Public Company Limited
MISC Berhad	10	Hongkong Land Holdings Limited
Public Bank Group Berhad	11	Capitaland Limited
Kuala Lumpur Kepong Berhad	12	Jardine Cycle and Carriage Limited
Petronas Dagangan Berhad	13	Dairy Farm International Holdings Limited
Hap Seng Consolidated	14	Singapore Technologies

Listed Companies in Malaysia and Singapore by Market Capitalization -
A Comparative Risk, Risk Diversification Benefits and Performance Analysis

Berhad		Engineering Limited
Genting Berhad	15	Great Eastern Holding Limited
RHB Bank Berhad	16	Keppel Corporation Limited
Hong Leong Financial Group Berhad	17	Genting Singapore Limited
Dialog Group Berhad	18	Singapore Airlines Limited
Genting Malaysia Berhad	19	Capitaland Mall Trust
Press Metal Aluminium Holdings Berhad	20	Ascendas Real Estate Investment Trust
Hartalega Holdings Berhad	21	Singapore Exchange Limited
Sime Darby Berhad	22	Capitaland Commercial Trust
AMMB Holdings Berhad	23	UOL Group Limited
Top Glove Corporation	24	Olam International Limited
Fraser and Neave Holdings Berhad	25	Comfortdelgro Corporation Limited
Malaysia Airports Holdings Berhad	26	Mapletree Logistics Trust
YTL Corporation Berhad	27	Yangzijiang Shipbuilding Holdings Limited
QL Resources Berhad	28	Sats Limited
Telekom Malaysia Berhad	29	Suntec Real Estate Investment Trust
British American Tobacco (M) Berhad	30	Venture Corporation Limited

Source : Developed for the Research.

3.2.2 Mathematical Formulas

3.2.2.1 Calculating Weekly Returns

The weekly returns of the 60 listed companies in Malaysia and Singapore were calculated using the formulas as follows:

Formula 3.1: Listed Companies' Weekly Returns

$$LC_t = \frac{P_t - P_{t-1}}{P_{t-1}} \times 100 \quad (1)$$

where,

LC_t = Company's stock price for week t

P_t = Company's closing share price on the chosen day of week t

P_{t-1} = Company's closing share price on the chosen day of the week prior to week t

The weekly returns for FTSE Bursa Malaysia KLCI Index and Singapore Strait Time Index were calculated with the following formula:

Formula 3.2: Market Indices' Weekly Returns

$$R_{index} = \frac{I_t - I_{t-1}}{I_{t-1}} \times 100 \quad (2)$$

where,

R_{index} = Index for week t

I_t = Closing index value on chosen day of week t

I_{t-1} = Closing index value on chosen day of the week prior to week t

3.2.2.2 Calculating Listed Companies' Performance (Sharpe Ratio, Jensen Alpha and Treynor Ratio)

The Sharpe Ratio, Treynor Ratio, and Jensen's Alpha of each listed company are calculated in order to assess the :

1. listed companies' performance against the projected risk, as well as
2. the possible abnormal return generated by each company in excess of the market index.

i. Sharpe Ratio

There are three main components in calculating Sharpe Ratio would be: standard deviation/total risk, average return of the portfolio, and the risk-free rate of return. The standard deviation indicates the degree of variation of the returns of each company throughout the sampling period (Choo & Tan, 2019).

Generally, if the result yielded a positive Sharpe Ratio value, it indicates there is returns generated in excess of the risk-free rate of return. Conversely, if generated a negative Sharpe Ratio value, it then indicates that the company generates a lower return compared to the risk-free rate of return. In other words, the greater the value of Sharpe Ratio, the more attractive the company return is as compared to the risk-free rate of return.

The formula for calculating the Sharpe Ratio is as follows:

Formula 3.3: Sharpe Ratio

$$SR = \frac{r_i - r_f}{\sigma_i} \quad (3)$$

where,

SR = Sharpe Ratio

r_i = Listed Companies' Average Return

r_f = Risk-Free Rate of Return

σ_i = Listed Companies' Standard Deviation

ii. Treynor Ratio

The Treynor Ratio is a performance metric for determining excessive return earned for each unit of risk taken on by a portfolio (Treynor, 1965). Like the Sharpe Ratio, it is used to determine the additional profits earned as more risk is taken on. However, unlike the Sharpe ratio, the Treynor uses β (market risk) to measure instead of total risk/SD.

If the result yielded a greater the Treynor ratio, it indicates that the return is more attractive adjusted for the level of risk taken. In other words, the higher the Treynor Ratio also implies that there is greater excessive returns generated by the company against the portfolio benchmark.

The formula for calculating the Treynor Ratio is shown below:

Formula 3.4: Treynor Ratio

$$TR = \frac{r_i - r_f}{\beta_i} \quad (4)$$

where,

TR = Treynor Ratio

r_i = Listed Companies' Average Return

r_f = Risk-Free Rate of Return

β_i = Listed Companies' Beta

iii. Jensen Alpha Formula

The Jensen's Alpha is used to calculate and determine the abnormal return on each company over the expected return given Beta and the average market return (R_m) suggested by the capital asset pricing model (CAPM) (Jensen, 1968). In short, it utilizes the CAPM to compute the return rate based on market volatility by comparing the beta β of each against the market beta (Fama & French, 2004).

Generally, the company that performed better carry a higher Alpha value.

The formula for calculating Jensen's Alpha is shown below:

Formula 3.5: Jensen's Alpha

$$\alpha_i = R_i - [R_f + \beta_i(R_m - R_f)] \quad (5)$$

where,

α_i = Listed Companies' Jensen's Alpha

R_i = Listed Companies' Return

R_f = Risk-Free Rate of Return

β_i = Listed Companies' Beta

R_m = Portfolio Market Return

3.2.2.3 Calculating Risk Features of Listed Companies

The Beta of each listed company was calculated to measure the market related risk or volatility of the company. Generally, a stock that carry a higher risk usually will also carry a higher value of β . In others words, it also implies that a stock's return varies from its possible returns if it has a higher beta value. Besides, the beta must be computed over time as it is not constant, especially when the historical data is being used. Based on the research by Fama & Macbeth (1973) it mentioned that the beta of the efficient portfolio will usually be stable and vice versa. For risk averse investors, they may prefer an investment portfolio with lower beta as it indicates a lower risk and volatility.

Formula 3.6: Company's Beta Measure

$$\beta = \frac{\text{Cov}(R_i, R_m)}{\sigma_m^2} \quad (6)$$

where,

β = Company's Beta Value

$\text{Cov}(R_i, R_m)$ = Covariance of the company's stock & the market

σ_m^2 = Market Portfolio's Variance of Return

Besides that, the total risk which the combination of systematic risk and unsystematic risk of each of the 60 listed companies in Malaysia and Singapore were calculated and compared with the following formula:

Formula 3.7: Listed Company's Total Risk

$$\sigma_i^2 = \beta_i^2 \cdot \sigma_m^2 + \sigma_e^2 \quad (7)$$

Where,

σ_i^2 = Listed Company's Total Risk

β_i^2 = Listed Company's Beta Squared

σ_m^2 = Market Portfolio's Variance of Return

$\beta_i^2 \cdot \sigma_m^2$ = Listed Companies Systematic Risk

σ_e^2 = Listed Companies Unsystematic Risk

Diversification can be valuable to investors to minimize the portfolio's overall risk by blending a variety of investments in a portfolio. According to the research by Ng, Leong, Lau & Abdul Rahim (2018), diversification can be defined as “the method of allocating capital in the purpose of reducing the risk exposure”.

The risk diversification benefits of a listed company can be determined by dividing the unsystematic risk with total risk. It also considered as a measure of risk “diversifiability” (Kim, Gu, & Mattila, 2002). The Diversifiability Measure can be determined simply by the percentage (%) of unsystematic risk over the total risk. Besides, there is another way, the diversifiability measure also can be calculated by minus the R-Square from 1 ($1 - R^2$). Generally, the closer the value computed is to 1, it implies that there is a better diversification opportunities for the investment. However when the value is closer to 0, there will be lesser chances for diversification.

The method of calculating the Diversifiability Measure is as follows:

Formula 3.8: Diversifiability Measure (Method 1)

$$\text{Diversifiability Measure} = \frac{\sigma_e^2}{\sigma_i^2} \quad (8)$$

where,

σ_e^2 = Listed Companies' Unsystematic Risk

σ_i^2 = Listed Companies' Total Risk

The second method of calculating the Diversifiability Measure is shown below:

Formula 3.9: Diversifiability Measure (Method 2)

$$\text{Diversifiability Measure} = 1 - R^2 \quad (9)$$

where,

R^2 = R-squared

Additionally, R-squared (R^2) is also used to determine the market movement of each listed company. Therefore, the relationship between the systematic risk and total risk can be shown by the R^2 value. It indicates how much of the overall risk is made up of systematic risk

Generally, if the value of R^2 is higher, there will be a higher likelihood that the listed companies moves along with the market index, which in other words, indicates that most of the risk is caused by the systematic risk. However, if the company has a low R^2 value, it explains that the company does not move along with the market index.

The formula in calculating the R-squared value is as follows:

Formula 3.10: R-Squared (R^2)

$$R^2 = \frac{\beta_i^2 \cdot \sigma_m^2}{\sigma_i^2} \quad (10)$$

where,

R^2 = R-squared

β_i^2 = Listed companies' Beta-squared

σ_m^2 = Market Portfolio's Variance of Return

$\beta_i^2 \cdot \sigma_m^2$ = Listed Companies' Systematic Risk Component

σ_i^2 = Total Risk

3.3 Method of Analysis

After all the necessary data was collected, the figures were compiled and tabulated into few tables as follows: Summary Statistics for Listed Companies in Malaysia (Table 4.1), Summary Statistics for Listed Companies in Malaysia (Table 4.2), Performance of Malaysia Listed Companies (Table 4.3) and Performance of Singapore Listed Companies (Table 4.4), Risk Features of Malaysia Listed Companies (Table 4.5), Risk Features of Singapore Listed Companies (Table 4.6), Comparison of Risk Features between Malaysia Listed Companies and Singapore Listed Companies (Table 4.7) and Comparison of Performance between Malaysia Listed Companies and Singapore Listed Companies (Table 4.8). Moreover, the average figures for the following metrics were calculated and compared between Malaysia Listed Companies and Singapore Listed Companies by using Treynor Ratio, Sharpe Ratio, Jensen's Alpha is also generated to assess their investment performance. Furthermore, the Beta measure, R-squared, Total Risk, Systematic Risk, Unsystematic Risk and Diversifiability Measure also being implemented in order to assess the companies' risk and risk diversification benefits.

3.4 Conclusion

As conclude, this research was done by utilizing the secondary data and collecting the listed companies weekly share prices from Bloomberg Terminal. The raw data was then applied into the mathematical formulas and measured the performance, risk and risk diversification benefits for the listed companies in Malaysia and Singapore. The final results were then tabulated and analysed in the following chapter.

CHAPTER 4 : DATA ANALYSIS

4.0 Introduction

In this chapter, the results of this analysis of the weekly share price data that has been collected from Bloomberg Terminal. Moreover, the data has been calculated with given mathematical formulas in the previous chapter. The end results are classified into two major categories, performance (Sharpe, Treynor and Jensen's Alpha Ratio) and risk features (Beta, R-square, Total risk, Systematic Risk, Unsystematic Risk and Diversifiability Measure).

4.1 Empirical Findings and Discussion

Using the data (weekly share prices) that this research has gathered through Bloomberg Terminal, an analysis of the selected Malaysia Listed Companies and Singapore Listed Companies is done based on their Sharpe Ratio, Jensen's Alpha and Treynor Ratio to assess their investment performance as well as risk features to assess their potential risk diversification benefits.

4.1.1 Summary Statistics

Table 4.1 Summary Statistics for Listed Companies in Malaysia

Listed Companies	Average weekly return (%)	Standard Deviation (%)	Minimum (%)	Maximum (%)
Malayan Banking Berhad	0.1630%	2.3262%	-11.8960%	17.5115%
Public Bank Berhad	0.2292%	1.6671%	-10.6283%	8.5582%
Tenaga Nasional Berhad	0.2220%	2.4380%	-9.0909%	11.5619%
CIMB Group Holdings Berhad	0.1888%	3.0630%	-12.3424%	12.8874%
Axiata Group Berhad	0.1470%	3.1966%	-17.2095%	14.7541%
Hong Leong Bank Berhad	0.3084%	2.2565%	-9.7031%	19.1557%
Digi.com Berhad	0.1662%	2.2717%	-6.9620%	9.1346%
Nestle (M) Berhad	0.3448%	1.9178%	-9.6552%	15.1708%
Petronas Gas Berhad	0.1497%	2.1334%	-9.4005%	9.6610%
MISC Berhad	0.0074%	3.1925%	-17.7358%	19.3258%
Public Bank Group Berhad	0.1917%	2.4660%	-9.2786%	14.4291%
Kuala Lumpur Kepong Berhad	0.2248%	2.3995%	-10.4545%	10.6013%
Petronas Dagangan Berhad	0.2845%	2.6086%	-12.5744%	9.5238%
Hap Seng Consolidated Berhad	0.5867%	3.2197%	-14.4152%	14.3703%
Genting Berhad	0.1479%	3.2741%	-11.1111%	14.5540%
RHB Bank Berhad	0.1584%	2.8981%	-10.2543%	12.6420%
Hong Leong Financial Group Berhad	0.3458%	2.7031%	-8.8772%	13.1496%

Listed Companies in Malaysia and Singapore by Market Capitalization -
A Comparative Risk, Risk Diversification Benefits and Performance Analysis

Dialog Group Berhad	0.5451%	3.4853%	-19.3849%	20.0743%
Genting Malaysia Berhad	0.1153%	3.3301%	-21.1454%	13.6842%
Press Metal Aluminium Holdings Berhad	0.8635%	5.6440%	-20.7273%	27.1429%
Hartalega Holdings Berhad	0.7933%	3.7102%	-11.3523%	15.8192%
Sime Darby Berhad	0.1645%	2.8596%	-16.0000%	25.3394%
AMMB Holdings Berhad	0.1483%	2.6644%	-9.0909%	9.1429%
Top Glove Corporation	0.5486%	3.8985%	-19.2250%	15.0442%
Fraser and Neave Holdings Berhad	0.2854%	2.3644%	-12.2905%	11.9048%
Malaysia Airports Holdings Berhad	0.3226%	3.4657%	-13.8280%	18.2952%
YTL Corporation Berhad	0.0169%	3.0941%	-25.5639%	18.6367%
QL Resources Berhad	0.5262%	2.6463%	-9.1803%	11.4754%
Telekom Malaysia Berhad	0.2306%	2.5613%	-30.3191%	6.7766%
British American Tobacco (M) Berhad	0.1894%	2.4775%	-9.5692%	11.7293%
Average	0.2872%	2.8744%	-13.6422%	14.4019%
Market Portfolio : KLCI	0.1378%	1.3901%	-5.1009%	4.9768%
Risk Free Rate of Return	2.87%	2.87%	2.87%	2.87%

Source: Developed for the Research

Table 4.2 Summary Statistics for Listed Companies in Singapore

Listed Companies	Average weekly return (%)	Standard Deviation (%)	Minimum (%)	Maximum (%)
DBS Group	0.3239%	3.0218%	-11.9912%	25.2641%

Listed Companies in Malaysia and Singapore by Market Capitalization -
A Comparative Risk, Risk Diversification Benefits and Performance Analysis

Jardine Matheson Holdings Limited	0.3361%	3.1900%	-9.9188%	14.8102%
Jardine Strategic Holdings Limited	0.3133%	3.1716%	-8.4226%	14.7598%
Singapore Telecommunications Limited	0.0500%	2.4195%	-7.8385%	10.2362%
Singapore Telecommunications Limited	0.1475%	2.2954%	-8.2932%	11.3260%
Oversea-Chinese Banking Corporation Limited	0.2609%	2.6858%	-7.5892%	22.4479%
United Overseas Bank Limited	0.1783%	3.0221%	-11.7117%	28.1739%
Wilmar International Limited	0.0880%	3.2859%	-15.8537%	15.8491%
Thai Beverage Public Company Limited	0.2779%	3.5650%	-12.3288%	16.8539%
Hongkong Land Holdings Limited	0.2184%	3.2686%	-13.4913%	13.7241%
Capitaland Limited	0.1054%	3.7268%	-13.8697%	19.2118%
Jardine Cycle and Carriage Limited	0.3324%	4.0039%	-12.0273%	17.1173%
Dairy Farm International Holdings Limited	0.1778%	3.2278%	-10.8236%	13.3249%
Singapore Technologies Engineering Limited	0.1117%	2.5956%	-10.7034%	10.7623%
Great Eastern Holding Limited	0.2206%	2.3844%	-7.1910%	13.6218%
Keppel Corporation Limited	0.1621%	3.6451%	-16.5517%	18.4280%
Genting Singapore Limited	0.2396%	4.1530%	-13.1148%	18.8657%
Singapore Airlines Limited	0.0199%	2.5679%	-16.6667%	17.1965%
Capitaland Mall Trust	0.1460%	2.9813%	-13.4556%	18.7500%

Listed Companies in Malaysia and Singapore by Market Capitalization -
A Comparative Risk, Risk Diversification Benefits and Performance Analysis

Ascendas Real Estate Investment Trust	0.1802%	3.1159%	-17.5316%	15.6719%
Singapore Exchange Limited	0.1042%	2.8803%	-9.7812%	23.9234%
Capitaland Commercial Trust	0.2566%	3.6689%	-18.5435%	30.9911%
UOL Group Limited	0.2672%	3.4425%	-12.0735%	22.0721%
Olam International Limited	0.1564%	4.0948%	-16.4251%	18.9333%
Comfortdelgro Corporation Limited	0.2407%	3.5056%	-19.4305%	14.9573%
Mapletree Logistics Trust	0.2888%	2.6681%	-8.9661%	19.7650%
Yangzijiang Shipbuilding Holdings Limited	0.2841%	4.5637%	-14.2857%	26.0000%
Sats Limited	0.2773%	3.1435%	-14.6825%	14.6119%
Suntec Real Estate Investment Trust	0.2216%	3.2868%	-22.1557%	23.8095%
Venture Corporation Limited	0.3056%	3.5871%	-15.3816%	16.3684%
Average	0.2097%	3.2390%	-13.0367%	18.2609%
Market Portfolio : STI Index	0.1308%	2.1054%	-6.4902%	16.5564%
Risk Free Rate of Return	2.69%	2.69%	2.69%	2.69%

Source: Developed for the Research

The overall weekly average return of the 30 Malaysian Listed Companies are calculated at approximately 0.2872% and the average return of all Malaysia Listed Companies actually performed much better than the FTSE KLCI Index, which stands approximately at 0.1378%. However for the Singapore Listed Companies, their overall weekly average returns stand at 0.2097% which also generated excess return against the Singapore Strait Times Index (STI) average weekly return of approximately 0.1308%. As we can see, Malaysia Listed Companies with

0.2872% actually performed slightly better than Singapore Listed Companies 0.2097%, investors can generate slightly more return if invested in the stocks in Malaysia. In addition to that, Singapore listed companies yielded a lower rate of return than Malaysia Listed Companies is due to some of the listed companies in Singapore such as the Wilmar International Limited, Capitaland Limited, Singapore Technologies Engineering Limited, Singapore Airlines Limited, Singapore Exchange Limited underperformed against the Singapore Strait Time Index (STI).

Furthermore, Singapore listed companies has a higher standard deviation of approximately 3.2390% as compared to Malaysia listed companies at approximately 2.8744%. Thus, this indicates that Singapore Listed Companies had achieved a significantly higher average return volatility in which it exceeded the Singapore Strait Time Index's (STI) average return volatility of approximately 2.1054%. However, Malaysia Listed Companies also achieved a higher average return volatility compared to the market index of KLCI Index, which is approximately at 1.3901%, around one time lower than M-REITs' 2.8744%.

4.1.2 Analysis of Performance Measures

Table 4.3 : Sharpe Ratio, Treynor Ratio and Jensen Alpha of Malaysia Listed Companies

Listed Companies	Sharpe Ratio	Treynor Ratio	Jensen's Alpha
Malayan Banking Berhad	0.1934	0.0618	0.0045
Public Bank Berhad	0.6489	0.2369	-0.0066
Tenaga Nasional Berhad	0.3744	0.1557	-0.0010
CIMB Group Holdings Berhad	0.1356	0.0437	0.0144
Axiata Group Berhad	0.0610	0.0225	0.0104

Listed Companies in Malaysia and Singapore by Market Capitalization -
A Comparative Risk, Risk Diversification Benefits and Performance Analysis

Hong Leong Bank Berhad	0.8287	0.3898	-0.0048
Digi.com Berhad	0.2100	0.1028	-0.0069
Nestle (M) Berhad	1.3172	1.7209	-0.0189
Petronas Gas Berhad	0.1824	0.0914	-0.0087
MISC Berhad	-0.0934	-0.0549	-0.0051
Public Bank Group Berhad	0.2551	0.1152	-0.0031
Kuala Lumpur Kepong Berhad	0.3841	0.1774	-0.0039
Petronas Dagangan Berhad	0.5615	0.3426	-0.0073
Hap Seng Consolidated Berhad	2.8403	2.1388	-0.0043
Genting Berhad	0.0614	0.0215	0.0134
RHB Bank Berhad	0.1033	0.0399	0.0054
Hong Leong Financial Group Berhad	0.8196	0.3149	0.0053
Dialog Group Berhad	1.9547	0.8466	0.0117
Genting Malaysia Berhad	0.0125	0.0050	0.0086
Press Metal Aluminium Holdings Berhad	4.1806	2.3998	0.0226
Hartalega Holdings Berhad	7.0570	6.3250	-0.0028
Sime Darby Berhad	0.1549	0.0666	0.0018
AMMB Holdings Berhad	0.1121	0.0401	0.0050
Top Glove Corporation	1.7565	3.1792	-0.0139
Fraser and Neave Holdings Berhad	0.6358	0.6284	-0.0155
Malaysia Airports Holdings Berhad	0.4588	0.2618	0.0009
YTL Corporation Berhad	-0.0961	-0.0618	-0.0077
QL Resources Berhad	2.7160	1.8296	-0.0064
Telekom Malaysia Berhad	0.2190	0.1529	-0.0105
British American Tobacco (M) Berhad	0.0830	0.0535	-0.0102
Average of Malaysia's Listed	0.9376	0.7216	-0.0011

Listed Companies in Malaysia and Singapore by Market Capitalization -
A Comparative Risk, Risk Diversification Benefits and Performance Analysis

Companies			
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Source: Developed for the Research

Table 4.4 : Sharpe Ratio, Treynor Ratio and Jensen Alpha of Singapore Listed Companies

Listed Companies	Sharpe Ratio	Treynor Ratio	Jensen's Alpha
DBS Group	0.6079	0.2449	0.0068
Jardine Matheson Holdings Ltd	0.6040	0.5304	-0.0089
Jardine Strategic Holdings Ltd	0.5077	0.3849	-0.0068
Singapore Tel Ltd	-0.0359	-0.0204	-0.0091
Singapore Tel Ltd	0.1669	0.0925	-0.0086
Oversea-Chinese Banking Corporation Ltd	0.4534	0.1759	0.0038
United Overseas Bank Ltd	0.1474	0.0594	0.0054
Wilmar International Ltd	-0.0174	-0.0111	0.0050
Thai Beverage Public Company Ltd	0.2930	0.3864	-0.0131
Hongkong Land Holdings Ltd	0.2199	0.1386	-0.0036
Capitaland Ltd	-0.0085	-0.0038	0.0082
Jardine Cycle and Carriage Ltd	0.3769	0.2190	0.0044
Dairy Farm Intl' Holdings Ltd	0.1271	0.2940	-0.0194
Singapore Tech. Engineering Ltd	0.0583	0.0381	-0.0096
Great Eastern Holding Ltd	0.3715	0.2921	-0.0124
Keppel Corporation Ltd	0.0609	0.0273	0.0078
Genting Singapore Ltd	0.1423	0.0844	0.0040
Singapore Airlines Ltd	-0.0767	-0.0422	-0.0078
Capitaland Mall Trust	0.0935	0.0570	-0.0056
Ascendas Real Estate	0.1450	0.0987	-0.0065

Listed Companies in Malaysia and Singapore by Market Capitalization -
A Comparative Risk, Risk Diversification Benefits and Performance Analysis

Investment Trust			
Singapore Exchange Ltd	0.0241	0.0103	0.00150
Capitaland Commercial Trust	0.2392	0.1331	0.0024
UOL Group Ltd	0.2966	0.1365	0.0062
Olam International Ltd	0.0210	0.0124	0.0029
Comfortdelgro Corporation Ltd	0.2217	14.2020	-0.0243
Mapletree Logistics Trust	0.5612	0.3854	-0.0082
Yangzijiang Shipbuilding Holdings Ltd	0.1855	0.1045	0.0089
Sats Ltd	0.3930	0.3678	-0.0105
Suntec Real Estate Investment Trust	0.2135	0.1105	0.0011
Venture Corporation Ltd	0.3368	0.2593	-0.0049
Average of Singapore's Listed Companies	0.2243	0.6259	-0.0034

Source: Developed for the Research

There are three measures in total that are used to indicate the well being of the companies, which includes the Sharpe Ratio, Treynor Ratio as well as the Jensen's Alpha. Treynor Ratio, the Sharpe Ratio and Jensen's Alpha. First of all, according to Table 4.3 and Table 4.4 in the Sharpe Ratio aspect, Malaysia listed companies has a higher ratio at 0.9376 as compared to Singapore Listed Companies which their sharpe ratio is value at 0.2243. As observed, this shows that the overall performance of the listed companies in Malaysia is significantly better than listed companies in Malaysia due to its higher Sharpe Ratio. In Malaysia, the best performer would be Hartalega Holdings Berhad which contributing a value of 7.0570 in terms of the Sharpe ratio. Nevertheless, YTL Corporation Berhad underperformed against the overall average Sharpe ratio at -0.0961. But overall, there are only 2 companies who yielded a negative ratio return, which is the MISC Berhad and YTL Corporation Berhad. However, there are 4 out of the 30 Singapore Listed Companies showed negative values, which is Singapore Telecommunications Limited, Wilmar International Limited, Capitaland Limited

and Singapore Airlines Limited. Obviously, the listed companies in Malaysia is perform way better than the listed companies in Singapore. In addition to that, all of the listed companies in Singapore did not obtain a Sharpe Ratio that is more than one. In other words, it implies that company who obtained a less than zero value ($r_f > r_i$) did not perform well against the investments with risk free rate of return. The risk-free rate of return for Malaysia and Singapore are 2.87% and 2.69% respectively.

Moreover, the performance index can also be measured by using Treynor Ratio. Treynor Ratio is somehow similar to the Sharpe Ratio but compared against beta instead. As observed in Table 4.3 and 4.4, Malaysia Listed Companies are performing slightly better than Singapore listed companies, which both are valued at 0.7216 and 0.6259 respectively. In Malaysia, the listed companies with the highest Treynor Ratio is also Hartalega Holdings Berhad, standing at 6.3250, and there are two negative Treynor Ratio recorded. Besides that, Singapore has the 4 out 30 listed companies that generates a less than zero ratio, which signifies that the companies are underperformed against the market benchmark. According to the findings, it shows that Singapore lowest value of Treynor Ratio stands at negative -0.0422 by Singapore Airlines Limited, and the highest value stands at merely 14.2020 by Comfortdelgro Corporation Limited.

Finally, the last metrics in measuring performance index are the Jensen Alpha formula, which uses the (CAPM). According to the findings, both Malaysia & Singapore generated a negative Jensen Alpha. The listed companies in Malaysia have been generating an average Jensen Alpha of -0.0011, whereas the listed companies in Singapore's is valued at -0.0034. Obviously, Malaysia listed companies have yielded a greater Jensen Alpha ratio as compared to Singapore. In Malaysia context, there are 18 out of 30 listed companies yield a negative value which in other words shows that the rest (12) of the listed companies outperformed against the benchmark of KLCI Index. However in Singapore, there are 17 out of 30 listed companies that yielded a negative value of Jensen Alpha.

However, in comparison, Malaysia listed companies outperformed relatively. In sum, Malaysia Listed Companies performed much better against the benchmark of market portfolio compared to Singapore Listed Companies in terms of their performance which are measured by the Sharpe Ratio, Treynor Ratio, and Jensen Alpha Formula.

4.1.3 Analysis of Risk Features

Table 4.5 : Risk Features of Malaysian Listed Companies by Market Capitalization

Listed Companies	Beta	R-Square	Total Risk	Systematic Risk	Unsystematic Risk	Diversifiability Measure
Malayan Banking Berhad	1.1561	0.4773	5.4111	2.5827	2.8284	0.5227
Public Bank Berhad	0.7250	0.3655	2.7793	1.0159	1.7634	0.6345
Tenaga Nasional Berhad	0.9308	0.2817	5.9440	1.6742	4.2698	0.7183
CIMB Group Holdings Berhad	1.5078	0.4683	9.3820	4.3937	4.9884	0.5317
Axiata Group Berhad	1.3764	0.3583	10.2180	3.6613	6.5566	0.6417
Hong Leong Bank Berhad	0.7614	0.2200	5.0916	1.1204	3.9712	0.7799
Digi.com Berhad	0.7365	0.2031	5.1608	1.0483	4.1124	0.7969
Nestle (M) Berhad	0.2330	0.0285	3.6780	0.1049	3.5730	0.9715
Petronas Gas Berhad	0.6755	0.1938	4.5513	0.8818	3.6695	0.8062
MISC Berhad	0.8616	0.1408	10.1920	1.4346	8.7573	0.8592

Listed Companies in Malaysia and Singapore by Market Capitalization -
A Comparative Risk, Risk Diversification Benefits and Performance Analysis

Public Bank Group Berhad	0.8667	0.2387	6.0813	1.4515	4.6298	0.7613
Kuala Lumpur Kepong Berhad	0.8247	0.2283	5.7578	1.3143	4.4435	0.7717
Petronas Dagangan Berhad	0.6786	0.1308	6.8049	0.8899	5.9150	0.8692
Hap Seng Consolidated Berhad	0.6787	0.0859	10.3662	0.8903	9.4759	0.9141
Genting Berhad	1.4875	0.3989	10.7195	4.2758	6.4437	0.6011
RHB Bank Berhad	1.1916	0.3267	8.3990	2.7441	5.6548	0.6733
Hong Leong Financial Group Berhad	1.1170	0.3300	7.3067	2.4114	4.8954	0.6700
Dialog Group Berhad	1.2775	0.2596	12.1472	3.1538	8.9934	0.7404
Genting Malaysia Berhad	1.3246	0.3058	11.0892	3.3908	7.6984	0.6942
Press Metal Aluminium Holdings Berhad	1.5608	0.1478	31.8548	4.7077	27.1471	0.8522
Hartalega Holdings Berhad	0.6571	0.0606	13.7654	0.8345	12.9309	0.9394
Sime Darby Berhad	1.0559	0.2635	8.1775	2.1547	6.0228	0.7365
AMMB Holdings Berhad	1.1803	0.3792	7.0991	2.6921	4.4071	0.6208
Top Glove Corporation	0.3419	0.0149	15.1983	0.2259	14.9724	0.9851
Fraser and Neave Holdings Berhad	0.3797	0.0498	5.5904	0.2786	5.3118	0.9502
Malaysia Airports Holdings Berhad	0.9641	0.1495	12.0113	1.7963	10.2150	0.8504
YTL Corporation Berhad	0.7634	0.1176	9.5733	1.1261	8.4472	0.8824
QL Resources Berhad	0.6236	0.1073	7.0027	0.7515	6.2513	0.8927
Telekom Malaysia	0.5823	0.0999	6.5601	0.6552	5.9049	0.9001

Listed Companies in Malaysia and Singapore by Market Capitalization -
A Comparative Risk, Risk Diversification Benefits and Performance Analysis

Berhad						
British American Tobacco (M) Berhad	0.6094	0.1169	6.13825	0.7177	5.4205	0.8831
Average	0.9043	0.2183	8.8017	1.8127	6.9890	0.7817

Source: Developed for the Research

Table 4.6 : Risk Features of Singapore Listed Companies by Market Capitalization

Listed Companies	Beta	R - Square	Total Risk	Systematic Risk	Unsystematic Risk	Diversifiability Measure
DBS Group	1.1908	0.6884	9.1312	6.2859	2.8453	0.3116
Jardine Matheson Holdings Ltd	0.5727	0.1429	10.1760	1.4538	8.7222	0.8571
Jardine Strategic Holdings Ltd	0.6641	0.1944	10.0588	1.9550	8.1037	0.8056
Singapore Tel Ltd	0.6742	0.3442	5.8538	2.0148	3.8390	0.6558
Singapore Tel Ltd	0.6576	0.3638	5.2687	1.9167	3.3520	0.6362
Oversea-Chinese Banking Ltd	1.0990	0.7422	7.2133	5.3541	1.8592	0.2577
United Overseas Bank Ltd	1.1908	0.6882	9.1333	6.2853	2.8480	0.3118
Wilmar International Ltd	0.8212	0.2768	10.7972	2.9889	7.8083	0.7232
Thai Beverage Public Company Ltd	0.4291	0.0642	12.7090	0.8163	11.8927	0.9358
Hongkong Land Holdings Ltd	0.8235	0.2813	10.6836	3.0057	7.6780	0.7187
Capitaland Ltd	1.3318	0.5661	13.8891	7.8620	6.0270	0.4340
Jardine Cycle and	1.0938	0.3308	16.0316	5.3027	10.7289	0.6692

Listed Companies in Malaysia and Singapore by Market Capitalization -
A Comparative Risk, Risk Diversification Benefits and Performance Analysis

Carriage Ltd						
Dairy Farm International Holdings Ltd	0.2215	0.0209	10.4188	0.2174	10.2014	0.9791
Singapore Technologies Engineering Ltd	0.6305	0.2615	6.7371	1.7619	4.9751	0.7385
Great Eastern Holdings Ltd	0.4813	0.1806	5.6853	1.0267	4.6586	0.8194
Keppel Corporation Ltd	1.2913	0.5562	13.2871	7.3906	5.8964	0.4438
Genting Singapore Ltd	1.1118	0.3176 7	17.2473	5.4789	11.7684	0.6823
Singapore Airlines Ltd	0.7412	0.3693	6.5941	2.4354	4.1587	0.6307
Capitaland Mall Trust	0.7764	0.3006	8.8883	2.6723	6.2161	0.6993
Ascendas Real Estate Investment Trust	0.7265	0.2410	9.7089	2.3398	7.3691	0.7590
Singapore Exchange Ltd	1.0687	0.6102	8.2960	5.0626	3.2334	0.3897
Capitaland Commercial Trust	1.0466	0.3607	13.4609	4.8554	8.6056	0.6393
UOL Group Ltd	1.1875	0.5275	11.8508	6.2510	5.5998	0.4725
Olam International Ltd	1.1022	0.3211	16.7676	5.3847	11.3830	0.6789
Comfordelgro Corp. Ltd	0.0087	0.0000	12.2894	0.0003	12.2891	1.000
Mapletree Logistics Trust	0.6168	0.2369	7.1188	1.6862	5.4326	0.7631
Yangzijiang Shipbuilding Holdings Ltd	1.2868	0.3524	20.8275	7.3392	13.4883	0.6476
Sats Ltd	0.5333	0.1275	9.8818	1.2604	8.6215	0.8724
Suntec Real	1.0079	0.4168	10.8032	4.5031	6.3001	0.5832

Listed Companies in Malaysia and Singapore by Market Capitalization -
A Comparative Risk, Risk Diversification Benefits and Performance Analysis

Estate Investment Trust						
Venture Corp Ltd	0.7397	0.1885	12.8671	2.4256	10.4416	0.8115
Average	0.8376	0.3358	10.7892	3.5778	7.2114	0.6642

Source: Developed for the Research

According to Table 4.5 and Table 4.6, we can see that Malaysia Listed Companies have yielded an average beta value of 0.9043, which is greater as compared to Singapore Listed Companies who yielded a beta value of 0.8376. This explains there is a higher systematic risk beared by Malaysia Listed Companies, in other words, it is more volatile against the market movement. In addition to that, if there is a higher the beta value, there will be more the portfolio contributes towards the average systematic risk of the entire market. In conclusion, Singapore listed companies has a relatively lower systematic risk and total risk in relative to Malaysia Listed Companies and it can be speculated that Singapore listed companies can be considered as a defensive investment portfolio as it has lower risk and less susceptible to market movement changes whereas Malaysia Listed Companies is a speculative investment portfolio which it has much greater risk with higher degree of volatility against the market movement.

Beside that, Malaysia listed companies yielded an average R-squared value of 0.2183 which is lowered than Singapore Listed Companies who yielded an average R-squared value of 0.3358. On the other hand, this indicates that the listed companies in Malaysia is highly diversified as compared to the listed companies in Singapore. The unsystematic risk took up a vast majority of the total risk, in which it has a larger influencing factor over the listed companies in both countries. Moreover, the diversifiability measure of Malaysia listed companies and Singapore listed companies are valued at 0.7817 and 0.6642 respectively. As we can see that for Malaysia listed companies, most of the diversification value of Malaysia listed companies is valued at approximately 0.5227 and above. However, for the listed companies in Singapore, the least diversification value is valued at

0.2577, which is 2 times lower than the listed companies in Malaysia. It also shows that most Malaysia listed companies have high diversification value and has greater opportunities for diversification as compared to Singapore.

Moreover, the total risk for Singapore Listed Companies, it is calculated at approximately 10.789% and it is higher than the Malaysia Listed Companies which calculated at approximately 8.8017%. The total risk beared by the listed companies in Malaysia is slightly lower than the listed companies in Singapore. Therefore, concluded from the total risk value from both countries is that both markets take a different in terms of their total risk.

Furthermore, the systematic risk value recorded in Singapore Listed Companies and Malaysia Listed Companies are approximately 3.5778% and 1.8127% respectively. This shows that the Singapore Listed Companies hold almost 2 times larger risk compared to Malaysia Listed Companies. This is also means that there is a larger undiversifiable risk exist in most of the listed companies in Singapore.

In addition to that, total risk also include unsystematic risk which is a risk that inherent in an industry or companies that can be drastically reduced through the portfolio diversification. According to Table 4.5 and Table 4.6, we can clearly see that the figure of unsystematic risk is computed by subtracting the systematic risk from total risk. Hence, it computed a value for Malaysia Listed Companies is 6.9890 and for Singapore Listed Companies is 7.2114.

4.2 Conclusion

Table 4.7: Comparison of Risk Features between Malaysia Listed Companies and Singapore Listed Companies

Risk Features (Average)	Malaysia	Singapore
Weekly Return	0.2872%	0.2097%
Beta	0.9043	0.8376
R-Square	0.2183	0.3358
Total Risk	8.8017	10.7892
Systematic Risk	1.8127	3.5778
Unsystematic Risk	6.9890	7.2114
Diversifiability Measure	0.7817	0.6642

Source: Developed for the Research

In sum, the results of this study found that Malaysia listed companies outperformed Singapore listed companies in terms of average weekly return as shown in table 4.5, while also containing significantly lower systematic, unsystematic and total risk. Besides, based on the assessment of risk diversification benefits, the listed companies in Malaysia were found to have a higher Diversifiability Measure relative to the listed companies in Singapore. Therefore, this indicates there is more diversification opportunities and better diversification benefits in Malaysia Listed Companies.

Table 4.8: Comparison of Performance between Malaysia Listed Companies and
Singapore Listed Companies

Performance Ratio	Malaysia	Singapore
Sharpe Ratio	0.9376	0.22433
Treynor Ratio	0.7216	0.62592
Jensen's Alpha	-0.0011	-0.0034

Source: Developed for the Research

According to table 4.6, in terms of the investment performance assessment, Malaysia listed companies were found to be significantly outperform Singapore Listed Companies based on the Sharpe Ratio and Treynor Ratio performance measures. However for the Jensen's Alpha, although both countries yielded a negative value, but the Malaysia Listed Companies is still marginally performed better than the Singapore Listed Companies.

CHAPTER 5 : DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction

Finally, in Chapter 5 will discuss major findings of this research. Furthermore, the implications, limitations and recommendations will also be included in this Chapter. Appendices and references will also be attached at the end of the chapter in order to provide better insights on the sources of information.

5.1 Discussion of Major Findings

The purpose in conducting this research is to study, compare and analyze the overall performance and risk features between the listed companies in two distinctive countries: Malaysia and Singapore. A total of 10 years study was conducted from 1st January 2009 to the last date 31th December 2018. The risk-adjusted performance of the Malaysia listed companies and Singapore listed companies were assessed through the tried and true evaluation methods which is Sharpe Ratio, Jensen's Alpha and Treynor Ratio. Additionally, the study also compares the risk diversification benefits of both Malaysia listed companies and Singapore Listed Companies by utilizing the Diversifiability Measure.

According to the table tabulated in chapter 4, the result shown that between the two countries' listed companies, Malaysia Listed Companies performed better in terms of average weekly return as compared to Singapore Listed Companies. The overall average weekly return of Malaysia Listed Companies (0.2872) is generally higher than Singapore Listed Companies (0.2097). On top of that, in terms of the performance measure on Sharpe Ratio, Jensen's Alpha and Treynor Ratio, Malaysia Listed Companies visibly has performed better in three of those components, in other words, yielding positive results in Sharpe Ratio, Treynor Ratio and a negative Jensen Alpha. Therefore, Malaysia Listed Companies are the ideal investment portfolio to consider.

Malaysia Listed Companies generated an average rate of return that are even higher than the risk-free rate in Malaysia as compared to Singapore Listed Companies in Singapore. Due to its high Sharpe Ratio and Treynor Ratio as compared to the listed companies in Singapore, the listed companies in Malaysia have yielded a positive Sharpe Ratio and Treynor Ratio value. There are 4 out of 30 listed companies in Singapore recorded a less than zero value return for both Sharpe Ratio and Treynor Ratio, however there is only 2 out of 30 listed companies in Malaysia obtained a negative value. It is implied that there is more listed companies obtained lesser than expected returns as compared to the risk-free rate of returns against the volatility of the portfolio in Singapore. Besides that, listed companies with negative value implies that it did not perform well against the risk-free rate level over the market risk, which is also known as the beta. On the other hand, the positive ratios indicated that the companies are able to gain better returns in compared to risk free rate. Furthermore, according to Jensen's Alpha, it is observed that 18 Malaysia listed companies underperformed against the KLCI Index. However, there is 17 out of 30 listed companies in Singapore have negative alpha values which also underperformed against the STI index.

After comparing and contrasting the listed companies in both countries, the risk and risk diversification measurement result is tabulated data in the previous

chapter. The total risk of Singapore Listed Companies is substantially higher than Malaysia Listed Companies. In addition to that, a lower than 1 beta value is observed in the listed companies in both countries, which it also indicates that both countries' listed companies are less susceptible to market movement and relatively low risk. Moreover, as compared to Malaysia Listed Companies, Singapore Listed Companies have a higher value of R-squared, which ($0.3358 > 0.2183$). It indicates that Singapore Listed Companies are more diversified than Malaysia Listed Companies and suggest that Singapore's market has been diversified. Therefore, there is more diversified opportunities left open for Malaysia's market. Besides that, in measuring the risk diversification benefit, a greater value of diversifiability measure is shown in the listed companies in Malaysia as compared to Singapore. In other words, this indicates that Malaysia Listed Companies may have greater and better diversification benefits.

In a nutshell, based on the findings from this study, it suggest risk-averse investors to invest in the listed companies in Malaysia instead of the listed companies in Singapore due to its lower risk and higher diversifiability opportunities. Additionally, the unsystematic risk is also more diversifiable if the investors choose the listed companies in Malaysia for their portfolio. To conclude, investors should make decisions wisely and plan their investing strategies by evaluating the market trend. The evaluation can be done by using the financial analysis of the market movement.

The results of this research study and the major findings on the hypotheses testing have been tabulated and shown in Table 5.1 as follows :

Table 5.1: Major Findings on Hypotheses Testing

Listed Companies in Malaysia and Singapore by Market Capitalization -
A Comparative Risk, Risk Diversification Benefits and Performance Analysis

No	Hypotheses	Findings	Conclusion
1	<p>H₁: Malaysia Listed Companies' SR > Singapore Listed Companies' SR</p> <p>(Malaysia Listed Companies have higher Sharpe Ratio in comparison to Singapore Listed Companies)</p>	<p>Malaysia Listed Companies' SR (0.9376) > Singapore Listed Companies' SR (0.2243)</p>	Accept H ₁
2	<p>H₁: Malaysia Listed Companies' TR > Singapore Listed Companies TR</p> <p>(Malaysia Listed Companies have higher Treynor Ratio in comparison to Singapore Listed Companies)</p>	<p>Malaysia Listed Companies' TR (0.7216) > Singapore Listed Companies' TR (0.6259)</p>	Accept H ₁
3	<p>H₁: Malaysia Listed Companies' α_i > Singapore Listed Companies' α_i</p> <p>(Malaysia Listed Companies have higher Jensen's Alpha in comparison to Singapore Listed Companies)</p>	<p>Malaysia Listed Companies' α_i (-0.0011) > Singapore Listed Companies' α_i (-0.0034)</p>	Accept H ₁
4	<p>H₁: Malaysia Listed Companies' β < Singapore Listed Companies' β</p> <p>(Malaysia Listed Companies' have smaller Beta [market risk] in comparison to Singapore Listed Companies)</p>	<p>Malaysia Listed Companies' Beta (0.9043) > Singapore Listed Companies' Beta (0.8376)</p>	Do Not Accept H₁

Listed Companies in Malaysia and Singapore by Market Capitalization -
A Comparative Risk, Risk Diversification Benefits and Performance Analysis

5	H ₁ : Malaysia Listed Companies' R ² < Singapore Listed Companies' R ² (Malaysia Listed Companies' have smaller R-Square in comparison to Singapore Listed Companies)	Malaysia Listed Companies' R ² (0.2183) < Singapore Listed Companies' R ² (0.3358)	Accept H ₁
6	H ₁ : Malaysia Listed Companies' total risk < Singapore Listed Companies' total risk (Malaysia Listed Companies' have lower total risk in comparison to Singapore Listed Companies)	Malaysia Listed Companies' total risk (8.8017) < Singapore Listed Companies' total risk (10.7892)	Accept H ₁
7	H ₁ : Malaysia Listed Companies' systematic risk < Singapore Listed Companies' systematic risk (Malaysia Listed Companies' have lower systematic risk in comparison to Singapore Listed Companies)	Malaysia Listed Companies' systematic risk (1.8127) < Singapore Listed Companies' systematic risk (3.5778)	Accept H ₁
8	H ₁ : Malaysia Listed Companies' unsystematic risk < Singapore Listed Companies' unsystematic risk (Malaysia Listed Companies' have lower unsystematic risk in comparison to Singapore Listed Companies)	Malaysia Listed Companies' unsystematic risk (6.9890) < Singapore Listed Companies' unsystematic risk (7.2114)	Accept H ₁

Listed Companies in Malaysia and Singapore by Market Capitalization -
A Comparative Risk, Risk Diversification Benefits and Performance Analysis

9	<p>H₁: Malaysia Listed Companies' Rd > Singapore Listed Companies' Rd</p> <p>(Malaysia Listed Companies have greater risk diversification benefits in comparison to Singapore Listed Companies)</p>	<p>Malaysia Listed Companies' Rd (0.7817) > Singapore Listed Companies' Rd (0.6642)</p>	<p>Accept H₁</p>
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Source: Developed for the Research

As a whole, the findings of this study are generally found to be consistent with several key findings from the literature review. For instance, the study were supported by the research of Choo & Tan (2019) and Ng, Leong, Lau & Abdul Rahim (2018) as these prior research found that the Malaysia REITs are outperformed the REITs in Japan and Singapore in terms of the performance measures, risk features and risk diversification benefits. However, the research by Low & Johari (2014) and Choo & Tan (2019) it was found that there is a lower Beta (risk/volatility of stocks) for the investment in Malaysia. But the findings of this study found to be differ from the prior studies as the Beta in Malaysia listed companies is higher than the Beta in Singapore listed companies.

5.2 Implications of the Study

The purpose of this research study is to provide a comparative analysis for the overall performance and risk diversification benefits of the listed companies in Malaysia and Singapore. Likewise, it also allows investors to looking in depth into the transparency of both countries listed companies by understanding the risk it

would face. The quantitative evaluation is provided as it allows readers/investors to understand and compare the abilities and potential for both countries' listed companies in terms of their overall performance, risk features and risk diversification benefits.

According to the results shown in Chapter 4, the results show Malaysia Listed Companies is performing favourably in comparison to Singapore Listed Companies. At the same time it also implies that the Malaysia Listed Companies had a remarkable high performance and risk diversification benefits when compared against the Singapore Listed Companies in terms of its higher value of SR, TR and α_i . Similarly, the studies by Ng, Leong, Lau, & Abdul Rahim (2018) which also uses the same risk and performance measurement method, found that the M-REITs perform better than the S-REITs. In conclusion, the findings of this study also indicate that the listed companies in Singapore do indeed have lower diversification benefits as shown by their lower Diversifiability Measure. Consequently, investors who invested in the Singapore's equity market may experience the potential losses of their investment portfolio as the Singapore's unsystematic risk has lesser chances to be diversified away. This is similar to the findings by Choo and Tan (2019) found that J-REITs actually have a lower diversification benefit in comparison to M-REITs.

5.3 Limitations of the Study

There were some complications that occurred during the process of conducting this study. Besides, there were also difficulties and problems faced in this research which caused the research to be imperfect.

First and foremost, there may be data collection error while using the Bloomberg Terminals as some of the data are unavailable and incomplete. For instance, the most common problems is that some of the share prices is missing hence this may have distorted the findings in this study.

Besides, another limitations of the study include the topic of this research study. This research with the topic “Listed Companies in Malaysia and Singapore by market capitalization - A comparative risk and performance analysis” was a research that has not been done before. On top of that, this research is an exploratory research which the researcher has to venture into a land of unknown with limited amount of prior studies to refer with. There is also a limited previous journals that covers the comparison of listed companies by market capitalisation in both Malaysia and Singapore. Hence, the researcher has to seek prior research that are related to the topic and combine the separated journals to form my literature review. Besides, as we are able to seek advice from the research advisor, Dr David Ng, and took his prior studies as a base reference for the assignment, which ease the process of the research.

Moreover, though the research period is from 2009 to 2018, this give arise to another limitation which is those companies who are listed after year 2008 is not included. Therefore, the companies that has been chosen is based on their ranking by market capitalization as well as the year of that company listed. On top of that, since the share price of a listed company keeps changing with each passing second, the market cap will also fluctuates accordingly. Therefore, the ranking of the companies by market cap will also varied day by day and the data that we retrieved is on 29 May 2019. This may caused the data gathered are biased and result in inaccuracies in the research.

5.4 Recommendations for Future Research

As there are several limitations occurs in the research, therefore, in this subchapter, recommendations are suggested for future research.

In order to conduct this type of research, it includes the variables of this research topics on financial terms like systematic, unsystematic risk, diversifiability measure, beta, r-square, standard deviations, Sharpe Ratio, Treynor Ratio, and Jensen's Alpha. Hence, a thorough research on all these variables must be done before conducting the study. By understanding each of the term definitely ease the process during the development of the research and it also will help in conducting the discussion in the findings of the results. Researcher then may be able to provide better judgements and insights towards the analysis of the results in Chapter 4.

Besides that, like aforesaid, this sample of the research is chosen by determining those companies listed. If the company that is chosen is listed on Bursa Malaysia and Singapore Stock Exchange late in the research period (after January 2009) will cause a shortage in the sample size of the study period. Hence, future researchers is strongly recommended to visit the Bloomberg Terminal and choose the company with comprehensive and complete data. By doing so, the results of the analysis could be much complete and accurate.

5.5 Conclusion

In a nutshell, this research has studied and compared the performance, risk and risk diversification benefits between the Malaysia Listed Companies and Singapore Listed Companies by market capitalization. In order to determine the overall performance and risk diversification benefits of the listed companies in both countries, this study has reviewed the literature, collected the data, and applied the mathematical formulas to measure as shown in the Chapter 3. This chapter has then included the problem faced by the researchers as well as some suggestions for future researchers as advice and guidelines. In addition to that, it also make contributions on the information and insights about the listed companies for investors who intend to invest in Singapore and Malaysia.

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