THE RELATIONSHIPS BETWEEN INTERNAL CONTROL, ENTERPRISE RISK MANAGEMENT, AND FIRM PERFORMANCE IN CHINA

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2017

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THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

INSTITUTE OF GRADUATE STUDIES
UNIVERSITY OF MALAYA
KUALA LUMPUR

2017

UNIVERSITY OF MALAYA
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Registration/Matric No.: HHB120014
Name of Degree: Doctor of Philosophy
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The Relationships between Internal Control, Enterprise Risk Management, and Firm Performance in China

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ABSTRACT

The continuing economic uncertainties and unfortunate operational-risk events affecting firms around the world, a serious concern for both academics and industry commentators, have led to the development of risk management for organizations. In this context, the Internal Control Integrated Framework and the Enterprise Risk Management (ERM) Integrated Framework, which was proposed and developed by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), have become the criterion reference of risk management programs for all entities. However, the valuation implications of internal control and ERM are mostly limited to financial institutions in European and American countries. Investigations of internal control or ERM are substantial but the relationship between them has not been rigorously studied yet. Moreover, there is also a shortage of empirical studies which compare the effects of internal control and ERM on firm performance. In that regard, this research is specifically designed for the purpose of addressing the shortcomings. This purpose is accomplished by exploring the association between internal control and ERM based on the relative impacts on firm performance for publicly listed firms located in China. Further to that, this research also attempts to understand if firm-specific characteristics can moderate the relationships between internal control, ERM, and firm performance in China.

This research primarily uses quantitative data for the investigation. As has been anticipated, large firms were more likely to embrace internal control and ERM into their

organizations, thus the sample selected for participation was sourced from firms listed in the CSI 300 Index. According to the time schedule of landmark events relative to internal control and ERM in China, this research also limited the sources of data collected to the 2008－2014 period. Collection of data streams depended mainly on the Bloomberg Database and Wind Financial Terminal (WFT). Content analysis was designed for the purpose of mining the supplementary data which were extracted from public information listed in firms' financial statements and other media. To further evaluate the relationships between internal control, ERM, and firm performance, this research also adopted the Partial Least Squares Structural Equation Modeling (PLS-SEM) which included both the reflective and formative hierarchical construct models. Additionally, the Univariate Difference Test (UDT) was also used for comparing the differences of firm performance across internal control adoption, traditional risk management adoption, and ERM adoption so as to obtain a better understanding of the functions of risk management programs in firms listed in China.

Results gained from the PLS-SEM indicated that there was a positive relationship between internal control adoption and firm performance in China; further, that relationship was moderated by firm size, leverage, asset opacity, and financial slack. Results also revealed that ERM adoption was negatively associated with firm performance; further, that association was moderated by leverage and dividend yield. Results also showed that internal control adoption had a positive effect on ERM adoption for publicly listed firms in China. The moderating relationship of firm size, leverage, beta, international diversification, industrial diversification, and the squared

value of insider ownership on internal control and ERM adoptions were noted to be significant. Results gained from the UDT illustrated a slightly different scenario where the adoption of internal control, traditional risk management, and ERM was noted to be all negatively related to firm performance in publicly listed firms in China. This finding suggested that internal control may mitigate risk for firms which have already established a sound framework for risk management. However, the effect of internal control on risk management was noted to be insufficient while the improvement in firm performance was also seen to be limited. Due to the inverse relationship seen between ERM adoption and firm performance, it was deduced that embracing ERM cannot add value to firms listed in China. The test results gained from applying the COSO components in this research suggested that firms in China need to increase the effectiveness of ERM by optimizing their strategy decisions. Since internal control was significantly associated with ERM, it is deduced that ERM was the mediator that can act on the association between internal control and firm performance. These results are useful as they provide key insights to scholars and practitioners on how to establish efficient internal control and ERM frameworks as well as on how to enhance firm performance by applying effective enterprise risk management systems.

ABSTRAK

Ketidaktentuan ekonomi bersama dengan peristiwa-peristiwa risiko operasi malang pada firma disekitar dunia telah menyebabkan pengurusan risiko di peringkat perusahaan menjadi satu kebimbangan serius kepada para ahli akademik dan pengulas-pengulas industri. Dalam konteks ini, *Internal Control Integrated Framework* dan *Enterprise Risk Management (ERM) Integrated Framework*, satu model yang telah dicadangkan dan ditubuhkan oleh *Committee of Sponsoring Organizations Treadway Commission* (COSO) telah dijadikan sebagai kriteria rujukan program-program pengurusan risiko untuk semua entiti. Walau bagaimanapun, implikasi-implikasi penilaian kawalan dalaman dan ERM, kebanyakannya, dihadkan kepada institusi kewangan dalam negara Eropah dan negara Amerika Syarikat. Walaupun kajian kawalan dalaman (Internal Control) atau ERM cukup banyak, hubungan sebenar antara mereka belum ketara. Tambahan pula, tiada kajian yang dapat memberikan bukti empirikal yang kukuh dalam perbandingan di antara kesan kawalan dalaman dan ERM. Disebabkan itu, kajian in telah dibentukkan untuk tujuan menangani kekurangan bukti serta untuk tujuan menjelajah dan mengkaji kesan relatif diantara kawalan dalaman dan ERM ke atas prestasi kukuh bagi syarikat-syarikat awam yang tersenarai di negara Cina. Lebih dari itu, kajian ini akan cuba memahami apakah ciri-ciri khusus firma yang boleh menyederhanakan perhubungan di antara kawalan dalaman, ERM, dan prestasi kukuh dalam firm-firma di negara China.

Kajian ini, secara utama, menggunakan data quantitatif untuk menjalankan siasatan. Oleh sebab firma-firma besar di negara China telah menggunakan kawalan dalaman dan ERM, maka, sampel peserta telah dipilih dari firma yang tersenarai dalam Index CSI 300. Berdasarkan jadual masa peristiwa penting berbanding dengan kawalan dalaman dan ERM di China, kajian ini dihadkan kepada tempoh 2008－2014. Pungutan data utama dalam kajian ini bergantung pada sumber *Bloomberg Database* dan *Wind Financial Terminal* (WFT). Sebagai data tambahan, satu analisis kandungan juga direka bentukkan bagi tujuan mengesan maklumat tambahan yang didapati dari maklumat umum dan tersenarai dalam penyata kewangan firma dan media lain. Bagi menilai perhubungan antara kawalan dalaman, ERM, dan prestasi kukuh, kajian ini mengamalkan *Partial Least Squares Structural Equation Modeling* (PLS-SEM) yang merangkumi kedua-dua bentuk hierarki reflektif dan formatif. Kajian ini juga menggunakan *Univariate Difference Test* (UDT) untuk membanding perbezaan prestasi kukuh merentasi penerimaan kawalan dalaman, penerimaan pengurusan risiko tradisional, dan penerimaan ERM supaya dapat mendapatkan satu kefahaman yang lebih baik dan boleh digunakan oleh program-program pengurusan risiko dalam firma China.

Keputusan PLS-SEM menunjukkan bahawa terdapat satu hubungan positif diantara penerimaan kawalan dalaman dan prestasi kukuh dalam firma China dan hubungan itu diredakan oleh saiz firma, leveraj, kelegapan aset, dan keadaan kendur kewangan. Bagaimanapun, keputusan mendedahkan bahawa penerimaan ERM secara negatif dikaitkan dengan prestasi kukuh dan hubungan itu diredakan oleh leveraj dan kadar

hasil dividen. Sebagai tambahan, keputusan menyediakan bukti yang menunjukkan bahawa penerimaan kawalan dalaman mempunyai satu kesan yang positif keatas penerimaan ERM untuk firma China. Hubungan orang tengah, saiz firma, leveraj, beta, kepelbagaian antarabangsa, kepelbagaian perindustrian, dan nilai selaras pemilikan orang dalam di kawalan dalaman dan applikasi ERM ditunjukkan penting. Keputusan UDT mencadangkan sedikit perbezaan, oleh itu applikasi kawalan dalaman, pengurusan risiko tradisional, dan ERM diakui menjadi benar-benar berkaitan negatif dengan prestasi kukuh dalam firma China. Dapatan hasil kajian ini menunjukkan bahawa kawalan dalaman boleh mengurangkan risiko untuk firma-firma sekiranya terdapat penubuhan rangka kerja baik. Bagaimanapun, kesan kawalan dalaman keatas pengurusan risiko kurang dan peningkatan dalam prestasi kukuh didapati terhad. Disebabkan hubungan songsang didapati di antara penerimaan ERM dan prestasi kukuh, maka diputuskan bahawa ERM tidak boleh menambah nilai kepada firma China dalam keadaan semasa. Keputusan ujian komponen-komponen COSO mencadangkan bahawa firma di China boleh meningkatkan keberkesanan ERM dengan mengoptimumkan keputusan strategi. Sejak kawalan dalaman dikaitkan dengan nyata sekali dengan ERM, maka, ERM ialah pengantara yang boleh melaksanakan persatuan diantara kawalan dalaman dan prestasi kukuh. Keputusan ini memberi wawasan penting kepada sarjana dan pengamal tentang cara yang baik untuk menetapkan kawalan dalaman cekap dan rangka-rangka ERM serta meningkatkan prestasi kukuh melalui perusahaan pengurusan yang mengambil risiko dengan berkesan.

ACKNOWLEDGEMENTS

This thesis is a compilation of my life as a postgraduate student in Malaysia. From structuring the framework of this thesis to research and analysis, the whole process has been an invaluable experience. I have finally reached completion of this journey and I would now like to express my gratitude for this opportunity to study and research in Malaysia.

I would like to express my sincere heartfelt thanks to my late supervisor, Dr. Che Hashim Bin Hassan who offered me the opportunity to pursue an advanced academic pursuit at the University of Malaya, Kuala Lumpur, Malaysia. His enlightening guidance granted me a correct direction in my life and study.

I would also like to convey my deepest and most special appreciation to my current supervisor, Professor Dr. Che Ruhana Binti Isa, a respectable, responsible, and resourceful scholar who has provided me with constant help, support, and encouragement when I was experiencing a tough time. Without her impressive patience and kindness, I could not have completed my thesis. Her informative instruction and professional academic observation has enriched my knowledge at every stage of writing this thesis.

I would also like to extend my thanks to all the statistical experts who had helped me to develop the fundamental and essential academic competence in modeling and analyzing data. My sincere appreciation also goes to the staff and students from the

Institute of Graduate Studies and the Faculty of Business and Accountancy who participated in this study with amicable cooperation.

Last but not least, I owe my greatest debt of gratitude to my family members for their invaluable encouragement and spiritual support throughout my whole life.

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LIST OF SYMBOLS AND ABBREVIATIONS

ASBE		Accounting Standards for Business Enterprises
AICPA		American Institute of Certified Public Accountants
AVE		Average Variance Extracted
BHC		Bank Holding Company
CAA		China Auditing Administration
CBRC		China Banking Regulatory Commission
CBSEM		Covariance-Based Structural Equation Modeling
CEO		Chief Executive Officer
CIRC		China Insurance Regulatory Commission
CMOF		China Ministry of Finance
COSO		Committee of Sponsoring Organizations of the Treadway Commission
CRO		Chief Risk Officer
CSRC		China Securities Regulatory Commission
CUBIT		Control Objectives for Information Technology
EBIT		Earnings before Interest and Taxes
EICSC		Enterprise Internal Control Standard Committee
ERM		Enterprise Risk Management
ERMI		Enterprise Risk Management Index
FDT		Financial Distress Theory
GAAP		Generally Accepted Accounting Principles
GAAS		Generally Accepted Auditing Standards
GEM		Growth Enterprise Market
GOC		Government of China
IAS		Independent Auditing Standards
IAT		Information Asymmetry Theory
IC		Internal Control
IFRS		International Financial Reporting Standards

IIA		Institute of Internal Auditors
IOP		Input and Output
ISDA		International Swaps and Derivatives Association
KPI		Key Performance Indicator
M/B		Market-to-Book Ratio
MPT		Modern Portfolio Theory
NPV		Positive Net Present Value
OLS		Ordinary Least Squares
P/E		Price-to-Earnings Ratio
PLS		Partial Least Squares
PLS-SEM		Partial Least Squares Structural Equation Modeling
R^2		Coefficient of Determination
RMC		Risk Management Committee
ROA		Return on Assets Ratio
ROE		Return on Equity Ratio
ROS		Return on Sales Ratio
SAC		Systems Assurance and Control
SASAC		State-Owned Assets Supervision and Administration Commission
SDLC		System Development Life Cycle
SEM		Structural Equation Modeling
SFAS		Statement of Financial Accounting Standards
SME		Small and Medium Enterprise
SWOT		Strength, Weakness, Opportunities, And Threats
TobinsQ		Tobin's Q Ratio
TOM		Total Quality Management
TRM		Traditional Risk Management
UCT		Underinvestment Cost Theory
UDT		Univariate Difference Test
WFT		Wind Financial Terminal

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CHAPTER 1: INTRODUCTION

1.1 Introduction

The subprime mortgage crisis that happened in the United States of America (U.S.) during 2007-2008 has created a significant echo for the whole world until it rapidly brought on a global financial crisis, causing every major economic entity worldwide to bear the horrible impact of the influences. Due to the lack of risk evaluation procedures and poor risk management performance available at that time, many firms failed to survive the disaster (Yeoh, 2010). Ultimately, many firms went into bankruptcy. Today, as a result of the ever-present financial crises, stiff competition, and constant changing business environments, governance practices are being sought after. Scholars like Huber and Scheytt (2013) advocate that risk management could serve as the backbone of good governance practices (Miller, Kurunmäki, & O'Leary, 2008); the foundation for contemporary control and management (Bhimani, 2009; Gephart, Van Maanen, & Oberlechner, 2009); and both the cause of and possible settlement of recent financial turmoil (Millo & MacKenzie, 2009; Power, 2009). Evidence drawn from those previous studies indicate that risk management is growing in importance and firms need to include risk management as a major aspect of governance, especially in very trying times like economic downturns or financial crises (Fraser & Simkins, 2016).

It is generally believed that internal control can benefit firms in mitigating risks and improving governance effectiveness and efficiency (Jokipii, 2010). However, the action of internal control on risks cannot satisfy the expectation of modern business because managing risk has become the fundamental concern in a firm's dynamic daily

operations. Consequently, in 2004, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) expanded its internal control integrated framework by recommending the implementation of the famous enterprise risk management (ERM) integrated framework. Practiced by administrative officers, COSO's two frameworks have become the criterion reference of internal control and risk management for all entities, allowing firms to assess their performance and to determine their improvements. Today, ERM has already been regarded as a significant instrument for event identification, risk evaluation, and portfolio optimization (Fraser & Simkins, 2016). ERM generates benefits for governance and internal control which allow management to effectively deal with uncertainties, consequent risks, and opportunities as a result of promoting a firm's capacity to generate value. Indeed, the concept of ERM has gained attention from both academics and industry commentators after the financial crisis. The concept of ERM has steadily increased the interests of many in risk management. It is regularly thought to be of significant importance more than ever before (Bromiley, McShane, Nair, & Rustambekov, 2015).

The definition of ERM is abundant in existing literature (Chapman, 2003) but the most popular and widely accepted one is specified by COSO (2004) which defined it as,

> …a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives. (p. 2)

Looking at risk management from a different perspective, ERM can be viewed as a holistic, integrated, future-focused, and process-oriented approach that aims to help

firms to manage risks and opportunities with the intent of maximizing shareholder value as a whole (Verbano & Venturini, 2011). As opposed to the different types of risks noted in separate "silos", ERM allows firms to treat risks in an integrated manner. In this context, risk exposures within a firm are not controlled by different sectors independently. Instead, all risk management activities would be executed in respect of risk portfolio basis (Gordon et al., 2009). Consequently, ERM is presumed to improve the effectiveness and efficiency of different risk management departments. This is achieved by increasing the synergy effect of cooperation which will lead to a reduction in business cost through the elimination of time and expenditures for duplicated operations (Farrell & Gallagher, 2015). Compared with ERM, risk management is one component of internal control; it works for the purpose of mitigating risks to acceptable levels but not utilizing risks to achieve potential profits. As defined by COSO (2013) internal control is,

> …a process, effected by an entity's board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives relating to operations, reporting, and compliance. (p.3)

Therefore, the purpose of internal control is to manage the variety of control activities along with business activities so as to ensure that a firm's objectives can be successfully achieved. In addition, the role of risk management in internal control is to identify and assess risks that obstruct the achievement of objectives. Risk assessment is a pre-condition of control activities and it is used to protect the system from the significant impacts of changes within the firm. Nevertheless, the function of ERM in a firm is quite different from internal control. ERM is a discipline that can enable a firm to assess, control, exploit, finance, and monitor risks from all sources so as to improve

the firm's short-term and long-term values for shareholders. Due to the financial crisis, more uncertainties and risks have crept into the business environment. This has led to a volatile firm performance in more complicated manners. Compared to internal control, ERM is supposed to be an effective way to manage risk for the current situation (Bates, 2010).

ERM programs can benefit firms by providing them with competitive advantages and effective mechanisms which can be achieved through the establishment of integrated frameworks (Stroh, 2005). The hypothesized benefits of ERM are noted as enhancing firm performance through mitigating earnings and stock price volatility, decreasing external capital costs, improving capital efficiency, promoting coordination between different risk management activities, and creating risk awareness that accelerates valid strategic decision making in operations (Beasley, Pagach, & Warr, 2008; Hoyt & Liebenberg, 2011; Woods, 2007). Despite the vast investigations depicting the theoretical benefits of ERM, there are relatively few empirical studies in the literature that could say whether internal control can enhance firm performance from the same perspective of ERM. Since risk management is part of COSO's internal control framework and internal control is included in COSO's ERM framework, the relationship between internal control and ERM has not been well-established for it to be able to make a general statement. Due to this, there is an obvious requirement for further investigation to be conducted to illustrate the relationship between internal control, ERM, and firm performance which this research hopes to fill.

1.2 Background

With the advent of worldwide economy integration, capital market globalization, and industrial business mutuality, international trade and cross-border commerce are becoming more prominent than before. As a case in point, China has become one of the major economies of the world through the current rapid economic growth. Its huge market potential has inevitably, attracted a growing number of multinational firms which want to take a share of the economic profits. This puts additional pressures on domestic firms in facing the increasing categorical business risks, endogenous and exogenous environmental uncertainties, complicated market competition, and changing global economics. To date, no other area other than risk management has earned that much media attention after the global financial crisis (Lewis, 2008; Millo & MacKenzie, 2009; Power, 2009). However, in an increasingly intense and difficult global business environment, firms in China have been slow in taking risk avoidance as the relative cost of operations is fairly high. The unsatisfactory performance of domestic firms, thus far, has been attributed to their lack of readiness in taking advantage of risk management at the enterprise level (Xiaochen & Aijing, 2013; Xiaolun, 2010).

Evaluating business risks have become a key exercise for multinational firms because they have to make a tradeoff between development opportunities and relevant operational threats. However, the scenario becomes exceptionally precarious in information-poor emerging markets where isolated risk assessment with silo-based mechanisms is unavailable (Haley, 2003). Since there is a double-digit annual sales growth in most industrial markets in China, it appears that sometimes, it may be less

accurate to analyse published archival data. Moreover, governmental statistics, if analysed, may also provide misleading information to the public (Haley, 2003). Therefore, attempting to evaluate or even manage risk through an isolated instrument is no longer the appropriate approach for both the multinational and domestic firms operating in China today. In addition, the various kinds of risks that exist for firms do not occur individually thus firm performance of organizations cannot be evaluated based on one but multiple risks at the same time (Razali & Tahir, 2011). In that regard, there is an urgent demand for firms to apply an effective and efficient approach that can understand the interrelated nature of risk elements and thereby, be able to formulate risk management strategies so as to incorporate such relationships (Hagigi & Sivakumar, 2009).

Although ERM has long been practiced and investigated in Europe and America, it is still an unfamiliar concept and a prentice approach in the Asia region, especially for those firms with primary operations in developing countries. Most of these firms are still in the process of planning or constructing a method to establish enterprise-wide risk management but they have not completely established a perfect ERM framework for available implementation. China is an important economic entity in Asia as well as the world. Since the government of China has progressively been opening both domestic and international markets for all firms, it is necessary for shareholders of these firms to undertake more challenges and uncertainties than before. In this context, depending on internal control and silo-based risk management as a means of governance is no longer able to satisfy contemporary requirements for firms. Nonetheless, firms in China

undesirably, experience barriers in the process of carrying out ERM programs and they include barriers such as weakness of risk awareness, invalid recognition of risk management, discrepant comprehension of internal control, and confusion of relevant participators (Xiaochen & Aijing, 2013; Xiaolun, 2010). These barriers hinder application. Accordingly, the application of ERM programs for firms in China has been a stringent and difficult process. Nonetheless, this should not serve as a reason to rule out the need to conduct a study for providing an empirical investigation of enterprise-wide risk management in China for the application of ERM is essential and necessary.

1.3 Problem Statement

Due to the fact that capital markets are not sound and not well served in China, firms in China experience a lack for diversified instruments in implementing risk aversion (Qiya, 2000). Compared to European and American firms, firms in China lack the strength to endeavour risk capacity. Sometimes, they are even weaker than their competitors in the neighbouring countries of Asia. In 2009, the International Swaps and Derivatives Association (ISDA) made an inquiry to disclose the utilization of derivatives for the Fortune Global 500 firms. The results indicate that 94% of firms utilized financial derivatives as tools for risk management. Indeed, there were 29 Chinese firms on the list of Fortune Global 500 and 18 of them were regarded as among the 94% target firms. However, the usage rate of derivatives in China was much less than any other top 10 countries which had the minimum rate that is higher than 80% (as shown in Figure 1.1). In addition, China is seen to be unable to experience the

advantage even if it competed with some emerging countries (as shown in Figure 1.2).

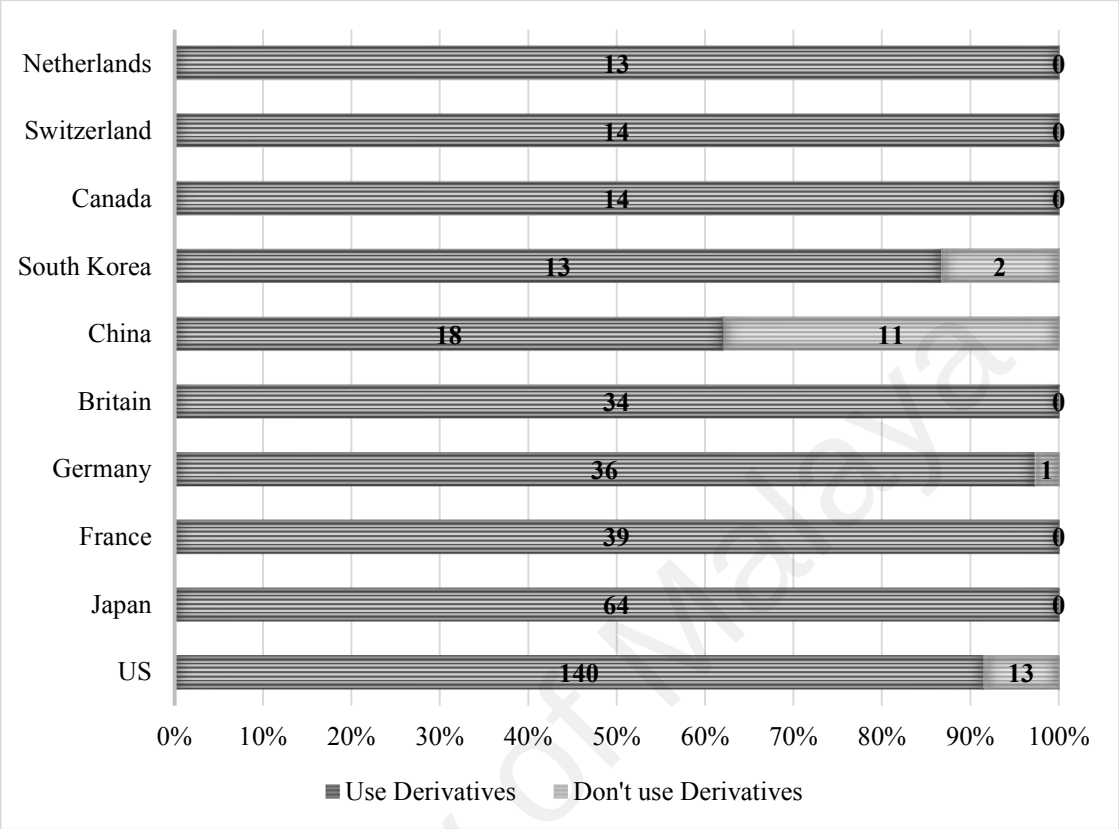

Figure 1.1: Highest Reported Use of Derivatives for Top 10 Countries

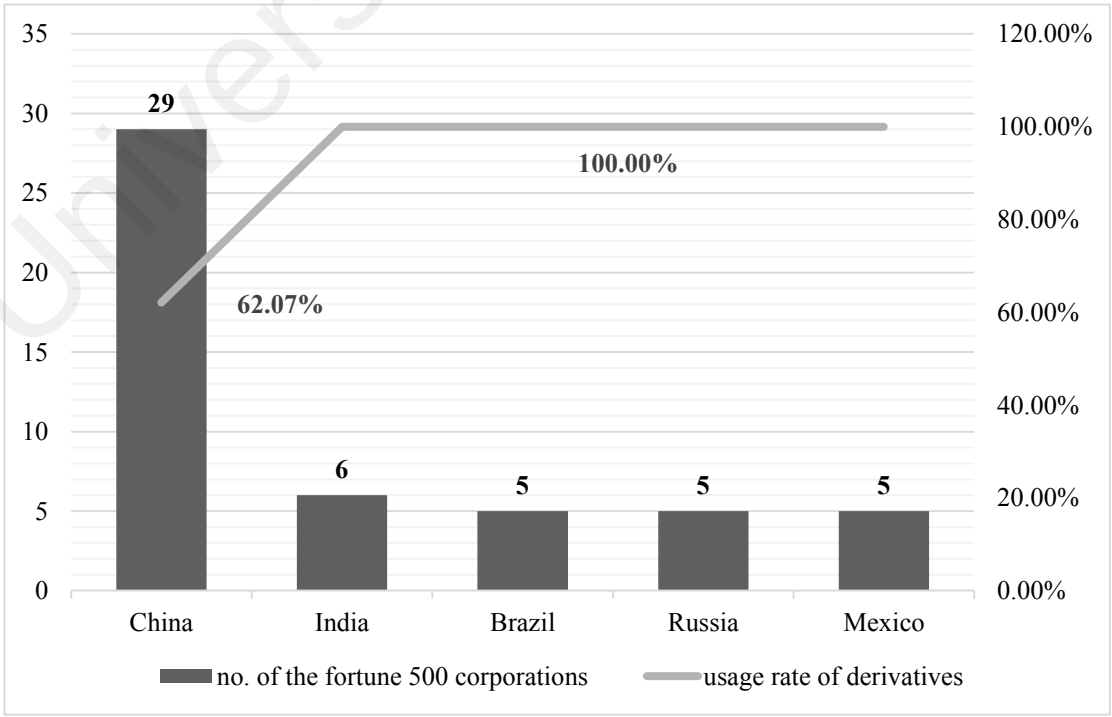

Figure 1.2: Usage Rate of Derivatives for Emerging Market Economics

The cognition of risk management at the enterprise level for most firms in China is not mature (Huancheng, Changqing, & Yonglai, 2010). Some firms concentrate mostly on apparent risks or they unilaterally focus on exogenous risks and overlook endogenous risks. In addition, these firms may cope with business risks in isolation but take no account of interactive risks, thereby, leading to a misunderstanding about ERM and then losing opportunities for further development. At present, many firms in China do not have the correct perspectives about the association between internal control and risk management (Bai, 2012). These firms tend to regard risks as force majeure and they make attempts to avoid all understanding and application, thus abandoning potential profits along with risks at the same time. Nevertheless, business today is no longer what it was and firms seem to come into contact with enterprise-wide risk management because this will make them more robust for survival from various future shocks.

Unlike developed countries, firms in China face many obstacles in implementations, either internal control or risk management as the relative concepts are being developed slowly. In 2008, the China Ministry of Finance (MOF), together with the China Securities Regulatory Commission (CSRC), the China Auditing Administration (CAA), the China Banking Regulatory Commission (CBRC), and the China Insurance Regulatory Commission (CIRC) issued the "Basic Standard for Enterprise Internal Control" and put these into force for all public-listed companies to follow. In 2013, the State-Owned Assets Supervision and Administration Commission (SASAC) in China issued a new policy which asserts that all stated-owned firms have to embrace ERM programs. Up to now, many firms in China have just established the integrated

framework of internal control and so the implementation of ERM would still be at its nascent stage, with several firms still facing deficiencies in their internal control frameworks. With this in mind, an empirical study looking at the effects of internal control and ERM in China is essential. It is believed that the results would benefit other firms in China or even other developing countries by serving as a reference for the successful adoption and engagement of internal control and ERM programs.

Despite the keen interest of researchers in ERM and the on-going research focusing on the characteristics of ERM activities, empirical evidence denoting the value implication of ERM is rather limited (Beasley, Clune, & Hermanson, 2005; Kleffner, Lee, & McGannon, 2003; Liebenberg & Hoyt, 2003). To date, ERM-related research and analyses have been limited to the U.S. and Bermudian financial institutions only (Arena, Arnaboldi, & Azzone, 2010; Farrell & Gallagher, 2015; Hoyt & Liebenberg, 2011). Investigations about internal control or ERM are substantial but the real relationship between these two concepts has not been rigorously demonstrated. Most research noted in literature explore the area of how to establish an integrated framework but not much focus has been given to the impact of internal control and ERM in practice. Few empirical studies compare these two programs' influences on firm performance, and there is no evidence to indicate whether risk management is a sub-division of internal control or vice versa.

Prior studies have demonstrated that some firm-specific characteristics such as firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta,

international diversification, industrial diversification, dividend yield, and insiders have significant effects on both ERM and firm performance (Farrell & Gallagher, 2015; McShane, Nair, & Rustambekov, 2011; Don Pagach & Warr, 2010). However, whether those firm-specific characteristics can also influence internal control has not been clearly discussed yet. This does not benefit firms' executive sponsors because a better understanding about the association between internal control and risk management can help firms to reduce the costs in enhancing firm performance. Thus, empirical investigation looking at the moderating effects of firm-specific characteristics on the relationships between internal control, ERM, and firm performance may become a new gap that warrants a further research.

1.4 Statement of Purpose and Research Questions

The main purpose of this research is to explore the relationship between internal control and ERM based on the concepts and their relative effects on firm performance in China. Therefore, the fundamental principles of internal control and ERM in the current research are interpreted according to the characteristics of the Chinese market and business environment which is aimed at making firms in China better at comprehending the difference and correlation about the role of internal control and ERM in their daily operations. This research also aims to assist management practitioners in China in establishing an effective and efficient framework for internal control and ERM in general. In addition, this research also hopes to contribute to the body of knowledge that is related to internal control and ERM that is specific to China. With that in mind, this research is designed to investigate the following research questions:

1. What is the relationship between internal control and firm performance?
2. What is the relationship between ERM and firm performance?
3. What is the relationship between internal control and ERM?
4. Do firm-specific characteristics (firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders) moderate the relationship between internal control and firm performance?
5. Do firm-specific characteristics (firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders) moderate the relationship between ERM and firm performance?
6. Do firm-specific characteristics (firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders) moderate the relationship between internal control and ERM?

As both internal control and ERM have long project durations, it is impossible for the benefits to be realized and achieved immediately within a firm's current operation. Moreover, it is difficult to track the actual costs and profits of these programs based on the firm's disclosures in China. According to recent research, different maturity stages of internal control and ERM will bring different impacts to a firm (Ballantyne, 2013; Farrell & Gallagher, 2015). Since the major data used in this research were collected from firms' financial reports, internal control reports, supervisory committee reports,

and other databases, the limitation of secondary data makes it unprocurable to compare the effects of internal control and ERM on firm performance in a separate maturity stage. Therefore, this research only focuses on the association of internal control and ERM with firm performance. In order to better investigate the relationship between internal control and ERM, this research applies risk management as an intermediate variable. It is supposed to be the common part between these two programs. Figure 1.3 describes the hypothesized association between internal control and ERM. It indicates that all firms in this research are divided into 4 groups. Indeed, classifying the firms into 4 groups makes an important contribution to solving the research problems.

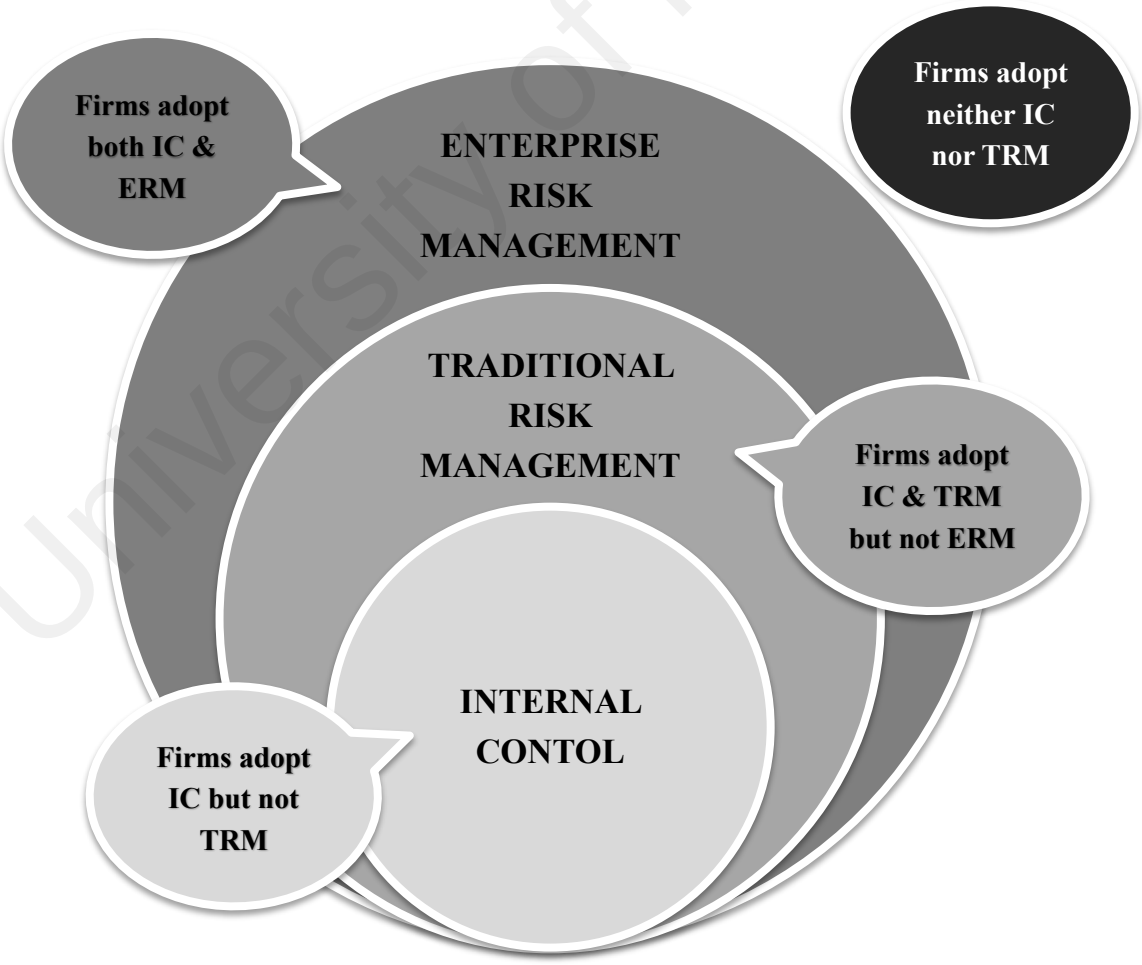

Figure 1.3: Relationships between Internal Control, Traditional Risk Management, and Enterprise Risk Management

1.5 Hypotheses

Consistent with the research purpose and problems developed above, the hypotheses formulated are shown in Figure 1.4:

H1: There is a positive relationship between internal control and firm performance.

H2: There is a positive relationship between ERM and firm performance.

H3: There is a positive relationship between internal control and ERM.

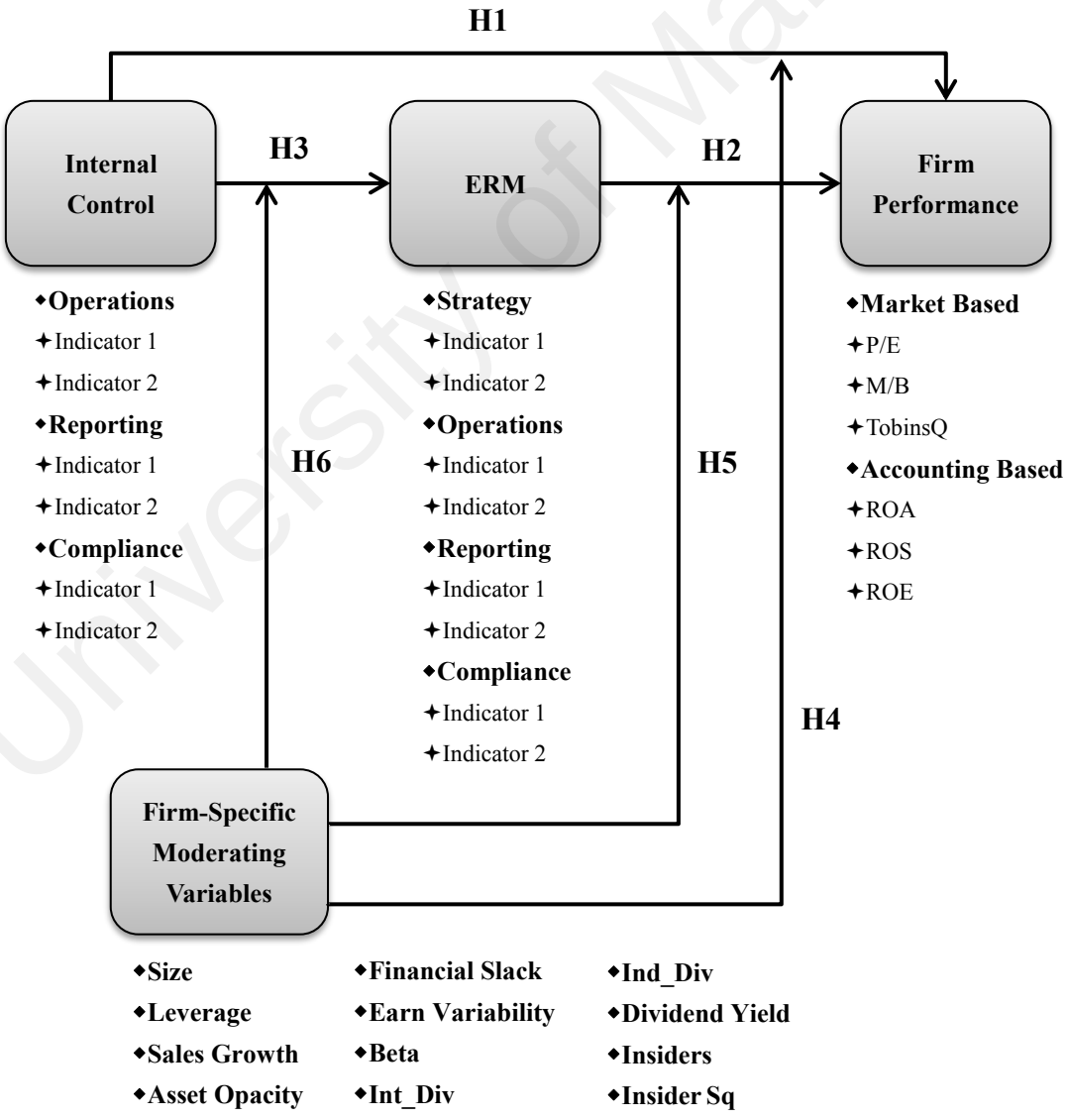

Figure 1.4: Conceptual Framework

H4: The relationship between internal control and firm performance is moderated by firm-specific characteristics (firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders).

H5: The relationship between ERM and firm performance is moderated by firm-specific characteristics (firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders).

H6: The relationship between internal control and ERM is moderated by firm-specific characteristics (firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders).

1.6 Conceptual Framework

The conceptual framework depicted in Figure 1.4 illustrates that this research uses firm performance as the dependent variable while internal control and ERM were chosen as independent variables as a means to test the association with firm performance. In this research, firm performance was evaluated through market-based and accounting-based metrics. This is because these two aspects of measurements have been widely accepted as valid performance indicators (Gentry & Shen, 2010). A general argument currently gaining momentum in the literature is that the adoption of effective internal control and ERM can add value to firms by enhancing their market and accounting performance (more details are discussed in Chapter Three). Therefore,

selecting valid measurements to estimate the effectiveness of internal control and ERM are of central importance in this research.

Since firms in China are not required to declare the status of engaging ERM, a detailed search for financial reports, internal control reports, supervisory committee reports, and other media for evidence of ERM was applied in this research (more details are discussed in Chapter Four). In the context of this research, the information of internal control could be directly obtained from auditor reports and managements' self-evaluation reports on internal control. Nonetheless, data disclosures are limited in China, thus it would be impossible to explore the maturity stage of internal control and ERM for all the firms selected for analysis. Accordingly, this research will evaluate internal control and ERM of firms in China by examining the objective achievement of a firm's framework. Following the approach first used by Gordon et al. (2009), this research cites an index to test the firm's ability to achieve the objectives by focusing on firm's strategy, operations, reporting, and compliance, all of which were selected from COSO's integrated internal control framework and ERM framework (more details are discussed in Chapter Four).

The notion of firm performance used in this research is an enduring emphasis noted in management studies (Hoopes, Madsen, & Walker, 2003). Theoretically, market-based metrics were used to indicate the long-term or future-focused firm performance of organizations while accounting-based metrics were adopted to reflect the short-term or past-focused firm performance of organizations (Hoskisson, Johnson, & Moesel, 1994).

However, since the establishment of effective internal control and ERM are long-run projects, it appears that relevant costs and benefits are also likely to happen but in a different period of time. To assess both the future and past influences which internal control and ERM were able to bring to a firm, this research thus adopts the Price-to-Earnings Ratio (P/E), Tobin's Q Ratio (TobinsQ), and Market-to-Book Ratio (M/B) as market-based key performance indicators whilst applying the Return on Assets Ratio (ROA), Return on Sales Ratio (ROS), and Return on Equity Ratio (ROE) as accounting-based key performance indicators. A detailed investigation about the market and accounting metrics is disclosed in Chapter Four.

In this research, the relationships between dependent and independent variables are examined for all measurements of internal control, ERM, and firm performance. As there are multiple metrics for each variable, it will be complicated and overloaded to test the relationships among constructs involved in the analysis. In order to fill the research gap stated above, this research thus adopts the Structural Equation Modeling (SEM) to estimate the paths linking internal control and firm performance, ERM and firm performance, and internal control and ERM. Having an advantage over observed variable modeling, the SEM can model latent variables which cannot be directly estimated by a single observed measure. In addition, the SEM can model measurement errors rather than assume measurements which have been made without errors (Finch & French, 2011). Compared to the covariance-based structural equation modeling (CBSEM), this research chooses the Partial least squares (PLS) as the statistical means for testing the structural equation models because it can handle both the reflective and

formative constructs in a complex SEM with abnormal-distributed data (Urbach & Ahlemann, 2010). The full SEM framework and methodology for the research are designed and discussed in Chapter Four.

According to prior studies, there are various variables that have significant effects on both ERM and firm performance (Farrell & Gallagher, 2015; McShane et al., 2011; Don Pagach & Warr, 2010). As both internal control and ERM act on firm risk in different extents, meanwhile, the objectives of operations, reporting, and compliance are applied in COSO's integrated internal control framework as well as the ERM framework. Therefore, these variables are supposed to have significant influences on the internal control in this research. All these variables were applied as the moderating variables while investigating the relationships between internal control, ERM, and firm performance. Identification of these moderating variables is important in research analysis because they can affect the direction and/or the strength of the relationship between predictors and criterion variables (Baron & Kenny, 1986). The moderating variables used in this research are firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders. The particular identification of each moderating variables is discussed in Chapter Four.

1.7 Significance and Contribution of the Research

Over the past decade, business frauds and failures of corporate governance have caused risk management to be the fundamental concern in management processes.

Indeed, both academics and industry commentators have shown an increasing interest in the practice of risk management at the enterprise level. To date, the basic argument in the literature is that the engagement of effective risk management programs should benefit firms. The proponents believe that the implementation of an integrative risk management framework can add value to firm performance (Beasley et al., 2008; Florio & Leoni, 2017; Hoyt & Liebenberg, 2011; Kleffner et al., 2003; Nocco & Stulz, 2006). However, the opponents argue that risk management was adopted mainly as a compliance exercise or an "after-the-fact inspection" for firms (Bowling & Rieger, 2005; Bruce, 2005; Collier, Berry, & Burke, 2007). Due to this discrepancy, there is an obvious need for additional empirical evidence to clarify the distinct contradiction on whether risk management enhances or reduces value for firms. In this context, this research makes several contributions to the literature of corporate risk management.

Firstly, this research expands upon the benefits of risk management programs by empirically examining the relationships between internal control, ERM, and firm performance from both the market and accounting-based perspectives. Since the well-known COSO ERM framework is closely related to the COSO internal control framework, this research attempts to add the internal control concept into the examination of the association between risk management and firm performance. Additionally, this research intends to track the status of the internal control and ERM by testing the program effectiveness. Following the approach created by Gordon et al. (2009), this research uses an index to investigate the achievement of internal control and ERM objectives. Accordingly, more achievements can reflect better effectiveness aided

by an efficient allocation. Furthermore, this research tests the moderating effects of firm-specific characteristics on the relationship between internal control and ERM based on the concepts discussed and its relative impacts on firm performance. The investigation provides key insights into the relationships between internal control, ERM, and firm performance. Finally, due to empirical investigations which have been limited to the U.S. and Bermudian financial institutions only (Farrell & Gallagher, 2015; Hoyt & Liebenberg, 2011), this research is designed to provide an initial evidence of the value implication of internal control and ERM for firms in China.

ERM is a relatively new concept in Asia in recent years and of late, there is insufficient empirical evidence to illustrate how it works for firms in China. As a matter of fact, introducing the concept of ERM actually increases the difficulty of the research because few research techniques and models can be used for reference. Compared to the European and American countries, information collection and judgment for target firms are even more difficult in China. Nevertheless, the challenge also serves as an opportunity for this research to make contributions to the relatively limited empirical studies. Through the insights gained from this research, firms in China would be given a reasonable standard guideline on how to establish effective internal control and ERM frameworks according to the special features of the Chinese market and commercial environment. Since the accomplishment of the ERM framework is pretty rare for most firms in China, an investigation into the correlation of internal control and ERM can assist firms in improving their existing internal control framework and engaging a more effective ERM framework. The research findings can enhance the understanding of the

board of directors in firms in China on how internal control and ERM concepts can be applied into practical operations and when implemented, how these risk management programs can help firms to mitigate the shocks firms experience from both internal and external markets during economic volatility.

1.8 Overview of Methodology

This research primarily uses quantitative data for the investigation. In order to assess the value of market-based measures and to observe public disclosures of internal control and ERM activities, firms in China that publicly traded at Shanghai and Shenzhen Stock Exchanges were selected as participant sample for this research. As both internal control and ERM require necessary financial ability and abundant human resources to support the implementation, not all firms are appropriate for these programs while making a tradeoff between costs and profits. Therefore, the sample of this research is limited to the firms in Shanghai Shenzhen CSI 300 Index because these 300 firms have covered 60%－70% of the whole market capitalizations. In addition, the industry weight distribution of the CSI 300 is approximately in accordance with the market of China, thus, the firms in the index can be deemed as indicators that can provide empirical evidence for all other firms in the market.

In order to evaluate the relationships between internal control, ERM, and firm performance, this research adopts the Partial Least Squares Structural Equation Modeling (PLS-SEM) which includes both the reflective and formative operationalization of constructs to express the relationships. For the purpose of better

understanding the functions of internal control and ERM in firms in China, the research also examines the effects of internal control and ERM on both market and accounting performance. The firms selected for this research were divided into 4 groups (as shown in Figure 1.3) and the Univariate Difference Test (UDT) was used to compare all variables across internal control, traditional risk management (TRM), and ERM so as to find evidence to support the results noted from the SEM. Due to the collaboration between the SEM and the UTD used in this research, it is deduced that the outcome gained from this research can provide a comprehensive estimation into understanding the relationships between internal control, ERM, and firm performance.

1.9 Limitations of the Research

Although this research would provide key insights into the value implication of both internal control and ERM for firms in China, there are several limitations. Firstly, the sample data used for this research were primarily collected from large firms that publicly traded at the Stock Exchange Listings in China. Therefore, the research findings generated may not be utilized as guidance for private, non-profit, and small or medium sized firms in China or in other regions. Secondly, the information about ERM was primarily dependent on self-reported data. According to the nature of self-reported data, it is possible that the participants manipulated the information for the purpose of avoiding risks. Despite the status of internal control which can be found in both the internal reports of the Supervisory Committee and the external reports of the Audit Firm, the government of China (GOC) does not force the third party to monitor and disclose the status of ERM for publically traded firms. Hence, the self-reported data can be

window-dressed and might not accurately reflect the real condition of ERM for the sample firms. Finally, this research also investigates the effectiveness of internal control and ERM based on an index method by testing the maturity of objectives related to COSO's frameworks. It conjectures that the program effectiveness is a good indicator for the implementation maturity. However, as the index method was only examined for ERM in prior studies (Gordon et al., 2009), it will thus be the first time to be used as a measurement of internal control in this research. In addition, there is no clear classification about the maturity level of the participating firms, so the research findings may not be applicable to firms as reference for carrying out internal control and ERM activities at different maturity stages.

1.10 Organization of the Thesis

This thesis is organized into six chapters. The topics for each chapter are as follows: Chapter One－Introduction, Chapter Two－Literature Review, Chapter Three－Theory and Hypotheses Development, Chapter Four－Research Methodology, Chapter Five－Results and Analysis, and Chapter Six－Discussion and Conclusion. As the first chapter, chapter one provides the introduction to the background of this research. It illustrates the basic argument regarding internal control and ERM's benefits to firm performance in the literature. The research purpose and the problem statement are described particularly in this part. In addition, the research significance and limitations are also mentioned in this chapter. Based on the research problems, the research methodology is briefly mentioned after the identified research questions and proposed key hypotheses are provided.

Chapter two presents a comprehensive review of the relevant literature that is pertinent to the core topic and subject of this research. It includes the evolution and meaning of enterprise control and risk as well as the definition of internal control and ERM concepts. In addition, this chapter also attempts to provide a clear introduction to the practical development of both internal control and ERM in China. The literature review is organized and presented in the following manner: (1) Introduction (2) Enterprise Control, (3) Internal Control Framework, (4)Determinants of Internal Control, (5) Internal Control in China, (6) Enterprise Risk, (7) ERM framework, (8) Determinants of ERM, (9) ERM in China, (10) Summary of Literature Review. Discussion of the literature review in chapter two will provide the foundations for the development of the theoretical, conceptual and practical framework.

Chapter three illustrates the theoretical context and development of hypotheses according to the underlying theories and empirical studies noted in the literature. It discusses the value implication of both internal control and ERM to firm performance through the theoretical arguments and empirical evidence. As there is very limited research on the relationship between internal control and ERM, this chapter explores this potential relationship by investigating the associations and distinctions among internal control, traditional risk management, and ERM. Additionally, the effects of firm-specific characteristics are also discussed in this chapter so as to better understand their moderations while investigating the relationships between internal control, ERM, and firm performance.

Chapter four describes the research framework and methodology of both data collection and analysis. It represents the development of the research design for empirical testing of various questions and hypotheses. In addition, the research variables, target population, and sample of participations are also discussed in this chapter. This is followed by the discussion of content analysis and analytic models which are used in respect of collecting and analysing research data. The last section of chapter three is dedicated to illustrating the reliability and validity of the designed framework by evaluating the measurement models and the structural models.

Chapter five highlights the key findings and implications of this research. The results of the hypotheses testing are provided followed by the interpretation of findings that relate to the relationships between internal control, ERM, and firm performance in China. For the purpose of verifying the adequacy of the modeling and the accuracy of the analysis based on the designed framework, a Univariate Difference Test (UDT) is also applied and examined at the end of this chapter. According to the results of the UDT, the findings and implications of the research can be analysed in a more exact manner.

Chapter six is the final chapter of the thesis. It includes the discussion and recommendation of the thesis to provide an overview by connecting all the conclusions that were presented from Chapter one to Chapter five. This chapter also interprets the findings related to the conceptual and practical framework of this research in a holistic manner. In addition, key limitations along with further recommendations for future

research are identified and disclosed. Following this a conclusion of the whole research is summarized at the end.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The focus of the literature review is on internal control and enterprise risk management (ERM) as both have been noted to be associated with firm performance. This literature review chapter aims to provide a specific discussion of the concepts, frameworks, and empirical evidence drawn from previous studies so as to explore the capacity of both internal control and ERM in promoting firm's value and performance. Based on the standard announcements made by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), the determinants of internal control and ERM are discussed in detail by focusing on the components in the integrated frameworks. With the scope of this research being restricted to the Chinese listed firms and markets in mainland China, the status of application and development of internal control and ERM in China is also introduced in this section.

These literature domains are then integrated into a review summary. It provides insights into the significant experiments and lessons learnt, the major gaps noted in literature, and the main trends noted in research. Finally, all components in the literature review are structured holistically in order to exploit the research opportunities for this study (as shown in Figure 2.1). The literature reviewed for the current research encompass information drawn from government regulations, industry principles, peer reviewed journal articles, academic papers, and professional books that were published from 1950 to 2017. Accordingly, this literature review contains discussion extracted from key publications of both scholars and practitioners who are made up of

government regulators, industry commentators, and academic experts. Although internal control and ERM are not new concepts in corporate governance, the specific studies of internal control and ERM were not significantly announced until the late 1990s.

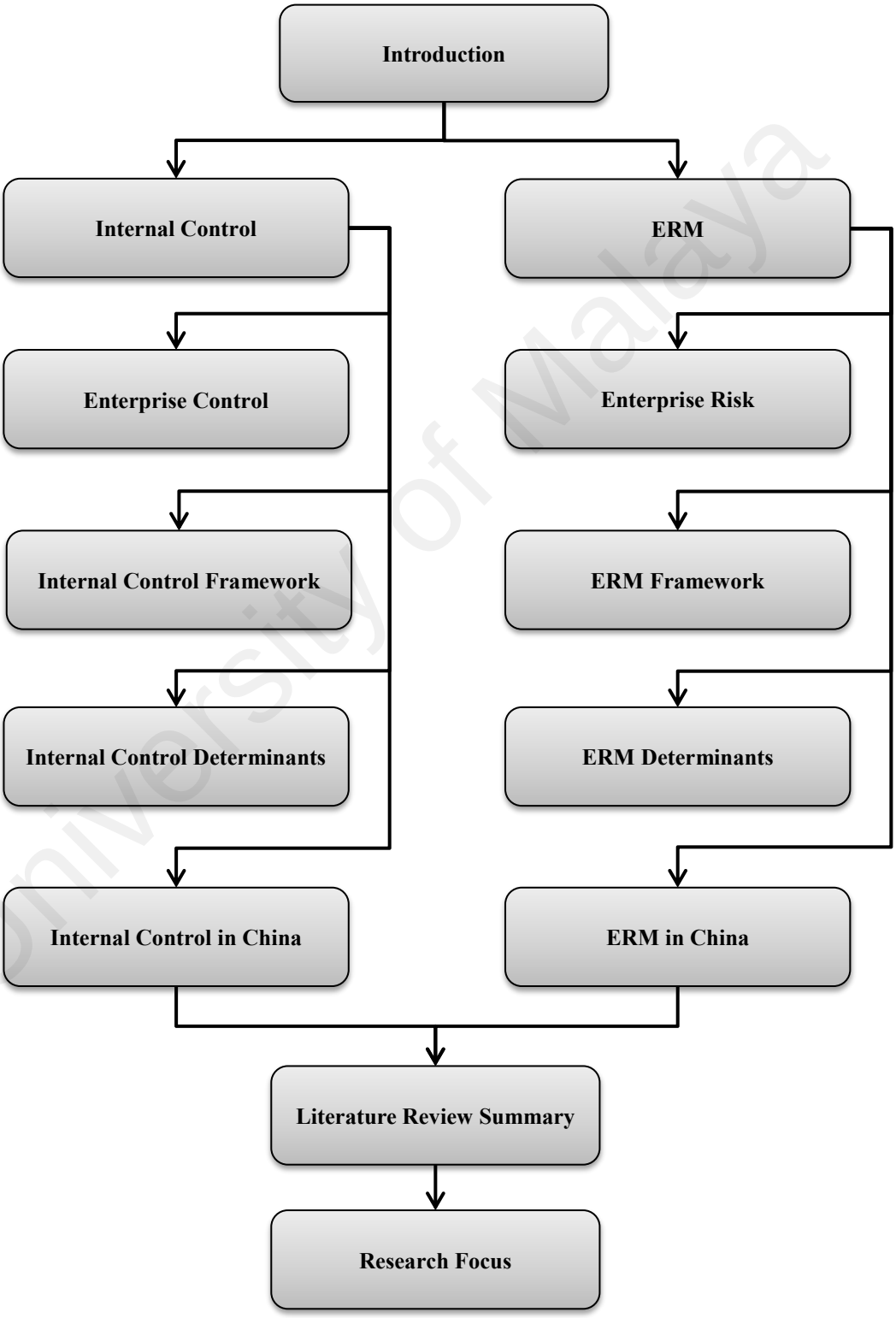

Figure 2.1: Map of Literature Review

2.2 Enterprise Internal Control

2.2.1 Enterprise Control

In a firm, the control activities are defined as management actions that can improve the possibility of achieving established goals (Institute of Internal Auditors, 1993). In most cases, enterprise control is designed to ensure that firms comply with the standards and disciplines in order to realize their targeted objectives. Therefore, procedures such as usage of sales and expenses budgets, padlocks on storage, service restriction for the internal network, guidance of security system, and even computer passwords are all control activities that come under a firm's daily operations (Hermanson & Hermanson, 1994). Along with the complex business environment and dynamic market requirements, firms are under heavy pressures and practitioners have to put more emphasis on control actions.

Through their summary of prior studies, Hermanson and Hermanson (1994) were able to come to the conclusion that five standpoints can be used to explain why control activities are necessary for modern businesses more than ever before. Firstly, firms are suffering from multitudinous liability derived from a wide range of sources nowadays. For instance, firms today need to deal with worker safety penalty, environmental pollution penalty, and lawsuit and litigation penalty. Secondly, enterprise control can guide employers to prevent violations. In this regard, control procedures can help to estimate the penalties imposed on firms. Thirdly, many firms look forward to against the increasing prevalence of fraud risk by establishing enterprise control. Fourthly, economic integration and business globalization can expose firms to more various risks

derived from the international market. Compared to domestic firms, transnational operations often occur hand-in-hand with cultural, economic, and political shocks which also lead to issues of differences. In addition to the various risks, international tax issues, joint ventures, and foreign exchange transactions also make the already complex trading process to become even harder. Finally, the adequate announcement of enterprise internal control systems is further required by the regulators.

Due to the growing expectations imposed by practitioners and regulators, an increasing number of academics and industry commentators are beginning to give attention to research looking at the innovation and supplement of enterprise control. Based on the action principle noted in the process of operation and management, it appears that control procedures have been categorized into different forms. Willits and Giuntini (1994) claim that there should be two kinds of control in the business which are preventive control and detective control. The preventive control is the feed-forward action that is taken before the event occurs. In contrast, the detective control is the feedback action that is used to handle the event for the purpose of minimising influence. According to empirical studies, the preventive control is mostly designed to include into areas of production (Morgan, 1992), strategic planning (Preble, 1992), and employee safety (Derksen, 1993). The detective control is normally used for less important risks and it can work to detect issues immediately after the events happened (Koelsch, 1993). Although the preventive control is much more costly than the detective control, nevertheless, it can take the advantage on time budget.

Another famous identification of enterprise control developed by the American Institute of Certified Public Accountants (AICPA) in 1972 is known as financial control and administrative control. It was believed that the financial control could act on the reliability of a firm's financial information while the administrative control could be related to the actions of employees and agents (Marchetti, 2005). These enterprise control activities, overall, provide the guarantee for practitioners to get accurate information about the agent's duties and performance. Consequently, the cooperating procedure between the administrative control and financial control can enhance the principals' efficiency in decision making.

Rapid economic development of markets and intensified competitions have caused the administration of firms to become more complex and the risks involved in operations to become more uncertain to predict. However, with the introduction of enterprise control, especially internal control, most principles are guaranteed standardised procedures in the way of firm management and firm operation (Rovcanin, Agic, & Mahmutovic, 2005). In order to supervise the major events faced by firms, internal control is regarded as an efficient instrument for securing the achievement of business objectives. Due to the globalization of markets, many new international risks, policies, and issues have caused firms to structure additional control systems. In this case, a new concept put forward for continuous practice within the organizational structure and business activities is the enterprise internal control system.

2.2.2 Internal Control Framework

One of the most widely accepted frameworks that used for enterprise internal control systems is the Internal Control Integrated Framework which proposed by Committee of Sponsoring Organizations of the Treadway Commission (COSO) in 1992. COSO claims that the internal control of a firm should include the principles, procedures, and policies which are formulated by the management. Internal control ought to guarantee that the firm's operations are efficient and effective, that its financial statements are accurate, and that the business activities are compliant with the laws and rules (Frazer, 2012). As a cornerstone in the history of business practice, both COSO and its internal control framework have made indelible contributions to the advancement of business administration.

During the period of the 1980s, corporate scandals caused a very bad impact on society and many people lost their jobs during that time (Marchetti, 2005). As required by both government and regulators, COSO was organized in 1985 as a measure to explore the multifarious factors that could lead to fraudulent financial reporting. It was also expected that this measure could be used to determine some possible recommendations and settlements to manage fraud issues (Kieso, Weygandt, & Warfield, 2013). In 1987, COSO first announced its findings of the corporate irregularities that had occurred within the period of the 1980s. It found that the occurrence of fraud was mainly caused by inappropriate internal control programs which can be found in environment control, opportunity control, financial statement control, compliance control and so forth (COSO, 1987). For the purpose of identifying the various factors

that could contribute to corporate fraud, in 1992, COSO proposed an internal control integrated framework which can benefit firms by better addressing the inappropriate internal control issues within the organization (Jackson, 2006). This framework then became a benchmark for all firms that embarked on building effective enterprise internal control systems (COSO, 1992).

COSO's internal control framework is holistic and it consists of five interrelated components, namely, control environment, risk assessment, control activities, information and communication, and monitoring (COSO, 1992). With the assistance of this holistic framework, the business activities and procedures of a firm can be protected against the fraudulent behaviours of both employers and employees. The five major components of internal control can also cooperate mutually to explore, prevent, and correct the faults and inaccuracies that might occur during the daily operations of the firm (COSO, 1992). In 2013, COSO updated its internal control framework and emphasized that internal control should be designed as a process of providing reasonable guarantee for the achievement of business objectives (Orchard & Hoag, 2014).

2.2.3 Determinants of Internal Control

As mentioned above, there are five components in the internal control framework proposed by COSO and all the components are normally presented as a pyramid as shown in Figure 2.2. Here, control environment is the foundation for all other components while risk assessment and control activities are the next two superstardoms

that sit at top of the base. This is then followed by information and communication which are accompanied by the other components. Monitoring is always listed at the peak of the pyramid (Hubbard, 2003).

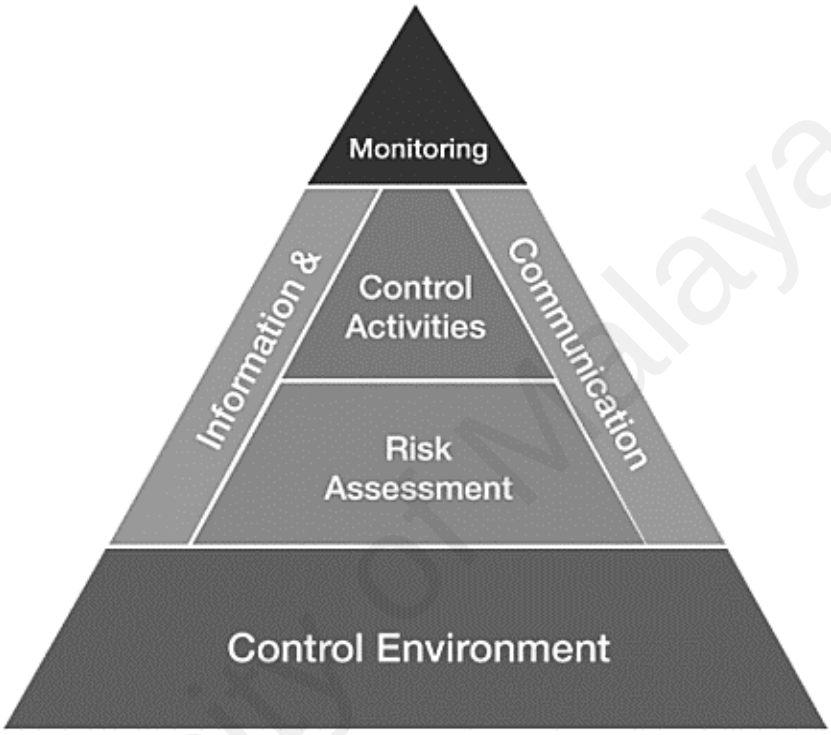

Figure 2.2: Pyramid of COSO's Internal Control Framework. Adapted from "Internal Control – Integrated Framework: Evaluation Tools," by COSO, p.2.

According to some empirical studies listed in the literature (Hubbard, 2003; Pickett & Pickett, 2005), the control environment includes both formal and informal control activities within a firm. The formal control contains the organizational structure and assignment of responsibilities and accountabilities whereas the informal control regards to integrity, commitment to competence, ethics, and management philosophy observed by the organization. Based on COSO's specification, it was stated that control environment is the base for all of the other components of control activities which can influence the control consciousness of both the employees and employers (Frazer, 2012).

When times are good and the firm has a nice performance in the stock market, the weaknesses of the control environment rarely appear. Nevertheless, when times become difficult, the control environment is under pressure because the board of directors may wish to keep firm performance consistently. Therefore, internal control is applicable when firms have good performance, and they become essential when firms' performance become tough (Hubbard, 2003).

No matter how large or small the firm is or whether it is private or public, the risk exposures that the firm faces from both the internal and external environments have to be assessed (Frazer, 2012). The establishment of business objectives is the precondition to risk assessment because risk assessment is the process of identifying and analysing all risks that are relevant to the achievement of the objectives (COSO, 1992). This assessment process also helps the firm to determine how the risk exposures should be managed (COSO, 1992). Normally, it is not feasible to identify and address all risks during risk assessments. Nonetheless, the most important risk that is related to the business objectives have to be measured so as to mitigate risks (Hubbard, 2003). Since the economic trends, operating environment, regulatory conditions, and industrial rules are in a constant process of change and development, it is therefore, necessary for the firm to evaluate and deal with the special risks associated with the variations (Frazer, 2012). In addition, a better comprehension about the business objectives can increase the management's ability to manage and control these risks (Hubbard, 2003).

The procedures and policies that firms establish to ensure the execution of management directives are regarded as control activities (Whittington & Delaney, 2009). These controls activities depend largely, on activities such as authorizations, reconciliations, verifications, approvals, safeguarding of assets, segregation of duties, and reviews of operating performance (Quall, 2004). According to Hubbard (2003), COSO's internal control framework is a matrix that is used to analyse activity-based risks, objectives, and control procedures. In addition to the risk control matrix, the analysis of accuracy, completeness, timeliness, and safeguarding of the input and output (IOP) of transactions; strength, weakness, opportunities, and threats (SWOT) analysis are all methods of establishing control activities (Hubbard, 2003). There are many completed models and frameworks that can be used for the control activities and they include the Total Quality Management (TOM), Control Objectives for Information Technology (CUBIT), System Development Life Cycle (SDLC), and Systems Assurance and Control (SAC) (Hubbard, 2003). COSO's internal control framework makes firms clear about the activities that are required to be controlled and it helps the management to determine the best ways to execute the directives (Hubbard, 2003). This framework ought to protect the firms against any activities that might eventually lead to their potential losses (Frazer, 2012).

As stated earlier, information and communication play an important part in COSO's internal control framework. In this regard, information is defined as the pertinent information that enables the employees to execute their responsibilities while communication is related to the free flow of information that emerges throughout all the

operating activities of a firm (Hubbard, 2003). Normally, the information system in a firm must be able to deal with both the internal activities and external events. It should provide accurate information for financial, operational, and compliance-related reporting, and should improve the efficiency and effectiveness of business decision making too (COSO, 1992). Together with the information system, communication must occur via a flow upwards, downwards, across, inside, and outside of the firm (Hubbard, 2003). Effective communication is significantly linked to employees, suppliers, customers, shareholders, and even regulators (Jackson, 2006). The role of information and communication is to make the employees understand their duties within the firm and to help them identify the relationship between individual activities and the work of others (Pickett & Pickett, 2005).

Since internal control is a dynamic management activity, it is necessary for the managers to evaluate the quality of the performance of the enterprise internal control system on a day-to-day basis (COSO, 1992). The monitoring component is related to the responsibility of the management. It is used to continuously and periodically estimate the effectiveness of the enterprise internal control system within a firm in order to ensure that control activities are working well (Amoruso, Brooks, & Riley, 2005). According to COSO's (1992) definition, monitoring is a process that combines ongoing monitoring activities with separate evaluations. The ongoing monitoring activities are usually supervised by auditors, managers, and other groups. These supervisory activities should be used for the purpose of correcting and revising the internal control deficiencies which are reported upwards to the board of directors and top management

(Hubbard, 2003). The frequency and scope of separate evaluations are primarily dependent on the level of risk assessment and effective monitoring procedures. Therefore, the monitoring component of COSO's internal control framework is often used as a measure to guarantee the feasibility of the other components such as control environment, risk assessment, control activities, and information and communication (Frazer, 2012).

2.2.4 Enterprise Internal Control in China

Though both the internal control mechanism and the relevant framework have been fully explored in developed countries, the evolution of enterprise internal control in China does not have a long history. Due to the instructions of the State Council, in July 2006, the China Ministry of Finance (CMOF), together with relevant government agencies, founded the Enterprise Internal Control Standard Committee (EICSC). This was developed with the intention of normalizing the internal control activities, strengthing the business administration, improving the risk aversion ability, and enhancing the capacity of sustainable development for Chinese firms. The main focus of the EICSC was aimed at formulating principles for enterprise internal control based on consistency, legibility, and universality. In June 2008, the CMOF, associated with the China Securities Regulatory Commission (CSRC), the China Auditing Administration (CAA), the China Banking Regulatory Commission (CBRC), and the China Insurance Regulatory Commission (CIRC), made the first announcement of the "Basic Standard for Enterprise Internal Control". This indicates that the internal control programs in China have formally entered the stage of standardisation and normalization (Weixing,

2010).

In April 2010, the government authorities additionally issued the “Guidelines for Assessment of Enterprise Internal Control”, "Implementation Guidelines for Enterprise Internal Control", "Guidelines for Audit of Enterprise Internal Control", and "Application Guidelines for Enterprise Internal Control". All of these were used to supervise and guide the establishment of the internal control mechanism within a firm. The basic standard and related guidelines quickly became the cornerstone for all firms in China because they provided the firms with the guidance and method to implement and evaluate the enterprise internal control system. Based on this, firms, whether large or medium-sized, were required to implement the effective and efficient self-evaluation process of internal control. At the same time, the employed audit firms were required to report the assessment results annually and to disclose the effectiveness of the enterprise internal control system over financial reporting (Yanhong & Qing, 2013). Beginning from January 2011, this criterion was noted to be appropriate for both domestic and multinational firms that traded publicly in the China market. Since January 2012, all firms listed on the Small and Medium Enterprise (SME) Board and Growth Enterprise Market (GEM) Board of Shanghai and Shenzhen Stock Exchanges have been encouraged to adopt the internal control standard.

The criterion of the basic standard and related guidelines is concerned mainly with the sound enterprise internal control system, the integrated risk management, and the combination of internal control and risk management. According to the basic standard

and related guidelines, the objectives of enterprise internal control for Chinese firms were determined as the compliance with laws and procedures, the security assurance for property, the reliability and integrity of reporting and information, the effective and efficient operations and management, and the accomplishment of development strategy (Yanhong & Qing, 2013). Based on observations, it seems clear that COSO's internal control integrated framework plays a significant role in formulating the enterprise internal control system for firms in China. Being defined as "a process, effected by an enterprise's board of directors, board of supervisors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives" (p. 3), the enterprise internal control in China not only includes the main components of the internal control integrated framework but also shows some characteristics of the primary elements noted in the ERM integrated framework (Yanhong & Qing, 2013).

2.3 Enterprise Risk Management

2.3.1 Enterprise Risk

In the economic market, every firm suffers all sorts of risks from both internal and external sources, and this is termed as enterprise risk. According to the definition of Committee of Sponsoring Organizations of the Treadway Commission (2013), enterprise risk is deemed to be the eventuality that an incident may break out and adversely affect the accomplishment of firm objectives. This is inevitable as all firms have to additionally face uncertainties which include both risks and opportunities, with the possibility of firm performance being slashed or enhanced. Due to the aim of maximizing shareholder values, it was noted that the most challenging thing towards

implementing good governance is determining how much uncertainty should be accepted within the risk appetite, for the sake of grasping the opportunity of profit potentials (COSO, 2004). As a result of this intention, a ubiquitous association between risk and uncertainty existed. According to the view of Knight (1921), risk and uncertainty are two separate concepts because risk is more related to explicit knowledge while uncertainty is based on implicit knowledge. However, the argument is that some part of uncertainty can translate into risk if they are estimated by a quantitative method whereas the remainder of uncertainty which cannot be quantitatively expressed is defined as true uncertainty (Knight, 1921). This view was echoed by March and Shapira (1987) who stated that making decisions under uncertainty is equivalent to taking risks.

According to the opinion of Figueira-de-Lemos, Johanson, and Vahlne (2011), if two separate things are combined with each other dependently, they are regarded as two sides of the same coin. This idea accurately explains the relation between risk and uncertainty because risk normally exists under uncertain conditions. Based on the concept of uncertainty, enterprise risk is divided into both the upside and downside aspects in real practice. The upside risk is defined as the uncertain likelihood of gains (opportunity for profit and growth) while the downside risk is the financial risk associated with losses (potential for loss). However, for firms, an upside risk that is lower than competitors' is also deemed as a relative downside risk. Firms often seek to avoid the downside risk because it usually brings multiple negative events and influences (Donald Pagach & Warr, 2007). Stulz (2003) recognizes this view and proposed that the potential valuation implications of risk management are acting on the

elimination and mitigation of downside risk such as the adverse effect of steep fall in cash flows. Therefore, the risk management programs which can decrease the possibility of downside risk will add positive net present value (NPV) to firms.

The definition of risk management has become broader over time. Indeed, the implication of risk management programs in today's context is not merely the utilization of derivatives. It also includes the composition of insurance portfolio, the constitution of reserve fund and credit line, the selection of capital structure, and the policies of operation (Hoyt & Liebenberg, 2011; Paape & Speklè, 2012; Pettit, 2011). Nevertheless, the major problem seen in risk management is the uneven understanding of the concept of risk in various branches of social science. Acharyya and Brady (2014) summarized that each branch of social science proposes a diverse primary aspect of analysis. For instance, the economists focus on risk behaviour in an individual-based perspective while the strategists, in contrast, are inclined towards concentrating on risk elements at a group level, and the sociologists view risk activities as a social phenomenon. In addition, there is further particular substrate under each primary aspect (Acharyya & Brady, 2014).

In the context of financial economics, risks are classified into three branches: mathematical finance, asset pricing models, and corporate finance (Whelan, Bowie, & Hibbert, 2002). In the mathematical finance, risk pricing is estimated with an applied discipline of computational finance. As a computational instrument, the Black-Scholes model is normally used to deal with risk and the price of option contracts under the

efficient market hypothesis. However, in the asset pricing models, risk is defined as the degree of security price fluctuations. The total risk of a firm comprises of systematic and unsystematic risks. According to the portfolio theory and the arbitrage pricing theory, the capital asset pricing model can be developed so as to evaluate the risk that is associated with asset pricing (Fama & French, 2004). Due to firms' concentration on capital structure, investment management, and dividend policy, the concept of risk is often treated as a necessary part of corporate appraisal, market diversification, and dividend discount. The emphasis made on financial economics suggests that firms measure the risk exposure of assets and liabilities but they do not try to identify the cause of the risk (Acharyya & Brady, 2014).

According to the literature of strategic management, the concept of risk is generally regarded as the uncertainty that was brought forward from both the environmental and organizational aspects. Environmental uncertainty is primarily caused by the instability of nature, society, regulation, and policy while organizational risk is often associated with strategic options (Acharyya & Brady, 2014). Due to the insufficient information of uncertainty, risks are thus, likely to affect firm performance with negative impacts. However, in strategic management, the definition of risk is treated as uncertainty within the organizational context which is based on a future-focused perspective (Miller, 1992). Under strategic management, risk is viewed as a gist of managerial judgment. Indeed, strategic risk is defined as the risk in relation to strategic options while making management decisions (March & Shapira, 1987). Different from the definition of risk in economics and finance, risk, seen from strategic management, is an obvious

interdisciplinary concept (Heli, Barney, & Reuer, 2003). The main concentration of strategic management is risk judgment and the relevant implications noted for the performance of the entire firm (Acharyya & Brady, 2014).

In the field of management decision-making, the concept of risk is associated with social phenomena. Based on the previous studies of risk management, it is noted that the behaviour of the economic agent within firms has been proposed as an essential element for decision-making in economics and strategic management (Acharyya & Brady, 2014). In their report, Paté-Cornell and Dillon (2006) provided a risk analysis of decision-making outside the field of economics and finance. This risk analysis utilized the concept of risk aversion to explore individual behaviours in the presence of uncertainty. The assumption of risk aversion then made valuable contributions to the development of the modern portfolio theory and the utility theory. In most real practices, the manager's decision does not mostly depend on mathematical probability and predicted value. The policy makers tend to combine social, political, and ethical dimensions with technical aspects in their decision-making process. From a different perspective, the experts mainly focus on the frequency and severity of a loss that is caused by a decision (Acharyya & Brady, 2014). The understanding of risk is different in many ways and yet it cannot be disassociated from the economic, personal, and social dimensions. As a result of this, it is thus, necessary to adopt a holistic view in treating the concept of risk when designing risk management mechanism at the enterprise level. In that regard, ERM has served as a widely accepted program which offers optimum assurance when dealing with enterpriser risk.

2.3.2 ERM Framework

The concept of ERM, like the term 'risk', also bears many definitions. Nonetheless, the most widely used representative of ERM is nonetheless, the one introduced by COSO which describes ERM as "a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives" (p. 2). Three critical characteristics are prominent in most ERM studies and they encompass the integrated span of all business lines, the comprehensive inclusion of overall enterprise risks, and the strategic alignment of entire corporate objectives. In the definition offered by COSO in 2004, ERM was conceptualized as a framework consisting of a three-dimensional cube (as shown in Figure 2.3). This framework was meant to serve the purpose of aligning and integrating a firm's strategic objectives, organizational structure, managerial reporting, and control procedures under one risk management mechanism (Tekathen & Dechow, 2013).

COSO prescribes that the ERM framework and the risk management activities of a firm should be made accountable by the organizational units in terms of hierarchical positions (Tekathen & Dechow, 2013). Under this criterion, each administrator must be responsible for the relevant higher level of position in an ERM system. Moreover, the chief risk officer (CRO) should be answerable to the whole ERM program and he/she should report directly to the chief executive officer (CEO) and the board of directors. According to COSO, the ERM framework requires every staff in the firm to know

his/her obligations and to be a part of the implementation procedure so as to meet corporate objectives. In addition, the COSO also proposed that managerial integration of business mission and vision should contribute to the optimum possibility of all personnels performing their respective responsibilities. For the purpose of operating risk management at the enterprise-level, firms have been suggested to build a compliance system that is intended to ensure that the related personnels act well in accordance with their defined roles and responsibilities (COSO, 2004). COSO further stressed that the development for the segregation of duties as well as ensuring checks and balances is an essential inducement for establishing an effective ERM framework.

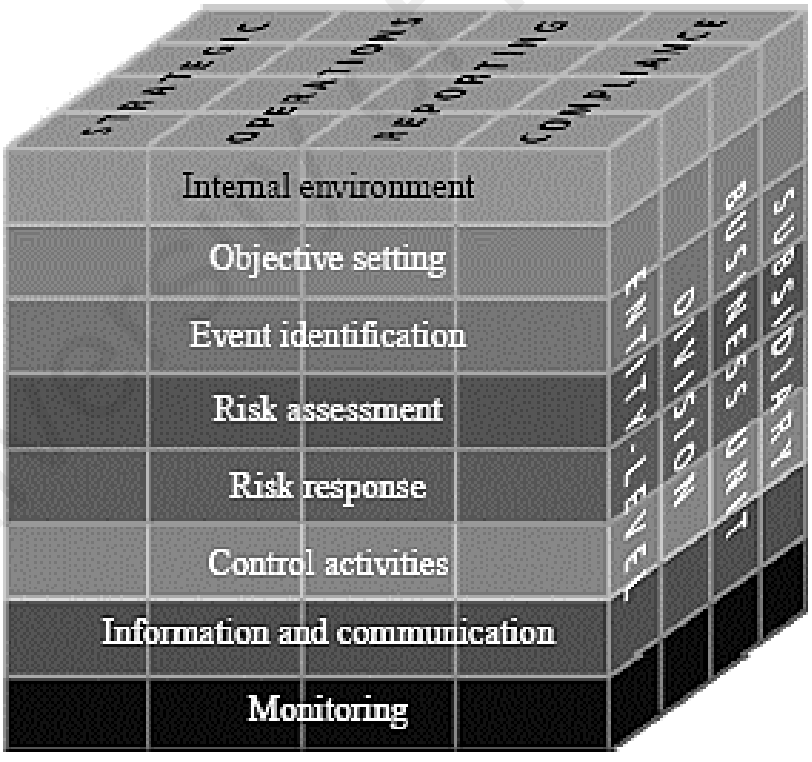

Figure 2.3: Objectives and Components of COSO's ERM Framework. Adapted from "Enterprise Risk Management – Integrated Framework," by COSO, 2004, p.5.

Since the risk management activities of firms have been detailedly formalized and disclosed in COSO's ERM framework, it is deduced that ERM, when implemented,

should bring benefits to firms and enhance their auditability (Power, 2009). As the main principle of ERM is to decentralize the enterprise-wide relationships into governable building blocks and traceable obligations, the firm's capacity of managerial integration is expected to improve. Based on the objective of strategy, operations, reporting, and compliance, COSO prescribed the ERM components into internal environment, objective setting, event identification, risk assessment, risk response, control activities, information and communication, and monitoring. In order to vividly express the objectives and components of the framework, COSO visualized ERM by combining managerial building blocks into a Rubik's Cube (as shown in Figure 2.4). This figure would enable consumer to imagine how accordance is shaped once all the cohesive building blocks have been moved into one union (Tekathen & Dechow, 2013). However, the downside of the ERM framework is that it could not be used to clarify the specific work of consistency. Additionally, the guidance to cascade units down through an organizational hierarchy is not explained accurately (Tekathen & Dechow, 2013). In this regard, COSO announced a project to update the 2004 ERM integrated framework in October 2014. This newer innovation is deemed to incorporate more formal sets of principles which should assist firms in adapting to the need to increase firm complexity, mitigate firm risk in the means to accomplish specified objectives, and to provide outsiders with reliable information, all of which can support a sound decision making process for policy makers.

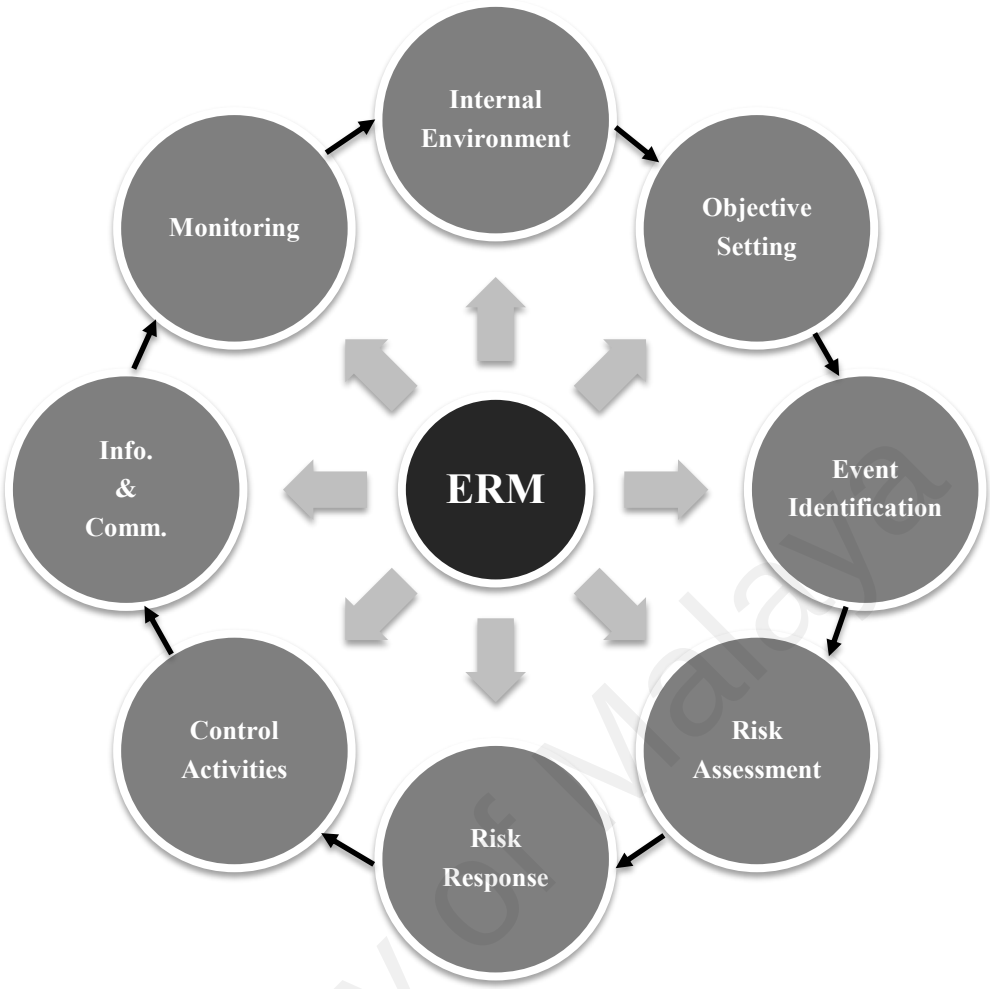

Figure 2.4: Process of COSO's ERM Framework Components

2.3.3 Determinants of Enterprise Risk Management

In 1985, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) was founded as a non-profit organization. Its main objective was to develop a governance-based guidance and framework for the purpose of deterring fraud, increasing internal control, and alleviating risk management. The main intention was of course, to identify, assess, and manage enterprise risk effectively and efficiently. In April 2004 COSO published the Enterprise Risk Management Integrated Framework. It was deemed to be one of its best-known models. Different from the highly quantitative risk metrics, the ERM framework provides a criterion for an integrated and holistic

approach that deals with enterprise risks through whole units within a firm (Mikes, 2009; Don Pagach & Warr, 2010). COSO states that risk management activities within the ERM framework is a dynamic process which encompasses eight correlated components that can assist a firm in managing risk and obtaining reliable assurance for objective achievements. The eight interrelated components are successively corresponded as internal environment, objective setting, event identification, risk assessment, risk response, control activities, information and communication, and monitoring (as shown in Figure 2.4).

It is generally accepted that the environment with uncertainties will bring both risks and opportunities to a firm at the same time. Indeed, the event identification component is utilized so as to distinguish those risks and opportunities (Caron et al., 2013). This procedure focus on recognising both the internal and external events which may obstruct the achievement of objectives that had been defined by the previous component (Arena et al., 2011). As O'Donnell (2005) argues, it is essential for organizational management to engage in event identification with the intention of developing and controlling the list of specific events. In addition, each event in the list should be evaluated for the probability and the potential influence in the procedure of risk assessment. Risk assessment is a process whereby a firm estimates the likelihood of events, the frequency of occurrences, and the severity of impacts, all of which are adverse to the accomplishment of the firm's objectives (Caron et al., 2013). After identifying and assessing the potential risks, the organizational management must select an appropriate risk response strategy (risk avoidance, sharing, reduction, and acceptance)

that is aligned with the firm's risk appetite (Arena et al., 2011). The adverse events that were identified during the risk assessment process can then be reflected on a risk map, which will be used to determine the risk response based on the various response options (Caron et al., 2013).

Control activities, as a component, is defined as policies, procedures, and controls that were designed to establish the opted risk response (Caron et al., 2013). Based on the risk appetite of the firm, control activities should be implemented for the sake of ensuring that risk responses are executed properly (O'Donnell, 2005). In order to make the ERM framework operate smoothly, the firm must carry out channels for disseminating information and communication. The component of control activities includes the mechanism that was used to ensure that accurate information and effective communication can be transmitted throughout the entire firm (Arena et al., 2011). The said mechanism allows the personnels or employees to fulfil their stated responsibilities and also enables the organizational management to have feedback about the extent to which the firm can achieve its established objectives (O'Donnell, 2005). Finally, in order to govern the whole process of risk management, a firm should continuously and periodically estimate the status and function of the individual components of ERM. Therefore, the monitoring program is required to track the performance of ongoing management activities and to inspect the effectiveness of the whole framework. Consequently, all the eight components are deemed as prerequisite conditions for achieving firm objectives across the different firm levels (Arena et al., 2011).

2.3.4 Enterprise Risk Management in China

The concept of ERM as a risk management mechanism has been generally accepted in China, especially by the fast-developing insurance industry (Qiuying, Yue, Ojiako, Marshall, & Chipulu, 2014). In this context, an effective and holistic framework of risk management that runs across the entire business is much more important for insurers when conducting dynamic risk in complex environments. Due to the tendency of recovery and growth in the financial sector, since the second half of 2009, there are strong signs which indicate that insurance companies in China should be realigning their operations so as to be able to branch out their businesses into other areas of financial services such as banking, trust, and asset management. In 2009, the China Insurance Regulatory Commission (CIRC) announced the guidelines for ERM implementation for Chinese life insurance markets. Following this is the announcement of a more standardized framework in 2012 for assessing the ERM implementation within insurance industry (Qiuying et al., 2014). Ever since the financial crisis broke out in late 2008, regulators in China have been more concerned about ERM. In the aftermath of the financial crisis, both investors and rating agencies were beginning to request for the ERM implementation within their concerned firms, on a continuous basis. Accordingly, the function of risk management is not only limited to protecting firms against the downside risks; it can also benefit executives with profits from the upside opportunities.

Known as one of the largest audit, tax, and advisory firms in the world, the KPMG conducted a survey of senior executives of insurance companies operating in mainland

China and Hong Kong in 2009. This survey investigated the insurer's awareness of ERM, the responsibility for implementing the ERM, the various policies and models available, and the expectations for future risk management initiatives. The results showed that majority of the executives in the survey were familiar with the concept of ERM. The results also indicated that their attitudes towards ERM were evolving rapidly and it was found that 73% of the firms surveyed had established a separate department or cross functional committee to govern enterprise risks. However, amongst the insurers embracing ERM, approximately half of the respondents did not have a specific statement of risk appetite. This shows an uneven trend for according to COSO's framework, risk appetite is the key aspect of ERM because it enables firms to successfully communicate their internal and external sources of risks, which can result in capturing opportunity as well as guarding against difficulties and losses. Indeed, the survey also indicated that insurance companies in mainland China and Hong Kong preferred to choose risk appetite and tolerance (44%), risk assessment (28%), risk management framework (12%), and risk monitoring and reporting (12%) as their further works on risk management. All these signs explicitly demonstrate that insurers in China were aware that ERM is a process of evolution.

In addition to the above findings, the KPMG also found that 43% of the respondents had engaged a CRO to be accountable for ERM. This finding represents a rising tendency that is in line with the status of western insurers in recent years. Nevertheless, the survey also indicated that 19% of the insurance companies in mainland China and Hong Kong had just adopted the compliance function so as to be

responsible for ERM. Furthermore, over 80% of the respondents surveyed also claim that the boards spent less than 30% of their time on risk and capital management activities. This trend is a little disturbing; although most large firms have established the risk management programs, they were not putting in sufficient investments in treading risk issues in a comprehensive manner. The KPMG attributed this phenomenon to the influence of government rules and regulations in China. In 2007, the CIRC announced the principles of a sound risk management framework that identifies the assessment of risk categories and the constitution of risk controls. In 2008, the CIRC supplemented a solvency regulation for insurance companies and set requirements for implementing a risk-based monitoring framework. In 2006, the State-owned Assets Supervision and Administration Commission (SASAC) set out the requirements of risk management for state-owned firms in China. In 2012, the SASAC announced that all state-owned firms in China need to comprehensively implement the ERM programs. As a result, some Chinese firms were forced to establish the ERM programs in their aim to fulfil the compliance purpose. This, incidentally, weakens the firm's capacity to achieve the relevant benefits of the ERM activities.

The KPMG had stated that many firms in China have high expectations of ERM. However, the biggest challenge in implementing ERM is in reconciling the level of detail and complexity required and developing the ERM capabilities with staff capacity. Further, the dynamic market environment and the massive growth potential in China even crated more challenges for firms to overcome before implementing an effective and integrated ERM framework. In order to overcome these challenges, the KPMG

suggested that Chinese firms should further develop a strong foundation of risk assessment, risk appetite and tolerance, and integration of management strategy with economic capital modeling through the establishment of a robust ERM framework. It was noted that after enhancing the ERM capabilities, firms would be better able to obtain valuable competitive advantages which can result in heightened risk awareness, efficient capital management, and effective business planning and decision-making. With the ERM implementation, insurance companies in China have now realized the benefits of ERM. Both the empirical and practical experiences of Chinese insurers can become a reference or guideline for firms in other sectors or in other Asia Pacific regions when embarking on their major ERM activities.

2.4 Summary

This chapter illuminates a particular literature review noting the concepts, frameworks, and benefits of internal control and ERM. The chapter also discussed why COSO's integrated internal control and ERM frameworks have become benchmarks and references for all firms which embark on building effective administrative systems. Its benefits to firms in enhancing their capacity of risk management and control were also highlighted. The literature reviewed in this chapter defined the determinants of internal control and ERM in terms of framework components. It was also noted that although the frameworks of internal control and ERM share the same objectives (operating, reporting, compliance) and components (risk assessment, control activities, information & communication, monitoring), the scope of the ERM is more extensive. It was further noted in the review of literature that the function of ERM is fully characterized by the

combination of internal control and risk management. Accordingly, it was stated that firms need to have complete a sound enterprise internal control system if they plan to implement an effective ERM program.

CHAPTER 3: THEORY AND HYPOTHESES DEVELOPMENT

3.1 Introduction

Recently, worldwide economies, global markets, and industrial environments are experiencing a change of becoming more unpredictable and more complicated than ever before. In addition to that, a growing number of firms, struggling to survive the economic turbulence, are also preparing themselves for the establishment of a relevant system and framework of risk management into their organizations so as to be ready for the forthcoming commercial war and crisis. In this regard, it is very important to clarify the correlation between internal control and ERM for firms that are aiming to engage in and carry out risk management programs. For this purpose, this chapter provides a comprehensive discussion on the theory context and hypotheses development which is associated with the mutual relationships between internal control, ERM, and firm performance.

Preliminary acquaintance of internal control and ERM are derived from the pioneering research of financial distress, underinvestment cost, information asymmetry, and modern portfolio. In the context of discussion, the financial distress theory, the underinvestment cost theory, the information asymmetry theory, and the modern portfolio theory are then introduced so as to expound on the relevant theoretical foundations. This chapter also provides a comparison showing the association and distinction between internal control and ERM in practice. Additionally, an investigation looking into the effects of internal control and ERM on firm performance is exposited, both theoretically and empirically. According to the theoretical foundation and empirical

evidence noted in literature, the research further explores the discussions and opinions regarding the effects of firm-specific characteristics on internal control and ERM.

3.2 Theoretical Context

3.2.1 Financial Distress Theory

The Financial Distress Theory (FDT) is regarded as one of the fundamental theories in the evaluation of internal control and ERM (Alviniussen & Jankensgård, 2009). It was noted by Purnanandam (2008) who asserts that the occurrence of a financial distress is always accompanied by low cash flows which may indirectly generate losses and cause bankruptcy to firms. Normally, financial distress can incur firms to default on contracts. In addition, financial restructuring among the firms, the creditors, and the equity investors may be forced to take if there are no sufficient cash flows (Koh, Durand, Dai, & Chang, 2015).

Based on the summarized literature, three primary sources of financial distress costs were identified. Firstly, firms which are suffering from financial distress will be more likely to violate their debt covenants (Purnanandam, 2008). Therefore, the default on the redemption of debt covenants will bring about inflexible operations within the firm; there will be accelerated repayment, and time and resources spent on negotiations with the creditors will be constrained (Kalay, 1982). Secondly, financial distress can weaken firms' capacity in capturing their key customers and this can ultimately cause firms to lose their competitive edge in competing with others in the marketplace. It has been proven by Opler and Titman (1994) that firms experiencing financial distress can lose

excess market share during an industry downturn. This view is echoed by Chevalier (1995) who found a significant relationship between debt weakness and competitive position for retail firms. Thirdly, financial distress may force firms to forgo their investment in projects that could have positive NPV. Since the risk exposures caused by financial distress can increase expected premiums by equity investors, external financing should change to be more costly (Froot, Scharfstein, & Stein, 1993).

Traditionally, empirical studies noted in literature prefer to classify financial distress costs into direct and indirect aspects (Pindado & Rodrigues, 2005). Direct costs of financial distress are those associated with audit costs, legal costs, management fees, bankruptcy costs, and raised interests and risk premiums. Indirect costs of financial distress are often caused by the loss in market share and business positions. Compared to direct costs, the indirect costs are more costly, harder to estimate, and are related to opportunities (Kim, 1978). Accordingly, it is necessary for firms to adopt an appropriate approach to manage and control the significant costs that are related to financial distress and insolvency. Smith and Stulz (1985) were the first people to present a study indicating that the probability of costs caused by financial distress and insolvency could be reduced through the effective utilization of risk management. According to the evaluation of ERM, one important benefit that stands out is that ERM can mitigate the variability in earnings. In that regard, ERM is elected as the rigorous and continuous instrument for managing financial distress and bankruptcy costs (Alviniussen & Jankensgård, 2009).

Alviniussen and Jankensgård (2009) also claim that ERM should evolve from FDT because the value of risk management is primarily derived from the avoidance of costs related to financial distress. This claim is supported by Dickinson (2001) who argue that a firm can become more adaptable and robust in facing financial distress and other major changes through embarking on the establishment of ERM mechanism and system. Due to the function of risk management, ERM is beneficial in identifying potential major events before the occurrence of such adverse effects. In addition, ERM also provides firms with contingency plans to cope with the events in order to eliminate risks accrued from their daily operations. Clarification can be drawn from empirical studies noted in the literature which state that the motivation of internal control and ERM engagements is mainly based on the features of secured shareholder wealth and improved firm performance, acquired through avoiding the costs incurred by financial distress (Florio & Leoni, 2017).

3.2.2 Underinvestment Cost Theory

The Underinvestment Cost Theory (UCT) plays an important role in the evaluation of internal control and ERM. As was mentioned in the description of the FDT, underinvestment costs usually materialize when there is insufficient internal funds for the initial investment of projects that have positive NPV. Under the potentiality of costly external financing along with risks, Froot et al. (1993) proposed a frame of reference for the purpose of investigating the risk management behaviours within firms. They found that risk control and management actions could be value-added for a firm in the case where external financing is more expensive than internal funding. Due to the effect of

risk control and management, firms would be shielded from costly external sources of finance and firms could resort to using internally generated funds. This occurrence can result in abridging underinvestment costs and gaining profits from high-yield investments (Froot et al., 1993). However, investing in projects with a positive NPV may not always be accepted by equity investors. This is because shareholders are responsible for all capital costs and they may not have the desire to divide their profits with creditors.

According to the observation of Froot et al. (1993), firms are inclined to take less risk control and management programs when the cash flows are closely concerned with prospective investment opportunities. Instead, firms are more likely to adopt risk control and management activities when cash flows are closely concerned with collateral values. Additionally, it was observed that firms' cash flows are connected with the capacity of external financing (Froot et al., 1993). Based on this, it can be conjectured that a firm's enthusiasm about embracing internal control and ERM is associated with its cash flows and underinvestment costs. Indeed, Gay and Nam (1998) advocate that firms with progressive investments prefer to engage in risk control and management if there were more capital expenditures. From their study, Chenmiao and Smith (2007) also concluded that underinvestment costs can determine the application of risk control and management because there is a significant relationship between a firm's derivative usage and investments in progressive projects.

However, Chenmiao and Smith (2007) insist that firms with fewer investment opportunities can increase their leverage level by implementing risk control and management programs. This is in spite of the fact that some firms with high-growth investment may refuse to adopt risk control and management as a means of increasing their leverage level. In this regard, the underinvestment problem cannot be diminished by enhancing the indebted ability for high-growth firms although bankruptcy risk can be mitigated by improving the financial leverage for slow-growth firms (Stulz, 1996). Moreover, even if a firm has chosen an optimal strategy for risk management, its performance cannot be fully protected against systematic risks such as the fluctuations in commodity prices risk, equity risk, foreign exchange risk, and interest risk (Froot et al., 1993). In contrast, firms with higher valuations in the marketplace can take advanced power to mitigate their underinvestment (Allayannis & Weston, 2001). As a holistic and comprehensive administrative mechanism, ERM can enable firms to obtain a more accurate information about the systematic and non-systematic risks involved. Consequently, this can result in an effective decision-making process where ERM can contribute to the firm's value via efficient capital formation and distribution thereby, shielding the firm concerned from underinvestment costs (Mikes, 2009; Woods, 2007).

3.2.3 Information Asymmetry Theory

The Information Asymmetry Theory (IAT) is another significant theory that supports the evolution of internal control and ERM. Holmström and Tirole (2000) argue that the existence of information asymmetry between managers (insiders) and investors (outsiders) can restrict a firm's capacity to raise external funds. Due to the constrained

cash and opportunities, the respective firm may not be able to finance and assume the value-creating projects that could lead to further growth and development. Linked to that, firms with constrained cash flows may also resort to bankruptcy if they are unable to refinance for the purpose of negating the shocks related to their cash flows. As a result of insufficient internal funds, firms usually have to abandon profitable investments and sustain the issues derived from the underinvestment problem (Amaya, Gauthier, & Léautier, 2015).

Review of previous studies, nonetheless, suggests that risk control and management activities can increase asymmetry information and noise of earnings within a firm if these activities were not communicated to market participants clearly and definitely. This claim was verified by Nguyen, Mensah, and Fan (2007) who note that the Statement of Financial Accounting Standards (SFAS) 133 framework aggravated the information asymmetries that was caused by redundant risk control and management activities. Indeed, risk control and management activities are considered to be concerned with the exposure of underlying financing and operating activities for a firm. DaDalt, Gay, and Nam (2002) found that for Bank Holding Companies (BHCs), the foreign exchange risk exposure creates more information asymmetries than interest rate risk exposure. This is due to the issues prevalent in the application of accounting. Based on the fewer information asymmetries, a firm's earnings could be forecasted more precisely and analysed more accurately.

Recently, more standardized disclosure requirements have been issued by the regulators in each country. Because of this relevant standards, information asymmetries between insiders and outsiders was minimised. This therefore, caused the estimations about the firm's value and future earnings to become more accurate. For example, a significant development in Europe is that the local Generally Accepted Accounting Principles (GAAP) was replaced by the International Financial Reporting Standards (IFRS). As a result of the transparency and comparability offered through the introduction of the standardized disclosure requirements, firms' financial reports have improved (Eling & Marek, 2014). With a reduction in information asymmetries between managers and investors, accounting disclosures enabled capital investment efficiency to improve (Biddle, Hilary, & Verdi, 2009; Bushman, Piotroski, & Smith, 2011).

In the context of accounting, studies have noted that accounting disclosures can also be utilized as a proxy for asymmetric information. This was advocated by Aboody and Lev (2000) who note that insiders can take advantage of their information superiority to make profits at the cost of capital from uninformed investors. Accordingly, high earnings will be derived from low cost of capital while volatile earnings performance could lead to costly capital. In this regard, accounting quality is the fundamental precondition for information symmetry between inside managers and outside capital suppliers (Brown, Pott, & Wömpener, 2014). In addition, accounting quality was also found to mitigate the problems of overinvestment and underinvestment (Biddle et al., 2009). Based on COSO's frameworks, reporting is an important objective for both internal control and ERM programs, meanwhile, information and

communication is an important component in internal control and ERM activities. Moreover, information asymmetries are associated with financial distress and underinvestment (overinvestment). In this context, IAT is believed to make significant contributions to the evolution of internal control and ERM.

3.2.4 Modern Portfolio Theory

The Modern Portfolio Theory (MPT) is deemed to be one of the main theories that caused the evolution of internal control and ERM (Alviniussen & Jankensgård, 2009). In 1952, Harry Markowitz first introduced the MPT and asserted that an investor's risk can be controlled and managed through the diversification and allocation of assets. Based on the definition of MPT, it was claimed that risk exposures will be incurred when the dispersion and volatility of a firm's market return exceeds the mean value of the equity investor's expectation. It was further emphasized that this kind of risk can be minimized by the optimal selection and weighting of securities which can offer equity investors a given level of expected returns (Brealey, Myers, & Allen, 2014). The MPT is a concept that attempts to quantify the risk of individual securities by measuring the standard deviation of historical market returns from the mean. Due to the significance of the statistical function, a greater standard deviation of the market returns indicates a greater volatility of the market value, which implies greater security risk.

Although the risk profile of individual securities is important to equity investors, the selection of assets cannot be dependent only on the characteristics that are relevant to the unique securities. As advocated by Elton and Gruber (1997), an equity investor

should consider the interactions and co-movements among each security while structuring the investment portfolio. Once the securities are selected and combined into a portfolio, the equity investor's risk can be more holistically estimated whereby the MPT is used to explore how the prices of securities are correlated and move together. Therefore, the portfolio risk can be quantified by combining the standard deviation of individual securities with the interactions of all securities within the portfolio (Hillier, Ross, Westerfield, Jaffe, & Jordan, 2010). In addition, the efficient distribution of various securities' weights and combinations can also minimize risk for a given level of expected return, otherwise, the optimal allocations can maximize the expected return for a given level of risk (Belmont, 2004).

An important foundation for MPT is that equity investors are assumed to be risk averse. In this context, an equity investor should choose a less risky portfolio as the option if two investment portfolios can gain the same level of returns or yields. Markowitz (1952) insists that rational investors prefer to maximize returns from the lowest level of risk which can be realized through seeking optimal portfolios that have appropriate risk-return profiles. As a philosophical extension of the MPT, ERM provides a framework for investors to think about collecting the risk of individual securities and forming these into a portfolio. Different from managing various risks in separate silos, ERM allows firms to treat all risks in an integrated manner. Each risk exposure is not controlled in isolation but is rather managed within a portfolio context (Gordon et al., 2009). Therefore, specific risks are no longer confined within the border of dedicated functions, but all the units within the firm, whose activities have an impact

on a certain type of risks, should be involved in the assessment and management (Arena, Arnaboldi, & Azzone, 2011). Consequently, ERM is presumed to reduce inefficiencies caused by lack of synergies between different risk management departments, thus leading to cost savings through avoidance of duplication of risk management expenditure (Farrell & Gallagher, 2015).

3.2.5 Underlying Theory for the Research

Among the four theories discussed above, the main underlying theory suitable for this research is the modern portfolio theory. The conceptual framework of this research is then structured based on the MPT which asserts that each risk exposure in the ERM framework is not controlled in isolation but managed within a portfolio context (Gordon et al., 2009). Therefore, the effects of internal control and ERM on individual risks for firms in China are not estimated in this study. Since risk exposures can lead to the uncertainty and volatility of firm performance as a whole, the relationship between risk management programs (internal control and ERM) and firm performance is quantified instead.

In addition, due to the portfolio characteristic of internal control and ERM frameworks on risk management activities, scholars and commentators proposed that every department in a firm, whose daily operations are connected to a certain type of risks, should participate in the process of risk assessment and management (Arena et al., 2011). Accordingly, there should be a potential relationship among all departments or all risk management activities within the firm. In this context, the current research assumes

that the relationship between internal control and ERM within firms in China ought to be significant. Beyond that, the effects of internal control and ERM on firm performance could be influenced by the association between these two programs. In this regard, the current research is designed to evaluate the relationships between internal control, ERM, and firm performance in China.

As mentioned in previous sections above, the occurrence of financial distress creates low cash flow which indirectly influences a firm's financial slack policy and dividend distribution policy (Floyd, Li, & Skinner, 2015; Koh et al., 2015). Due to the occurrence of financial distress, the firm may lose its capacity to settle its debts and go into bankruptcy, which can affect its firm size (Bhattacharjee & Han, 2014; Chunli, Bin, & Wei, 2017). In this context, both the creditors and equity investors will be more cautious in providing financial support to the firm, which can change the firm's leverage level (Koh et al., 2015; Xu-dong, Wei, & Wen, 2017). Since underinvestment cost is usually caused by a lack of capital being invested into projects with net positive value, the event, in turn, could limit the firm's sales growth, and so increase the return volatility and earnings variability (Sarkar & Zhang, 2015; Xu-dong et al., 2017). In addition, the firm's development in the industrial chain and international market will be restricted due to underinvestment as well (Song & Shoji, 2016). It is generally believed that information asymmetries between managers and investors are accompanied by financial distress and underinvestment within a firm (Rapp, Schmid, & Urban, 2014). Indeed, asset opacity is a good indicator to reflect the situation of information asymmetry for a firm. Additionally, the situation of information asymmetry will be

influenced by the firm's insider share ownership (Byun, Hwang, & Lee, 2011; Ravi & Hong, 2014).

In order to better explore the association between internal control and ERM as well as their relative impacts on firm performance, this research applies some firm-specific characteristics as moderating variables as it attempts to see if the relationships between internal control, ERM, and firm performance can be moderated by these variables. Based on the theoretical foundations and empirical studies which focused on risk management topics, the current research summarizes and adopts 12 firm-specific characteristics extracted from literature. These include firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, insiders and its squared value. As noted above, all of these moderating variables were selected based on the advocates of financial distress theory, underinvestment cost theory, and information asymmetry theory.

3.3 Hypotheses Development

3.3.1 Relationship between Internal Control and Firm Performance

3.3.1.1 Theoretical Arguments

As has been mentioned before, internal control refers to the process designed by the corporate governance and management which provides for a reasonable assurance about the achievement of the firm's objectives. Indeed, internal control is considered to be a critical component in determining the effectiveness and efficiency of firm operations, reliability of financial reporting, and compliance with applicable laws and regulations

(Drogalas, Soubeniotis, & Fotiadis, 2005). Of late, there has been a growing tendency for firms to engage in internal control because it helps firms by enhancing firm performance, averting resource losses, ensuring reporting reliability, and guiding compliance operations. The enterprise internal control system is a foundation of sound operations; it contributes to the improvement of the whole network of systems within a firm, making firms more capable of attaining their business goals (Karagiorgos, Drogalas, & Dimou, 2010). The theoretical basis for establishing a connection between internal control and financial performance has been demonstrated in literature. It has been verified that firms can realize the benefits of internal control which improves their financial performance. Not only does internal control influence the personnels, the organization, the supervision, and the management, it also acts on the arithmetical and accounting, the acknowledgment of budgeting, the physical authorization and approval, and the segregation of duties (Douglas, Micah, & Tom, 2014).

Messier, Glover, and Prawitt (2008) insisted that firm performance is heavily dependent on internal audit function. The enterprise internal control system is asserted to play a great role in the internal audit function. Nonetheless, small and medium-size enterprises (SMEs) have disregarded the important function of internal control even if the benefits of establishing effective internal control programs are theoretically, more than the relevant costs (Messier et al., 2008). Additionally, the SMEs also prefer to concentrate on accessibility, availability, and cost efficiency in the utilization of finances. Accordingly, firms that operate in total disregard of internal control will be exposed to the mass failure of business (Douglas et al., 2014). This claim was verified by

Tushabomwe-Kazooba (2006) who found that 90% of the start-up businesses in Uganda were unable to operate beyond the third anniversary due to the absence of a sound enterprise internal control system. In addition, Anduuru (2005) argued that external auditors cannot count on the enterprise internal control system of SMEs because there is no elaborate internal control implemented in such businesses. Therefore, SMEs without effective internal control will be lacking in adequate segregation of duties and complete assurances of business transactions.

3.3.1.2 Empirical Evidence

Though the literature on the internal control for SMEs is limited, the empirical evidence noting internal control for large-scale firms have been comprehensively studied by scholars and practitioners in Europe and America. According to their study, Wallace and Kreutzfeldt (1991) found that firms with large size, high profits, frequent liquidity, advanced competition, conservative accounting policies, high regulation, and competent management are more willing to establish effective internal control. In the same context, Douglas et al. (2014) explored the relationship between the enterprise internal control system and profitability. They found that there was a significant relationship between internal control and financial performance. They noted that the financial performance is negatively associated with control environment and information and communication. Nevertheless, the financial performance is proved to be positively affected by risk assessment, control activities, and monitoring activities conducted by firms.

Supporting this, Goodwin-Stewart and Kent (2006) highlighted that the existence of internal control is positively correlated with firm size and commitment to risk management. It was claimed that since the risk and control awareness were connected to the scope of enterprise internal control system (Sarens & De Beelde, 2006), firms were more likely to recognize the role of internal control in their operations if the risk and control activities were understood by the management (Selim & McNamee, 1999). Firms' capability of surviving in business is also an indicator of good financial performance (Douglas et al., 2014). Additionally, the insufficient application of internal control is an indicator of poor financial performance. According to the observations of Richardson, Nwankwo, and Richardson (1994), a total of 15,051 British firms collapsed in 1990, 21,827 firms ended in 1991, and 38 active firms went into liquidation in the third quarter of 1992, all of which were caused by the lack of internal control. Tushabomwe-Kazooba (2006) also found empirical evidence to support the claim, they noted that 90% of SMEs in Ugandan failed within 3 years due to the poor performance of the enterprise internal control system.

Over the past decade, many regulators, board of directors, managers, internal and external auditors, investors and lenders, and suppliers and customers of organizations have shown a growing interest in the effectiveness of internal control. Rittenberg and Schwieger (2005), for example, noted that internal control information can ensure that firms conduct significant risks. In addition, the internal control information can provide an assurance for firms to declare the accuracy of interim financial data which will influence decision making. From a different perspective, Doyle, Ge, and McVay (2007)

explored the relevance between internal control and earnings quality. They found empirical evidence which showed that enterprise-level control problems are associated with earnings management, restatements, fraud, and material weakness. In another study, Xinmin, Yuan, Zhongfeng, and Jinlu (2007) were able to ascertain that there was a significant relationship between a firm's internal control mechanism and the choice of innovation mode. Based on a sample of 585 Chinese firms, they found that financial control has a negative correlation with radical innovation and a positive correlation with incremental innovation. In contrast, they expressed that strategic control has a positive connection with radical innovation and a negative connection with incremental innovation.

Since there is adequate empirical evidence to demonstrate the theoretical benefits of internal control on firm performance, one of the hypotheses formulated for this research is then developed as:

H1: There is a positive relationship between internal control and firm performance.

3.3.2 Relationship between Enterprise Risk Management and Firm Performance

3.3.2.1 Theoretical Arguments

Modigliani and Miller (1958) argued that risk management does not affect the market value of the firm in perfect capital markets. However, there are many market imperfections that are incurred in the commercial environment, which are presented in terms of taxes (Graham & Smith, 1999; Modigliani & Miller, 1963), bankruptcy costs

(Kraus & Litzenberger, 1973; MacMinn, 1987), external capital costs (Froot et al., 1993), and agency costs (Garven & MacMinn, 1993; Mayers & Smith Jr, 1987). Therefore, it can be said that the theoretical arguments presented in the literature suggest that risk management can and does indeed add value within the organization. Due to the existence of numerous market imperfections and frictions occurring in the business world, risk management is deemed to be a value-added project with net present value which helps to mitigate the idiosyncratic risks firms face (Donald Pagach & Warr, 2011). In addition, even if there were no well-diversified investors in practice (Shimko, 2001), risk management is recognized as a means of improving firm performance by enhancing the value of expected cash flows (Nocco & Stulz, 2006). The theory of corporate risk management contends that firms with smooth cash flows will have lower financial distress costs, less expected tax liabilities, and few contracting costs (Smith & Stulz, 1985). Therefore, it is generally recognized that managing risk is important for firms.

As a comprehensive instrument of risk management, ERM is posited to create shareholder value by enabling firms to obtain an optimized risk-return tradeoff (Hoyt & Liebenberg, 2011). If ERM can enhance the optimization of risk-return in a cost-effective manner, then it is reasonable to conjecture that ERM would increase firm value (Farrell & Gallagher, 2015). This view is echoed by Meulbroek (2002) who insisted that the objective of risk management at enterprise-level is to choose the optimal level of risk for maximizing shareholder value rather than for minimizing total risk. However, since the correlations and diversifications of risk were ignored while

estimating the risk-return at project-level, firms cannot achieve the optimization at enterprise-level, and this then results in suboptimal decision making (Nocco & Stulz, 2006). It is noted that the evaluation of risk aggregations and interactions is a key component of the ERM framework. Accordingly, ERM is recommended to benefit firms by enhancing firms' internal decision making, which will ultimately contribute to firm performance through efficient capital allocation (Callahan & Soileau, 2017; Myers & Read Jr, 2001). In addition, it has been theoretically argued that ERM can lead to an abridgement in the likelihood of large detrimental cash flow shortfalls, costly capital acquisition and distribution, and underinvestment of profitable projects (Farrell & Gallagher, 2015).

3.3.2.2 Empirical Evidence

Different from traditional risk management, ERM is an integrated approach to risk management, whereby all sources of major risks within firms are combined into a risk portfolio. As defined by Gordon et al. (2009), the ultimate goal of ERM is to model, measure, analyse, and respond to all risks in a holistic manner. Compared to treating each risk exposure in isolation, ERM is inclined to manage and control all risk exposures in the portfolio context. According to the explanation of McShane et al. (2011), the benefits of ERM is derived from hedging the residual risk instead of focusing on the individual risk. Therefore, the risk integration approach improves firm value by allowing the firm to take full advantage of risk diversification and natural risk hedges. Numerous empirical studies have recognized that only the remaining risk requires being governed because conducting each risk independently will add more

onerous works to risk mitigation (Farrell & Gallagher, 2015). In this context, Hoyt and Liebenberg (2011) also emphasized that the aggregation of risks benefits firms in avoiding the duplication of risk management expenditures.

However, for firms which want to control their risk taking, it is necessary to set risk budgets among the various departments at first and then to integrate all risk exposures into a consistent framework (Lleo, 2010). As Hoyt and Liebenberg (2011) proposed, the ERM framework can affect cost savings for firms by refraining from the duplication of risk management outlay. Accordingly, firms are able to avoid the inefficiencies caused by a lack of coordination between different risk management departments. In addition, the portfolio-based approach to risk management can help firms to exploit the natural hedges that may occur across the organization. Farrell and Gallagher (2015) contended that the establishment of comprehensive risk management programs by firms will lead to a hike in material costs. Indeed, both opportunity sacrifice and monetary expenditure affect the implementation of ERM. Therefore, firms have to judge and weigh the benefits and costs of the ERM activities, so as to ensure that the engagement of ERM is a value-added project for their respective organizations.

By utilizing a copula-based method, Rosenberg and Schuermann (2006) found that the total amount of risks experienced by a firm does not equal the sum of the firm's individual risks. In this context, Beasley et al. (2005) highlighted that risk portfolio is beneficial to a firm because it can enhance the capability of both the board of directors and senior managers in supervising enterprise risks. Consistent with previous studies,

the study conducted by Chapman (2006) also confirmed that ERM can improve the comprehension and transparency of enterprise risks, thus leading to the optimal risk taken along with the efficient decision making. In addition, Hoyt and Liebenberg (2011) advocated that firms which embraced ERM will get profits from their increased capital efficiency, higher equity returns, and effective resource allocation. Empirical evidence drawn from literature show that the effects of ERM on firm performance are manifested in terms of enhanced credit ratings from agencies (Samanta, Azarchs, & Martinez, 2004), reduced capital costs (Hoyt & Liebenberg, 2011), improved insights into various risks (Meulbroek, 2002), increased capacity of risk profile (Hoyt & Liebenberg, 2008), and efficient decision making on capital structure (Graham & Rogers, 2002).

Since there is adequate empirical evidence to demonstrate the theoretical benefits of ERM on firm performance, one of the hypotheses formulated for this research is then developed as:

H2: There is a positive relationship between ERM and firm performance.

3.3.3 Relationship between Internal Control and Enterprise Risk Management

3.3.3.1 Association between Traditional Risk Management and ERM

Risk management has always been a fundamental interest in finance and governance studies. Historically, the opinions of academics and practitioners have been shaped into two extreme perspectives (Jie & Zefu, 2014). Some scholars argue that the various risks within a firm are independent and can be managed into silos by separate

units (Kobrin, 1982; Simon, 1984). However, industry commentators state that each risk should be treated as part of the overall risk portfolio. Thus, firms were advised to govern all risks in unified operations (Abrams, Von Känel, Müller, Pfitzmann, & Ruschka-Taylor, 2007; Meulbroek, 2002). This debate, nonetheless, changed after the financial crisis; the attention shifted to focusing on maximizing firm value by managing risks in a holistic manner (Andersen, 2008; Kaplan & Mikes, 2012). According to the development and establishment of the self-regulated mechanism of risk through the internal control function, the new concept of ERM, which integrates organizational management with risk management, has come into practice (Kim, 2013; Power, 2009).

The historical approach to risk management was based on compartmentalization and matters were not wholly coordinated. In this regard, one risk was managed at a time, without acknowledging the relationship existing among the risks. Such a traditional approach to risk management prefers to adopt insurance and derivatives as an instrument to protect firms against hazards and financial risks (McShane et al., 2011). However, risk management at the enterprise-level has exceeded the mitigation of hazard and financial risks in recent years. Today, firms are no longer limited to managing enterprise risks through insurance and financial hedging instruments only. Modern risk management concept now includes the consideration of mutual relationship of risks in strategic, operational, and reputational aspects (Farrell & Gallagher, 2015). In this context, it is not appropriate to view risk as an irrelevant activity nor it is wise to carry out strategic planning with traditional silo-based operations. ERM is a holistic approach with the purpose of achieving a coordinated management of all significant risk

exposures (Farrell & Gallagher, 2015). Based on the extension of traditional risk management, ERM focuses on risk assessment, risk quantification, risk financing, and risk management at the enterprise-level (Grace, Leverty, Phillips, & Shimpi, 2015).

The association between ERM and traditional risk management can be traced back to the theory evolution (Eckles, Hoyt, & Miller, 2014). In the theory, the notion of corporate risk management originated from corporate financing policy. As argued by Modigliani and Miller (1958), that corporate financing policy is irrelevant if the firm has fixed investment policy and there is no contracting costs and taxes. In this regard, the theory of corporate risk management uses contracting costs, taxes, and the impact of risk management on corporate investment policies to explain the firm's risk management decision (Froot et al., 1993; Smith & Stulz, 1985). The theory of ERM follows from the theory of corporate risk management. It views all risks wholly and its operations are carried out within an integrated framework (Nocco & Stulz, 2006). By using ERM, the firm's capacity to create value is strengthened through the improvement of strategic and operational decision making processes. ERM is not a substitution for individual risk management; it in fact creates synergies for individual risks by combining them into a coordinated framework (Yijia, Minming, & Jifeng, 2012). Indeed, ERM plays the part of a supervisor in the firm as it disburses the relevant duty of taking charge of accommodating and assembling all individual risk management activities effectively.

3.3.3.2 Distinction between Traditional Risk Management and ERM

There is a clear distinction between ERM and traditional risk management. Traditional risk management looks at each risk being managed and being conducted individually whereas ERM aggregates and coordinates all variety of risks faced by the firms concerned (Yazid et al., 2012). What is different about ERM is that it leaves behind the traditional silo basis approach to risk management and it tends to assess and govern all types of risks from a portfolio-based perspective (Lai, Azizan, & Samad, 2010). As stated by Alviniussen and Jankensgård (2009), by engaging ERM, firms are prepared to abandon the "silo" thinking approach that is related to risk management. By using ERM, each category of risk is no longer treated separately; all departments need to participate in the entire process of risk management and responses for the relevant part of the business activity. By integrating all risks and departments into a holistic manner, ERM has become the essential element of modern risk management. It provides firms with a strategic view of the organizational threats, where firms' assets are protected from the risk of lower-tail earnings outcomes that would lead to the veritable destruction of shareholder value (Stokes, 2004).

In contrast to identifying, assessing, and managing individual risk experienced by the respective departments separately, ERM emphasizes that aggregating risks into a portfolio is the optimal instrument for risk management (Eckles et al., 2014). Therefore, compared with embracing individual risk management, the implementation of ERM can enable firms to exploit natural hedges and avoid the duplication of risk management expenditures (Liebenberg & Hoyt, 2003). As an integrated approach to risk, ERM

enables firms to better comprehend and aggregate the various risks of the firm through different procedures of business operations. ERM provides firms with a more objective basis for distributing the relevant resources, which would result in enhancing the capital efficiency and cost savings (Keizer, Vos, & Halman, 2005). In this context, an effective ERM is conjectured to work on streamlining the operations, reducing the redundancy, and consolidating the risk management thereby, leading to a minimization of costly risk transfers (Yijia et al., 2012). By looking into the distinctive details differentiating ERM from traditional risk management, Banham (2005) was able to summarize the differences within eight aspects as is illustrated in Table 3.1.

Table 3.1: Differences between ERM and Traditional Risk Management

Enterprise Risk Management	**Traditional Risk Management**
Risk viewed in context of business strategy	Risk as individual hazards
Risk portfolio development	Risk identification and assessment
Focus on critical risks	Focus on discrete risks
Risk optimization	Risk mitigation
Risk strategy	Risk limits
Defined risk responsibilities	Risks with no owners
Monitoring and measurement of risks	Haphazard risk quantification
"Risk is everyone's responsibility"	"Risk is not my responsibility"

Note: Adapted from "Enterprising views of risk management," by R. Banham, 2005, p. 17.

When the two approaches of the ERM and traditional risk management are compared, one can note the distinctive strengths and weaknesses. Nevertheless, as is

noted by Kim (2013), traditional risk management is adept in clarifying the accountability of each department for specific risk exposures. It ensures that the department can utilize the accumulated experience and expertise in responding to the particular risk exposures effectively and efficiently. However, the "silo" basis management system has limitations in dealing with tremendous and compound risk exposures. Today, it seems that traditional risk management has had to face many challenges arising from the decentralization of authority and responsibility, the complication of risk funds preparation and allocation, and the reduplication of tasks among relevant agencies (Kim, 2013). Indeed, the primary weakness of traditional risk management is its lack of comprehensive coordination when multiple risks explode at the same time. In contrast, the ERM approach enables a reasonable distribution of resources while being exposed to tremendous and compound risks. Additionally, the tasks and responsibility of the entire risk management activities can be heavily concentrated in a specific organization under the ERM framework (Kim, 2013).

3.3.3.3 Association between Internal Control and ERM

According to the definition of the Institute of Internal Auditors (IIA) (1993), the enterprise internal control system is an aggregation of all control activities which can provide firms with a guarantee for accomplishing their objectives and this can be achieved through five objectives: (1) integrity and reliability of information, (2) compliance of laws, policies, and plans, (3) assurance of assets, (4) efficient resources allocation, and (5) achievement of goals. The primary risks faced by firms arise from the failure of achieving these five objectives, therefore, the function of the enterprise

internal control system should be used to defend firm risks (Hermanson & Hermanson, 1994). However, some academics and industry commentators proposed that the development of internal control mechanism should cooperate with enterprise risk management. The COSO's report also states that the ERM framework is an expansion of the internal control framework because ERM offers firms a more integrated and robust perspective to meet the internal control requirements (Azimah Abdul Aziz, 2013). Therefore, there is an obvious connection between internal control and ERM.

In 1992, COSO issued the initial report of the widely accepted internal control integrated framework. Subsequently, the framework was complemented and supplemented in 1994 and 2013 respectively. The internal control framework consists of five components which include control environment, risk assessment, control activities, information and communication, and monitoring (as shown in Figure 3.1). It has withstood the test of time and has been adopted as a benchmark and reference by firms around the world. In order to enhance the firm's capacity of identifying, assessing, and managing risks, COSO published the ERM integrated framework in 2004 and stated that internal control is an internal part of enterprise risk management (Yanhong & Qing, 2013). The ERM framework contains and inherits the main components of the internal control framework and it expands on the objectives by including strategic focus. By adding other variables such as objective setting, event identification, and risk response into the components, the function of ERM completely embraces the functions derived from the combination of internal control and risk management (Yanhong & Qing, 2013).

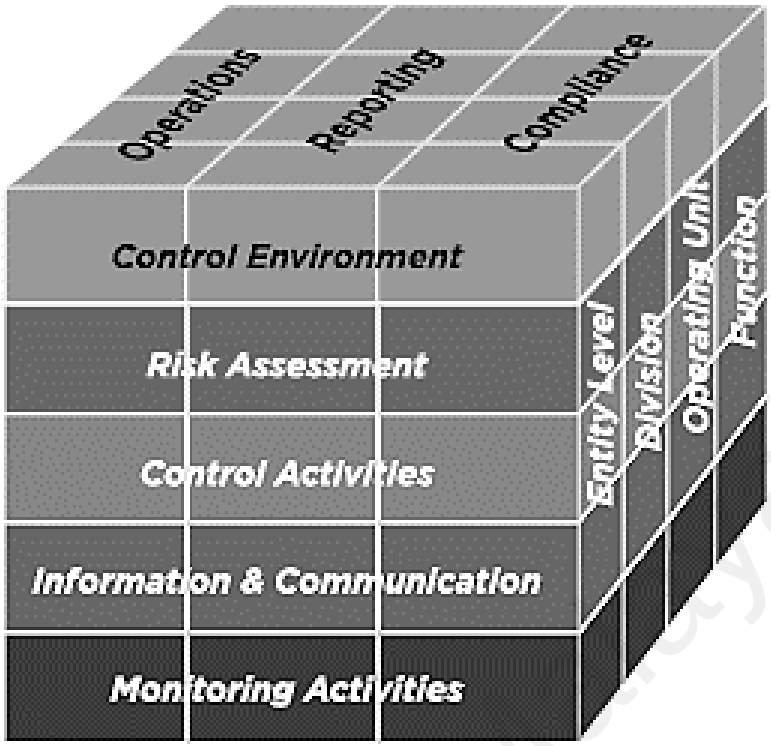

Figure 3.1: Objectives and Components of COSO's Internal Control Framework. Adapted from "Internal Control – Integrated Framework," by COSO, 2013, p.6.

As an essential part of risk management, internal control seeks to provide firms with a reasonable assurance in achieving their organizational objectives. According to the establishment and implementation of a sound enterprise internal control system, a firm can obtain benefits from its effective and efficient operations, reliable financial reporting, and compliant rules, laws, procedures (Yanhong & Qing, 2013). In addition, the effectiveness and efficiency of operations, reliability of financial reporting, and compliance with regulations, law, and procedures are also noted as the cornerstones of ERM. Indeed, risk management activities are involved in the process of internal control programs. In this regard, three objectives and five components integrated into COSO's internal control framework are subsequently developed into four objectives and eight components in the ERM framework (Yanhong & Qing, 2013). Based on this, it can be deduced that the concept of risk management is the commonality of internal control and

ERM, and firms which want to establish an effective and efficient ERM framework need complete the design of a sound internal control framework first.

3.3.3.4 Distinction between Internal Control and ERM

Although there is a very close connection between internal control and ERM, the distinction among the rest is also obvious. According to empirical studies, Yanhong and Qing (2013) summarized the differentiation into three aspects. Firstly, the scope of internal control is different from that of ERM. Normally, internal control is regarded as the management mechanism in firms and its function determines how internal control principally assists firms in accomplishing their objectives via the process and post control activities. Nevertheless, the risk management activities which are involved in ERM have to penetrate into various departments and all aspects of the management process. Therefore, ERM has to contain not only the forward control activities but also the afterward control activities. In actual practices, internal control does not participate in establishing the ultimate operational objectives of firms. It, however, takes actions in the evaluation and assessment of the objective-making processes (Yuechao, 2009). Compared to internal control, the most important consideration for ERM is the risk existence when setting objectives in advance (Yanhong & Qing, 2013).

Secondly, the activities of internal control are not consistent with those of ERM. Internal control is essential for the performance of all risk management activities. The internal control mechanism is applied to the main activities that occurred during the process of risk management. All the internal control principles related to operations,

reporting, and compliance objectives are driven directly from the risk assessment, implementation of control activities, information and communication, supervision and administration, and correction of faults (COSO, 2013). In contrary, ERM includes all procedures such as the establishment of risk management strategy and objective, the approach selection of risk assessment, the efficient allocation of human resource, the governance of budget and administration, and the statement of reporting and so forth (Yugui & Yunfeng, 2006). The significant difference between internal control and ERM is that internal control activities are responsible for the settlement of particular business objectives while ERM activities take charge of assessing risks that exist in the process of framework development, strategy determination, and objective accomplishment (Yanhong & Qing, 2013).

Thirdly, the definition of risk is different in internal control and ERM frameworks. The risks in ERM framework are treated as the possibility of major incidents that may bring negative impacts on firm objectives and incidents which can bring positive impacts on firms are deemed as opportunities. Therefore, risk and opportunity are defined discriminatively in the ERM framework. Nonetheless, the distinction between risk and opportunity is not obvious in the internal control framework (Yanhong & Qing, 2013). Further, the internal control and ERM frameworks conduct risks in a different manner. Longping and Jinyu (2002) note that the ERM framework adopts some specific approaches and concepts which include risk capacity, risk appetite, risk countermeasures, scenario analysis, stress testing and others. Benefiting from the risk measurement, the ERM framework can contribute to the consistency of the capital

distribution combined with firm growth, the development strategy associated with risk appetite, and the decision-making connected with information support. These contents ultimately conduce to enhance the capacity of the board directors and senior managers in accomplishing the business objectives. All these characteristics, however, cannot be found in the internal control framework (Yanhong & Qing, 2013).

Since there is very limited research on the relationship between internal control and ERM, it cannot get the evidence directly from theoretical arguments and empirical studies in the literature. In this context, this research explored this potential relationship by investigating the associations and distinctions among internal control, traditional risk management, and ERM. According to the discussion noted above, one of the hypotheses formulated for this research was then developed as:

H3: There is a positive relationship between internal control and ERM.

3.3.4 Moderations of Firm-Specific Characteristics

3.3.4.1 Effects of Firm-Specific Characteristics on Internal Control

According to the study of Hermanson and Hermanson (1994), there should be three elements in an enterprise internal control system and they are categorized as accounting system, individual control procedures, and control environment. The role of the accounting system is to help the firms identify, record, and report the transactions. The control procedures provide the details about the rules and regulations for the employees and employers. It sets policies such as the segregation of duties, the physical control of

assets, and the authorization of transactions. The control environment includes the operating style of the management, the assessment of authority and responsibility, and the organizational structure of the enterprise (Hermanson & Hermanson, 1994).

Nevertheless, Rovcanin et al. (2005) distinguished the enterprise internal control system as internal auditing, internal accounting control, and internal administrative control. In this respect, the internal auditing refers to the consultation services that can provide objective supervision and guarantee for enhancing the business activities. Together with the disciplined and systematic operations, firms can improve both the risk management and control management through efficient internal auditing. The most important function of internal auditing is to analyse and evaluate the efficiency of the firm's internal control and the quality of reports on the financial statements (Rovcanin et al., 2005). The internal auditing can provide the directors with advice and recommendations that are related to business activities, which will further enable the firm to achieve its tasks and goals efficiently.

Closely related to internal auditing, the concept of internal accounting control includes measures that refer to the property safety and the reliability of financial statements. The function of the internal accounting control is to standardize the procedures and rules that contribute to the accurate reporting of financial transactions (Rovcanin et al., 2005). For this purpose, the internal accounting control should provide the directors with the access that can track and control the reliability of the internal auditing so as to keep the operations and properties secure. As a complementary section

of the internal accounting control, the internal administrative control refers to the organizational procedures, plans, policies, and records that can directly work on the administrative and operational efficiency. Likewise, it should also be indirectly related to the enterprise's financial records (Rovcanin et al., 2005). Through cooperation with the internal auditing and internal accounting control, the internal administrative control can help firms to ensure that the operations are executed consistently with the missions set by the enterprise internal control system.

According to previous studies, there are multiple characteristics that have been proved to influence both internal control and firm performance (Chenhall, 2003; Hoque & James, 2000). Of these, the most commonly selected characteristics that have been widely examined in the control literature are business strategy, firm size, organizational structure, and environment uncertainty (Jokipii, 2010). In his study, Otley (1992) claims that the firm's establishment of the accounting control system must be based on its business strategy. This opinion is supported by Miller and Dröge (1986) who noted that the control system can be used in different ways but this primarily, depends on the firm's strategy. Simons (1992) also found evidence which show that firms with different strategies tend to configure the structure control systems in distinct perspectives. However, there are no unified conclusions about the nature of the most appropriate association between internal control and firm strategies in prior empirical studies (Jokipii, 2010).

Prior empirical research states that the enterprise internal control system, which firms design and use, will be influenced by the firm size (Hoque & James, 2000). Since firm size is connected with internal differentiation and resource utilization, there is, thus, an essential need for a more integrated control system by firms with organizational growth. Based on a sample of non-profit firms with different size, Duncan, Flesher, and Stocks (1999) also found that larger firms are more likely to adopt internal control. This view is explained by Merchant (1984) who argued that larger firms require more internal control because the organizational growth brings with the control and communication problems. In addition, the firm's control processes have to become precise and integrated due to the requirement of the firm size expansion (Hoque & James, 2000; Libby & Waterhouse, 1996).

Connected to the concept of authority, communication, and roles within a firm, the organizational structure of a firm contributes to the comprehension about the design of internal control (Chenhall, 2003). As Otley (1992) proposed, firms organized with different structures should be supported by various accounting information in order to ensure that the firm's operations are effective. Although a well-structured firm can have control activities with formal procedures and regulations, it is more inclined towards taking a personal discretion when looking from the perspective of controlling and monitoring (Whitley, 1999). Environment uncertainty is another significant variable looming in management control system research. Chenhall (2003) claims that firms intend to depend on formal control and traditional budgets if the external environment changes were rigorous and complex. Based on this, it seems obvious that the dynamic

environment will put internal control into more important positions as a means to supervise a firm's daily operations. There are many lines of empirical evidence which indicate that environment uncertainty makes firms adopt a more open, externally focused, and non-financial management control systems (Chenhall, 2003; Hartmann, 2000; Jokipii, 2010).

3.3.4.2 Effects of Firm-Specific Characteristics on ERM

Different from the aspect of internal control, there is a broad range of firm-specific characteristics that can affect ERM and firm performance. Donald Pagach and Warr (2007) summarized the effect factors into financial, asset, market, and managerial characteristics. The financial characteristics account for the possibility of financial distress. Since the occurrence of financial distress is always accompanied by implicit and explicit costs, firms can benefit from the ERM by reducing the likelihood of costly lower tail earnings and cash flow outcomes (Donald Pagach & Warr, 2007). The asset characteristics represent the potential costs of financial distress. Due to the decreased chance of financial distress caused by ERM, the occurrence thus, enables the firm to save enough liquidities which can then be invested in future projects with potential profits and thereby, enjoy the growth of firm performance (Donald Pagach & Warr, 2007). The market characteristics indicate the implicit costs that are associated with financial market volatility. Here, ERM is expected to add value to firms by mitigating the fluctuation of stock yields whilst lowering capital costs (Donald Pagach & Warr, 2007). The managerial characteristics estimate the relevance of the CEO's risk response strategy to the stock option compensation. If the CEO has a high compensation, then the

firm can take advantage of ERM because it can bring down the incentives of the managers to adopt projects with excessive risks (Donald Pagach & Warr, 2007).

According to the definition of Lam (2000), ERM is "an integrated framework for managing credit risk, market risk, operational risk, economic capital, and risk transfer in order to maximize firm value" (p. 85). He argues that ERM should include the components of portfolio management, line management, shareholder management, corporate governance, risk analytics, risk transfer, and data and technology resources. Lam (2000) introduces a new risk officer role (CRO) who can be responsible for managing risk in a comprehensive approach. He states that the CRO plays the decisive role in implementing ERM. Indeed, the firm is strongly recommended to hire the CRO and to establish the Risk Management Committee (RMC) which can manage all potential risks. This view is supported by Liebenberg and Hoyt (2003), who argued that if a firm fails to appoint a CRO, then it means that the firm has not embarked on ERM. Moreover, Beasley et al. (2005) investigated the factors associated with the establishment of ERM and they found that firm's engagement in ERM is significantly affected by the appointment of a CRO. This has been confirmed by Kleffner et al. (2003) and Yazid, Hussin, and Daud (2011) who asserted that the existence of the CRO will impact on eventual ERM establishments.

Although leverage is generally accepted as a useful tool for enhancing firm's future growth, it may increase the possibility of financial distress, thereby forcing the firm to bear bankruptcy risks if too much borrowing exists in the capital structure (Yazid,

Razali, & Hussin, 2012). This situation will become worse during an economic downturn. Based on the empirical study of Donald Pagach and Warr (2011), leverage has been demonstrated to be one of the main characteristics that can lead to the engagement of ERM. The findings show that firms which choose debt capital as the financing channel will have a higher probability of being involved in ERM. In addition, Liebenberg and Hoyt (2003) also found that the utilization of high leverage is always associated with the employment of a CRO and this means that the firm will directly participate in the ERM program. Therefore, a firm with a higher leverage is conscripted to take on more risks which will encourage the firm to embark on ERM (Xu-dong et al., 2017).

The fundamental objective of any business is to improve shareholder's value as a whole. However, this can only be achieved if the firm can earn more profits during each financial year. Essentially, a firm needs to provide adequate resources for the sake of establishing ERM. Compared to human resources, the component of financing support is more important. This is because it can ensure that all ERM activities can be implemented efficiently and effectively. In this context, firms with more profits will have a greater chance in engaging ERM (Liebenberg & Hoyt, 2003). It is argued that the majority of shareholders will also affect the establishment of ERM because the decision to embrace ERM as a preferred risk management mechanism should also come directly from the firm's board of directors (Yazid et al., 2012). According to the evidence provided by Yazid, Hussin, and Razali (2009), it is essential for the top management to decisively force the implementation of ERM so as to standardize risk management for

best practices. In this regard, Donald Pagach and Warr (2007) found that firms with greater institutional ownership will face more pressure to adopt internal control and ERM activities for stability and good performance. It is through the consensus of the majority of shareholders that the comprehensive quality of risk management for a firm can be ensured (Desender & Lafuente, 2010).

The concept of diversification was defined Lam (2003) as a means that can help to mitigate the total risk of a firm by spreading risk into different projects. In this regard, the total risk amounting from the risk diversification should be less than the sum of the risk traded in isolation Nonetheless, a firm is likely to bear more varied risks if its diversification includes international trade and commerce. In this context, Yazid et al. (2009) proposed that highly diversified firms prefer to adopt ERM because it can systematically decrease total risk exposures. This claim is supported by Hoyt and Liebenberg (2008) who say that internationally diversified firms are positively related to ERM. According to empirical studies noted in the existing literature, firm size was also found to be another key factor that is relevant for the establishment of ERM (Beasley et al., 2005; Hoyt & Liebenberg, 2008; Yazid et al., 2009). It appears that larger firms were more likely to be involved in risk management because adequate assets are the essential support for the ERM programs (Donald Pagach & Warr, 2007; Yazid et al., 2012). It was argued that if a firm was able to get more sales revenue, then it is more likely to expand its firm size and thus, support business programs including ERM (Benston & Evan, 2006). Therefore, it can be noted that sales growth should be one firm-specific characteristic that affects firm's engagement in ERM (Kleffner et al., 2003).

Based on the theoretical context as well as the empirical evidence that have been discussed above, the effects of firm-specific characteristics are summarized in Table 3.2. Accordingly, the firm-specific characteristics which can be adopted as moderating variables in this research are selected as firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders. In order to further estimate the moderating effects of the selected firm-specific characteristics on the relationships between internal control, ERM, and firm performance, the corresponding hypotheses formulated for this research are then developed as:

H4: The relationship between internal control and firm performance is moderated by firm-specific characteristics.

H5: The relationship between ERM and firm performance is moderated by firm-specific characteristics.

H6: The relationship between internal control and ERM is moderated by firm-specific characteristics.

Table 3.2: Effects of Firm-Specific Characteristics on Internal Control, ERM, and Firm Performance

Name	Description	Hypothesized Impact on Firm Performance	Hypothesized Impact on Internal Control & ERM Adoptions
Size	Natural logarithm of the book value of total assets	Negative (Allayannis & Weston, 2001; Lang & Stulz, 1994)	Positive (Beasley et al., 2005; Paape & Speklè, 2012; Thiessen, Hoyt, & Merkley, 2001)
Leverage	Book value of liabilities / Market value of equity	Ambiguous (De Wet, 2006; Fama & French, 2002; Sharma, 2006)	Positive (Donald Pagach & Warr, 2011)
Sales Growth	(Sales in year t minus sales in year t-1) / Sales in year t-1	Positive (Titman & Wessels, 1988)	Positive (conjectured by the research)
Asset Opacity	Intangible assets / Book value of assets	Negative (conjectured by the research)	Positive (Liebenberg & Hoyt, 2003)
Financial Slack	Cash and short-term investments / Book value of assets	Positive (conjectured by the research)	Ambiguous (Don Pagach & Warr, 2010)
Earn Variability	Coefficient of variation of earnings before interest and taxes, in the nine financial years up to and including that corresponding to survey completion	Negative (conjectured by the research)	Ambiguous (Liebenberg & Hoyt, 2003; Don Pagach & Warr, 2010)

Note: Adapted from "The Valuation Implications of Enterprise Risk Management Maturity," by M. Farrell and R. Gallagher, 2015, p.14.

Table 3.2, Continued

Name	Description	Hypothesized Impact on Firm Performance	Hypothesized Impact on Internal Control & ERM Adoptions
Beta	Covariance (firms excess returns, market returns) / Variance (market) over 9 years	Negative (Sharpe, 1964)	Positive (conjectured by the research)
Int_Div	It equals to 1 if a firm gets foreign revenue, otherwise, it equals to 0.	Positive (Bharadwaj, Bharadwaj, & Konsynski, 1999)	Positive (Standard & Poor's, 2005)
Ind_Div	It equals to 1 if a firm gets revenue beyond the main business in one sector, otherwise, it equals to 0.	Positive (Bharadwaj et al., 1999)	Positive (Standard & Poor's, 2005)
Dividend Yield	Annual dividends per share / Stock price per share	Ambiguous (Allayannis & Weston, 2001; Lang & Stulz, 1994)	Negative (conjectured by the research)
Insiders	Percentage of outstanding shares owned by insiders	Negative (McConnell & Servaes, 1990)	Positive (conjectured by the research)
Insider Sq	Insiders × Insiders	Negative (McConnell & Servaes, 1990)	Positive (conjectured by the research)

Note: Adapted from "The Valuation Implications of Enterprise Risk Management Maturity," by M. Farrell and R. Gallagher, 2015, p.14.

3.4 Summary

This chapter has discussed the theoretical framework and development of hypotheses according to the underlying theories and empirical evidence noted in literature. It can be observed that most of the analyses and results, as mentioned, have mainly concentrated on the specific impacts of internal control and/or ERM on firm performance and in particular on the financial aspect. Up to the present moment, there has been an absence of empirical validation noting the relationship between internal control and ERM, a result derived from the review of previous research and literature. This gap will be then filled by the current research. Additionally, even if empirical studies about the valuation of internal control and ERM have been intensively explored, evidence has been limited to the financial institutions of developed countries only. In this regard, the focus of this research is to address the shortcoming by investigating the value implication of internal control and ERM within Chinese listed firms at the enterprise level. Accordingly, the purpose of this research is to estimate relationships between internal control, ERM, and firm performance in China. In addition, the moderating effects of firm-specific characteristics, such as firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders, are further examined so as to provide a comprehensive analysis.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

To date, the scope of previous research has been limited to financial institutions (Farrell & Gallagher, 2015; Hoyt & Liebenberg, 2011). The lack of empirical investigation into other industries may be the result of insufficient information disclosure by non-financial organizations. Nevertheless, managing risk for sound operations is no longer the unique mode for financial institutions; it has been gradually accepted by firms in other fields too. In this context, the current research will make contributions to academics and practitioners by providing empirical evidence for firms in different domains to adopt as reference for their respective risk management activities, particularly for non-financial businesses. Different from prior studies, this research not only assesses the internal control and ERM based on firms' adoptions but also estimates the effectiveness of internal control and ERM based on firms' achievements of relative objectives in accordance with COSO's frameworks. By improving the diversification of the evaluations, the outcomes drawn in answering the research questions will be more accurate and authentic. This research also builds upon prior empirical evidence by exploring the relationships between internal control, ERM, and firm performance. It further attempts to validate if ERM can become a mediator and act on the relationship between internal control and firm performance. Additionally, this research aims to understand whether the moderating role of firm-specific characteristics can influence the impacts of internal control and/or ERM on firm performance, as well as the association between internal control and ERM.

The following section of this chapter provides a detailed information of the research methodology applied in this research. This chapter begins with an overview of the research design; it provides a brief summary explaining and describing the developed research questions and hypotheses. Following this, all the variables and relevant measurements used are introduced. Based on the characteristic of the selected population and sample, this chapter also provides a section justifying the use of content analysis for exploiting and collecting the data which cannot be directly found in the databases. Through the effect of the content analysis, the status of internal control and ERM would become more appropriate in presenting the population and sample. In addition, the use of content analysis will also help to improve the robustness of this research while estimating the applied SEM. This approach will benefit the research in achieving the research objectives effectively and successfully. In the latter part of this chapter, the method for data analysis and the measurement of data validity and reliability are also provided.

4.2 Research Design

The research methodology used for this investigation was designed using a quantitative approach. The quantitative data were collected from Chinese Listed Companies through the Bloomberg Database, Wind Financial Terminal (WFT), and publicly disclosed financial statement information. Since the participants of this investigation are firms that publicly traded in the China market, a portion of the data streams was derived from the WFT which is a professional database that can be used to tap into the Chinese financial market. The WFT provides the most accurate, timely, and

complete financial information for Chinese firms hence, the adoption of the WFT would make up for the insufficient data extracted from the Bloomberg database. It is claimed that quantitative data helps to provide a more precise statistics when aiming to locate correlations or relationships, and in the case of this research, the reason for using the quantitative method is because the secondary data extracted were more suitable for solving the designed research questions. According to the definition of Stewart and Kamins (1993), secondary data refer to the information that is collected by someone else and can be archived in some forms. Since secondary data have already been tabulated and coded by others, it would thus, save time and money. Moreover, it would also make the data more efficient when used as they are practical data informed by practising organizations (Cowton, 1998; Roth, Gray, Shockley, & Weng, 2013). Compared to primary data, secondary data avoid information biases that are caused by either common methods or the researchers themselves (Houston, 2004; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Additionally, secondary data are more consistent as they are obtained from the same observations over time (Boyer, 1999; Roth et al., 2013).

In the financial systems, both internal control and ERM are perceived to be long-term programs. This means that the impacts of the programs cannot be reflected through firm performance during a short-time period. Therefore, collecting longitudinal data from time series is essential in internal control and ERM studies. However, most research in literature prefer to use primary data and qualitative methods. Although primary data may be more suitable and appropriate for specific research objectives and

questions, researchers may also face some issues while obtaining information through interviews and questionnaires. Generally, a respondent bias will occur if researchers put heavy reliance on data collected from individuals (Harris, 2001). As has been declared by Robertson (1993), respondents may distort their genuine options when information are relevant to ethical or intended behaviours. Sometimes respondents may give best answers according to the wishes of the inquirers because most empirical investigations of applied business are associated with sensitive, secretive, and even embarrassing issues (Dalton & Metzger, 1992). Furthermore, if some individuals refuse to be surveyed and their response patterns are distinctive from non-respondents, then the non-response bias will impair the results of the interviews and questionnaires. In this context, secondary data would show the attractive attributes of providing unobtrusive access in dealing with sensitive circumstances (Dalton & Metzger, 1992). It has been acknowledged that using secondary data is the fourth general strategy for doing social research (Roth et al., 2013).

As mentioned before, the data sourced for this research were collected from the existing information listed in the Bloomberg Database and the WFT of China and through exploiting data sourced from the publicly displayed information noted in firm's financial reports, internal control reports, supervisory committee reports, and other media. A content analysis was then applied in the research in order to make the data mining process more effective and efficient. As a well-developed but underused technique, content analysis has a great potential in studying human relations, beliefs, attitudes, and organizations (Neuman, 2009). It has been described by Berg and Lune

(2011) that content analysis examines objective documents according to some explicit rules. These rules are used to classify the signs occurring in a communication process into a set of appropriate categories (Janis, 1965). The current research follows an eight-step procedure which is commonly used in the content analysis (Harris, 2001). This research also applies the mediator model and the moderator model to explore the relationships between internal control, ERM, and firm performance. Baron and Kenny (1986) have observed that a variable will act as a mediator if it accounts for the relationship between the predictor variable and the criterion variable (as shown in Figure 4.1). Therefore, the role of the mediator is to explain how the external physical events affect the internal psychological significance. Nevertheless, different from the mediator model, a moderator always serves as an independent variable in the model. This has been defined by Baron and Kenny (1986) who say that a moderator is a variable which can influence the direction and/or strength of the relationship between predictor variable and criterion variable (as shown in Figure 4.2). By combing the mediator model and the moderator model into one SEM, the quantitative analysis of this research will provide a deeper understanding of the relationships between internal control, ERM, and firm performance.

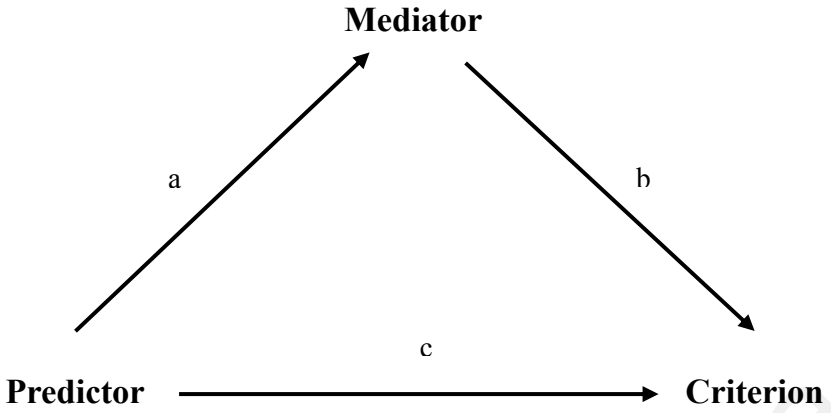

Figure 4.1: Mediator Model. Adapted from "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations," by R. Baron and D. Kenny, 1986, p.1176.

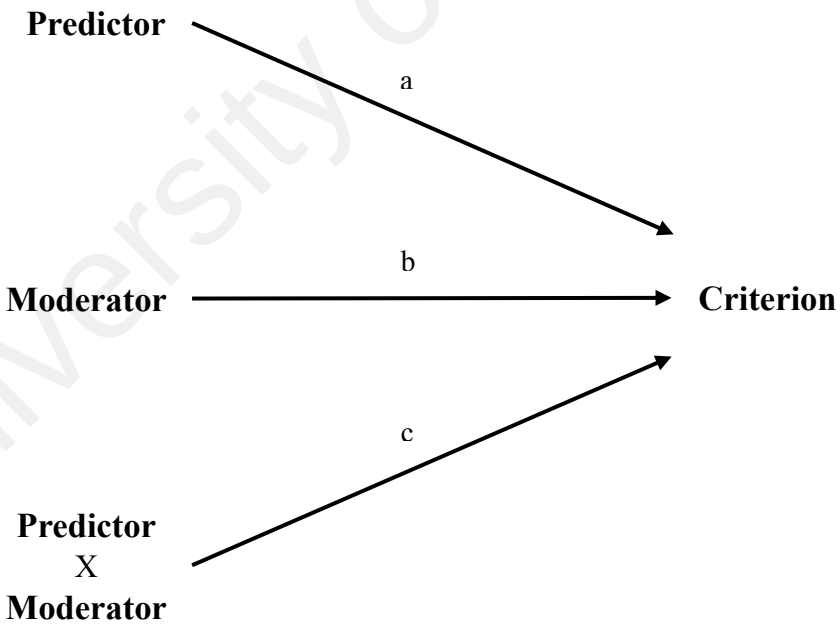

Figure 4.2: Moderator Model. Adapted from "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations," by R. Baron and D. Kenny, 1986, p.1174.

4.3 Research Questions and Hypotheses

This research is armed with several objectives. The first of these objectives is to investigate the association between internal control and ERM through their concepts and their relative effects on firm performance in public-listed firms in China. In order for these firms to better understand the difference and correlation regarding the role of internal control and ERM in operations, this research interpreted the fundamental principles of internal control and ERM according to the characteristics of the Chinese market and business environment. Accordingly, this research is designed to explore the relationships between internal control, ERM, and firm performance in the case of China. Figure 4.3 displays the conceptual model for the whole study. Based on the conceptual model, the function of firm-specific moderating variables (firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders) was examined so as to better explain the influences of both internal control and ERM on business operations. In this context, the developed research questions and hypotheses are then summarized in Table 4.1. Consequently, the outcomes of this study can assist management practitioners in China in establishing an effective and efficient framework of internal control and ERM in general, and thereby, contribute to the body of knowledge that is related to internal control and ERM, specifically in China.

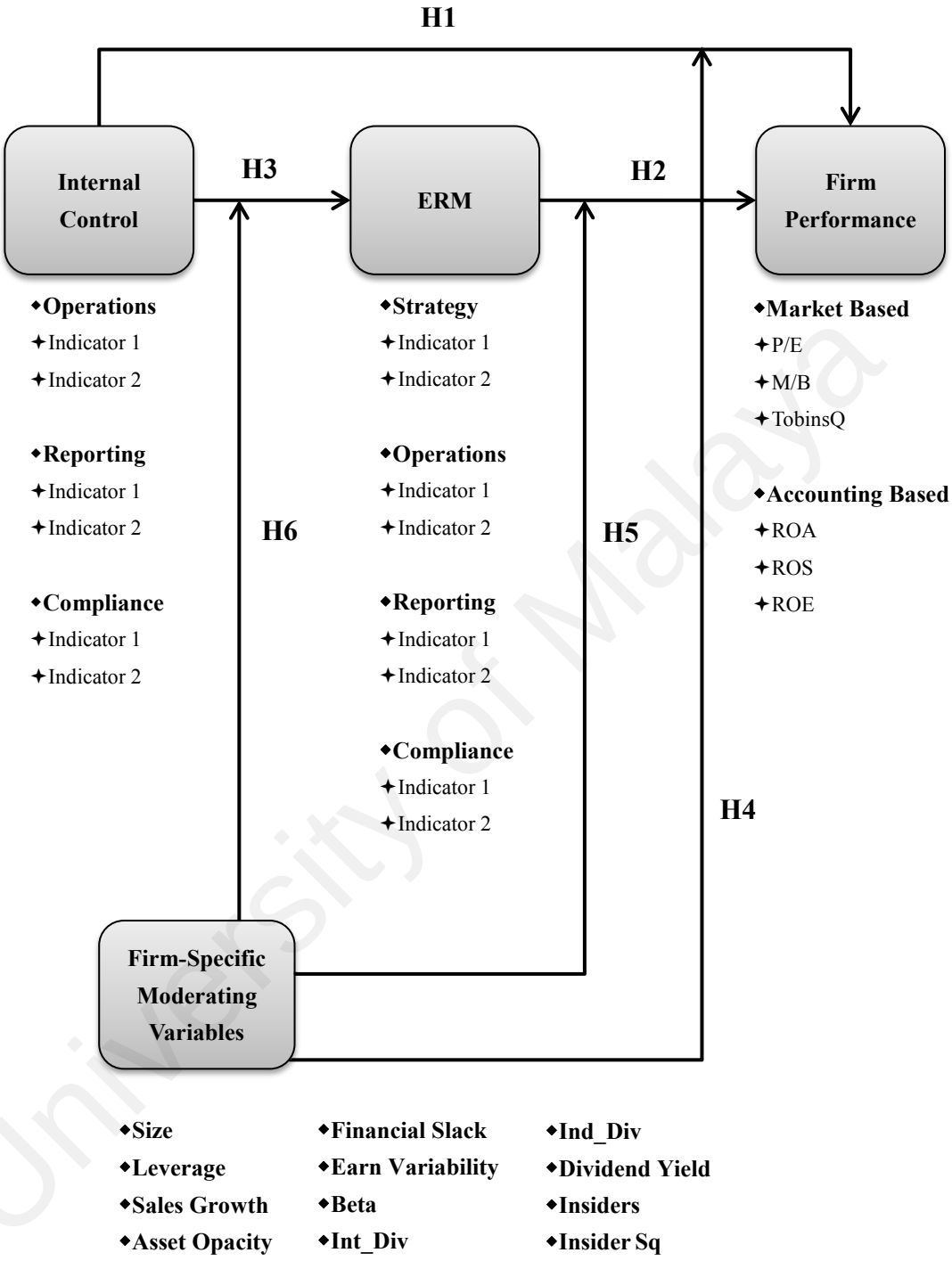

Figure 4.3: Conceptual Framework

Table 4.1: Summary of Research Questions and Hypotheses

Research Questions	Research Hypotheses
1. What is the relationship between internal control and firm performance?	**H1**: There is a positive relationship between internal control and firm performance.
2. What is the relationship between ERM and firm performance?	**H2**: There is a positive relationship between ERM and firm performance.
3. What is the relationship between internal control and ERM?	**H3**: There is a positive relationship between internal control and ERM.
4. Do firm-specific characteristics moderate the relationship between internal control and firm performance?	**H4**: The relationship between internal control and firm performance is moderated by firm-specific characteristics.
5. Do firm-specific characteristics moderate the relationship between ERM and firm performance?	**H5**: The relationship between ERM and firm performance is moderated by firm-specific characteristics.
6. Do firm-specific characteristics moderate the relationship between internal control and ERM?	**H6**: The relationship between internal control and ERM is moderated by firm-specific characteristics.

4.4 Research Variables

The literature seems to suggest that there should be a significant relationship between firm performance and the adoption of internal control and ERM (Douglas et al., 2014; Doyle et al., 2007; Farrell & Gallagher, 2015; Hoyt & Liebenberg, 2011). In addition, literature also provides that the effect of internal control should be positively associated with risk management activities (Goodwin-Stewart & Kent, 2006). In order to comprehensively explore the relationships between internal control, ERM, and firm performance, this research selected both the market-based metrics and accounting-based

metrics as the Key Performance Indicators (KPIs). It has been widely accepted that no single measurement can fully account for all aspects of performance for organizations (Abu-Shanab & Saleh, 2014; Ibrahim, Zolait, & Sundram, 2010; Obeidat, Al-Dmour, & Tarhini, 2015). However, prior studies normally adopt one or the other, that is either the market-based measures or the accounting-based measures, to assess firm performance (Combs, Crook, & Shook, 2005; Hult et al., 2008). Theoretically, market metrics are used to reflect the long-term or future performance while the accounting metrics are used to indicate the short-term or past performance (Gentry & Shen, 2010). Therefore, the reliability and validity of the measurement assessing firm performance can be improved by combining these two kinds of metrics into one integrated manner (Rowe & Morrow, 1999).

4.4.1 Key Performance Indicators (KPIs)

Although market-based measures and accounting-based measures are equivalent and interchangeable, they have different merits and demerits in the function of measurement. The advantage of using market-based metrics is that they can reflect a firm's market value and future expected cash flows through stock prices (Aliabadi, Dorestani, & Balsara, 2013). Additionally, market variables can present information that are not disclosed in the accounting statements (Agarwal & Taffler, 2008). However, market imperfections can cause under/over estimations of stock prices of firm performance. The advantage of using accounting-based metrics is that they are simple and convenient to be used through audited figures (Aliabadi et al., 2013). Nevertheless, since all accounting statements are historical and backward-looking information, it is

likely to manipulate the data according to different accounting policies and this will lead to a reduced comparability across firms (Aliabadi et al., 2013). In order to overcome the disadvantages of these two methods, a reflective measurement model which includes both the market-based measures and the accounting-based metrics was constructed for the current research (as shown in Figure 4.4).

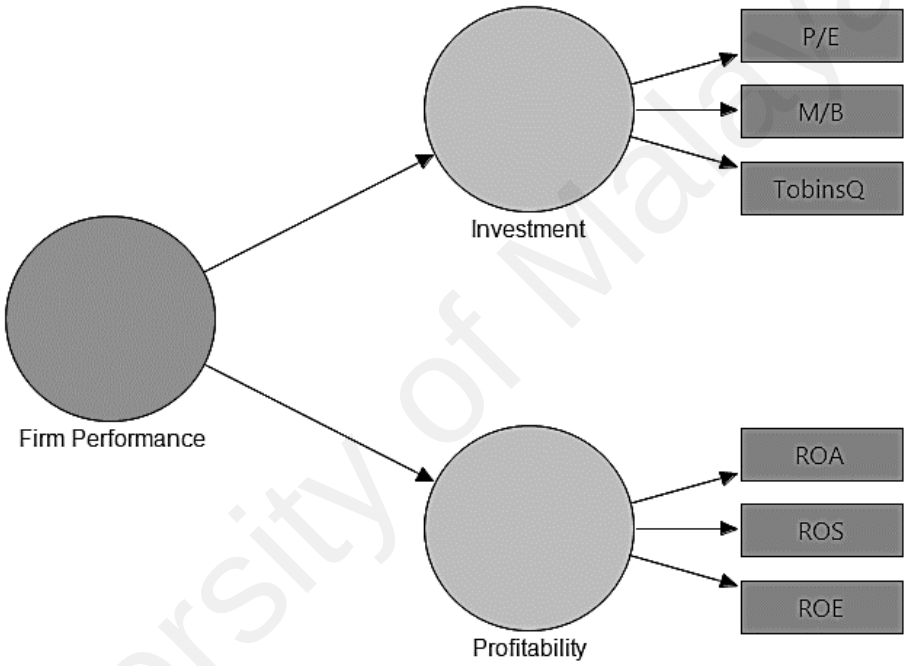

Figure 4.4: Structural Model for Firm Performance

4.4.1.1 Market Proxy

There are several techniques which can be used to analyse firm performance but in all of these, the ratio analysis component is most important. Although there are no definitive classification of ratios, under normal circumstances, ratios can be classified into investment (market) category and profitability (accounting) category (Tayeh, Al-Jarrah, & Tarhini, 2015). Market ratios describe how well a firm's performance can be associated with its stock price. In the current research, price-to-earnings ratio,

market-to-book ratio, and Tobin's Q ratio are used to quantify firm performance in the aspect of investment.

Price-to-Earnings (P/E) Ratio. The price-to-earnings ratio is an indicator that is used to measure the market expectations of corporate stocks. In truth, the Wall Street Journal reports the P/E ratio as a daily coverage of trading activities and stock prices (Stickney, Brown, & Wahlen, 2007). It has been observed that a higher P/E ratio can often present a better confidence of a firm's profitability in the future. The formula of the P/E ratio is as follows:

$$P/E = Market\ Price\ per\ Share / Earning\ per\ Share$$

Since this ratio is computed by using the current stock price and current earnings, it is asserted that even if it is efficiently captured and applied, the P/E ratio may give misleading information on the investment. This is because it forecasts the present value of future earnings based on historical data.

Market-to-Book (M/B) Ratio. Many previous studies have adopted the market-to-book ratio as an indicator of market performance. This ratio is computed by using the market value of firms' common equity at a point-in-time and firms' book value of shareholders' common equity (Stickney et al., 2007). Specifically, the market value of equity is quantified by the stock price of all shares outstanding; the book value of equity is equal to the worth that all assets and liabilities are settled or sold out. Thus, the formula of the M/B ratio is as follows:

$$M/B = (Market\ Value\ of\ Firm/Book\ Value\ of\ Firm) \times 100\%$$

As market values are determined by the cash flow that are subsequently generated out rather than cash invested in assets acquisition, it can be asserted that instead of telling analysts the significance of the ratio itself, the M/B ratio merely reflects the market value of the firm (Tayeh et al., 2015).

Tobin's Q (TobinsQ) Ratio. The Tobin's Q ratio is often applied as a proxy of firm value in risk management research. It dominates other performance measures because TobinsQ does not require risk adjustment or normalization (Lang & Stulz, 1994). This ratio is defined as the market value of assets for replacement cost. However, since the replacement cost is difficult to assess, an approximated equation is used in the current research. The formula of the TobinsQ ratio is as follows:

$$TobinsQ = (Market\ value\ of\ common\ stock + Book\ value\ of\ nontradable\ stock + Book\ value\ of\ debt) / Book\ value\ of\ assets$$

Due to the existence of a large amount of non-tradable shares existing in China, the market value of this kind of shares cannot be directly evaluated by equity market (Xiaoming & Chunyu, 2009). Therefore, in this context, the approximated equation, when compared to traditional TobinsQ ratio, is deemed to be more effective and efficient for the study of firms in China.

4.4.1.2 Accounting Proxy

Accounting ratios reflect the ability of a firm to earn money. This kind of ratios is considered to be the most useful metrics in financial statement analysis (Tayeh et al., 2015). In the case of using ratios to serve as indicators of profitability, it is noted that the accounting ratios are used to illustrate how much profit a firm can generate from its sales. In this research, return on assets ratio, return on sales ratio, and return on equity ratio are used to quantify firm performance in the aspect of profitability.

Return on Assets (ROA) Ratio. The return on assets ratio reflects how firms produce income from their assets. Theoretically, a higher ROA means a firm can achieve better operating performance from its investment activities. Nevertheless, this ratio does not indicate whether these investments are financed through using debt or equity (Stickney et al., 2007). It merely shows the relationship between the amount of profits (excluding tax and interest) and corporate assets. The formula of the ROA ratio is as follows:

$$ROA = (Net\ Profit\ before\ Interest\ and\ Tax / Total\ Assets) \times 100\%$$

Though the ROA can measure a firm's ability of generating profits from its total assets, it ignores the proportion of financing that may be collected from either debts or equities. In addition, the ROA ratio is also unable to show the cost of the financing capitals (Stickney et al., 2007).

Return on Sales (ROS) Ratio. According to Tayeh et al. (2015), the return on sales ratio is one of the top ten KPIs which is used to benchmark firm performance. This ratio can reflect how successful the corporate management is in producing profits from sales. Similar to other profitability ratios, the ROS is defined by net profits and firm sales. The formula of the ROS ratio is as follows:

$$ROS = (Net\ Profit\ before\ Interest\ and\ Tax/Sales) \times 100\%$$

It is widely accepted that a higher ROS ratio generally means good firm performance. However, it merely concentrates on the profit and loss account and neglects the balance sheet and cash flow statements. Due to the lack of a holistic approach for assessment, the ROS ratio can only present the segment of management performance (Warner & Hennell, 2001).

Return on Equity (ROE) Ratio. The return on equity ratio describes how efficiently a firm can produce profits for the shareholders. Additionally, it reveals a firm's ability to generate growth from investment funds (Alexander & Nobes, 2004). In other words, the ROE ratio examines whether the corporate management of a firm can maximize the shareholders' value based on the capital collected from the financial market. The formula of the ROE ratio is as follows:

$$ROE = (Net\ Profit\ before\ Interest\ and\ Tax/Total\ Equity) \times 100\%$$

Although the ROE is often applied as a useful proxy to compare firms' profitability, it is disadvantaged by the clarification distinguishing whether a firm is improving or reducing the wealth for shareholders (Elliott & Elliott, 2011). In the current research, all the KPIs used are summarized in Table 4.2.

Table 4.2: Summary of Key Performance Indicators

Name	Classification	Measurement
Price-to-Earnings Ratio	Investment / Market	$P/E = (Market\ Price\ per\ Share) \div (Earning\ per\ Share)$
Market-to-Book Ratio	Investment / Market	$M/B = (Market\ Value\ of\ Firm) \div (Book\ Value\ of\ Firm) \times 100\%$
Tobin's Q Ratio	Investment / Market	$TobinsQ = (Market\ value\ of\ common\ stock + Book\ value\ of\ nontradable\ stock + Book\ value\ of\ debt) \div Book\ value\ of\ assets$
Return on Assets Ratio	Profitability / Accounting	$ROA = (Net\ Profit\ before\ Interest\ and\ Tax) \div (Total\ Assets) \times 100\%$
Return on Sales Ratio	Profitability / Accounting	$ROS = (Net\ Profit\ before\ Interest\ and\ Tax) \div (Sales) \times 100\%$
Return on Equity Ratio	Profitability / Accounting	$ROE = (Net\ Profit\ before\ Interest\ and\ Tax) \div (Total\ Equity) \times 100\%$

4.4.2 Internal Control and ERM Metrics

Previous studies have widely applied internal control or ERM as a binary variable to explore the association between risk management activities and firm value. However, this kind of proxy is too simple for quantifying the genuine function of internal control and/or ERM. In addition, since the establishment of both the internal control and ERM consume long-term operations and their effects on performance cannot be reflected immediately, it is difficult to prove whether the improved value or decreased value of the firm is caused mainly by the "Adoption" at a point-in-time. In this context, effective and efficient measurements for internal control and ERM are of importance in this research.

In 2009, Gordon, Loeb, and Tseng were the first to develop the Enterprise Risk Management Index (ERMI) as a means to measure the effectiveness of a firm's ERM. This was done through its ability in achieving the four objectives noted in COSO's integrated framework. Theoretically, the ERMI combines the achievement of a firm's goal in the aspect of strategy, operations, reporting, and compliance into one metric. Furthermore, each objective achievement is estimated by two indicators as a means to comprehensively measure the performance of ERM in detail. The ERMI is structured as follows:

$$ERMI_{ij} = \sum_{k=1}^{2} Strategy_k + \sum_{k=1}^{2} Operation_k + \sum_{k=1}^{2} Reporting_k + \sum_{k=1}^{2} Compliance_k$$

According to Gordon et al. (2009), the ERMI can be used to reflect the association between ERM effectiveness and firm performance. However, the impacts of each objective in the ERM framework cannot be manifested. In this research, a comprehensive measurement model was constructed for the purpose of achieving a better understanding of the relationships between internal control, ERM, and firm performance. As shown in Figure 4.5 and Figure 4.6, this research adapted the ERMI which combines the indicators of relative objectives into one formative model. Although both the internal control model and ERM model had adopted some common indicators, their measurements were quite different. Compared to internal control, ERM added strategy into its assessment which would modify the parameters of the existing variables in new conditions.

Successful Strategy. In looking at the indicators of relative objectives, strategy is defined by a firm's market position which is relative to its competitors. By executing the strategy, a firm can develop its competitive edge by lowering the risk of failure and increasing firm value. It has been noted by Gordon et al. (2009) that all firms compete for sales opportunities. Therefore, if a firm can earn more sales which is relative to its competitors, it means that the firm's strategy is effective and efficient. In this context, one indicator of successful strategy is determined as follows:

$$Strategy_1 = (Gross\ Sales_{ij} - \mu_{Gross\ Sales_j})/\sigma_{Gross\ Sales_j}$$

where Gross Sales $_{ij}$ is the gross sales of firm i in year j; $\mu_{\text{Gross Sales j}}$ is the average

industry gross sales in year j; $\sigma_{\text{Gross Sales j}}$ is the standard deviation of gross sales of all firms in year j.

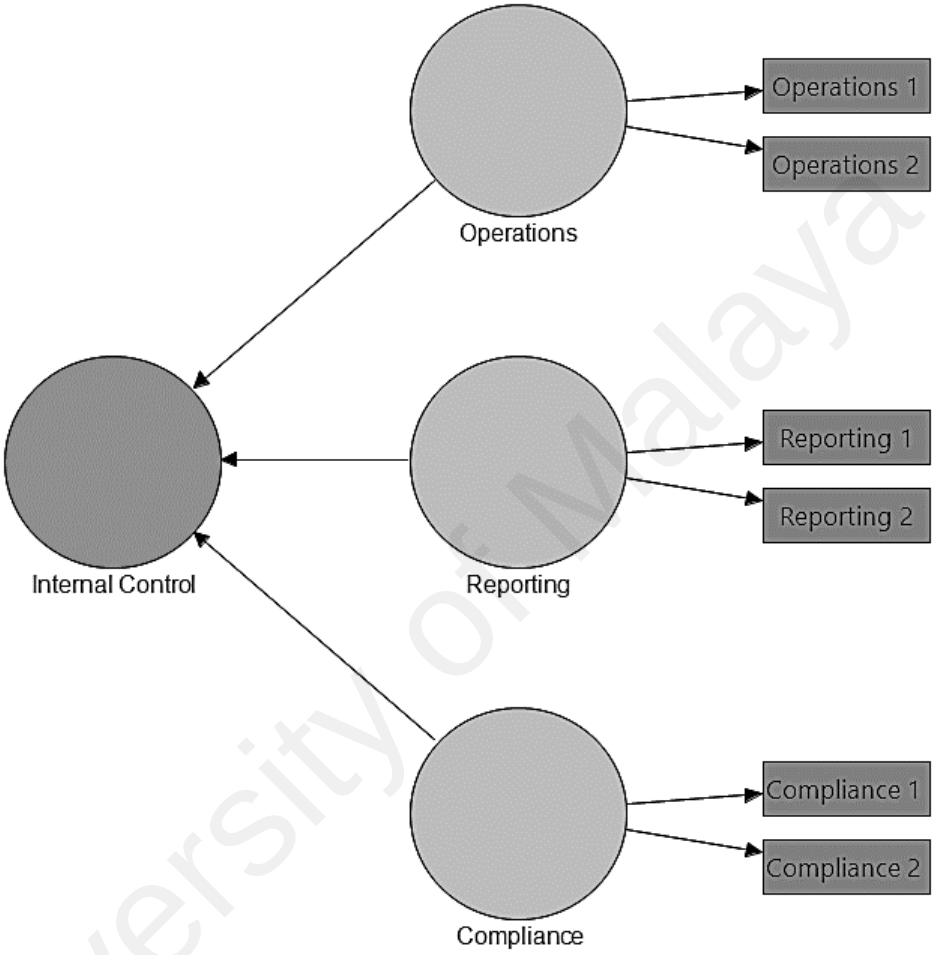

Figure 4.5: Structural Model for Internal Control

Another measurement of strategy is based on a firms' ability to reduce systematic risks. According to Nocco and Stulz (2006), the major benefit of ERM is that risks can be diversified and reduced through risk portfolio management. Additionally, since systematic risks indicate the undiversified risks of a firm, a successful strategy of diversification would help the firm to reduce its systematic risks. In this context, the second indicator of successful strategy is determined as follows:

$$Strategy_2 = (\Delta\beta_{ij} - \mu_{\Delta\beta_j})/\sigma_{\Delta\beta_j}$$

where $\Delta\beta_{ij}$ is the change of beta for firm i in year j; $\mu_{\Delta\beta j}$ is the average industry change of beta in year j; $\sigma_{\Delta\beta j}$ is the standard deviation of change of beta of all firms in year j.

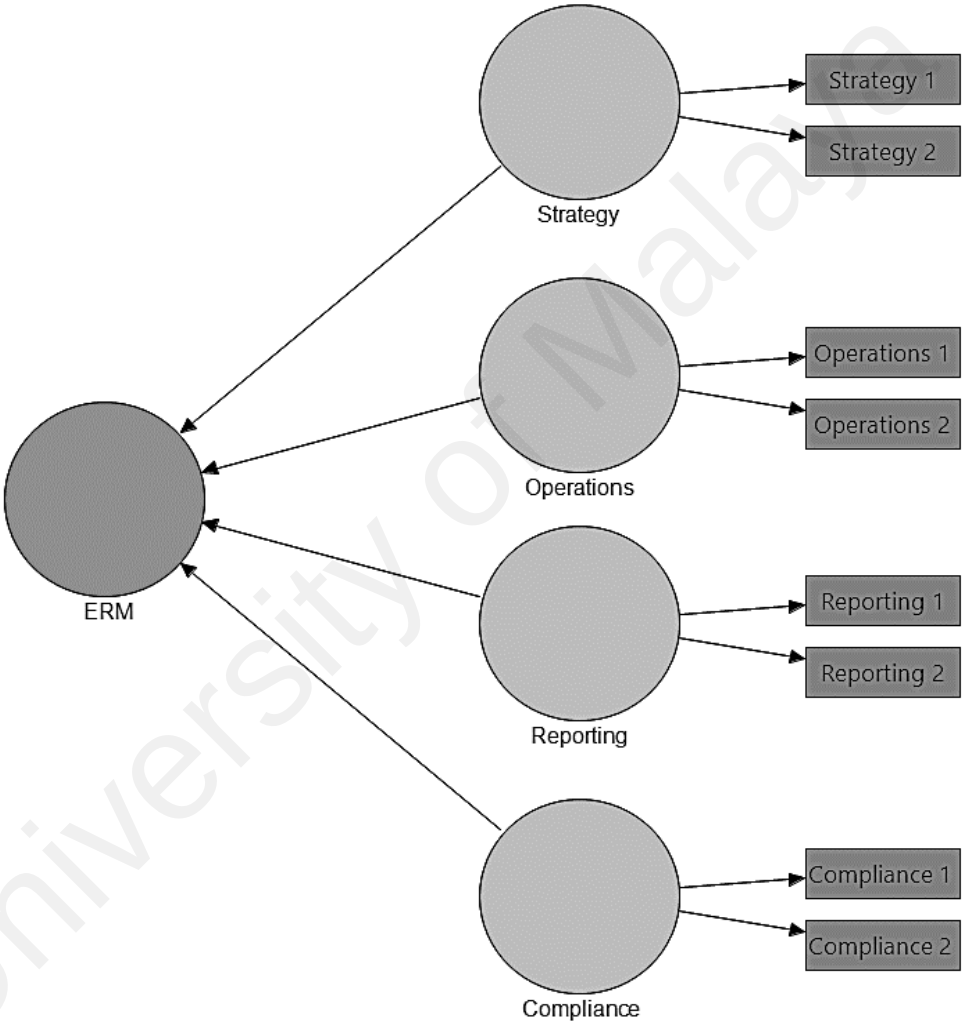

Figure 4.6: Structural Model for ERM

Effective Operations. Operations efficiency can be simply explained as productivity for a firm (Gordon et al., 2009). It is reasonable that a firm's operations would be deemed as efficient if it can generate more output for a given level of input, or

if it can use less input to produce a given level of output. Meanwhile, higher operating efficiency can reduce the firm's overall risk of failure, and so improve firm performance. In this context, the indicators of effective operations are determined as follows:

$$Operations_1 = Gross\ Sales_{ij}/Total\ Assets_{ij}$$

$$Operations_2 = Gross\ Sales_{ij}/Number\ of\ Employees_{ij}$$

Reliable Reporting. Reporting reliability is important for a firm because poor financial reporting will lead to an increase in failure risk as well as a decrease in firm value. Scholars like Cohen, Krishnamoorthy, and Wright (2004) claimed that financial fraud, financial restatements, and illegal earnings can provide evidence which demonstrates poor reporting quality. In addition, it has been noted that organizations which employ one of the Big Four (PricewaterhouseCoopers, Deloitte, Ernst & Young, and KPMG) accounting firms as independent auditors are more likely to present reliable reporting. Therefore, one measurement of reporting reliability is computed through the combination of material weakness, qualified auditor opinion, restatement, and hiring of the Big Four. In this context, the indicator of reliable reporting is determined as follows:

$$Reporting_1 = Material\ Weakness_{ij} + Auditor\ Opinion_{ij} + Restatment_{ij} + Big4_{ij}$$

where Material Weakness $_{ij}$ is set to 0 when firm discloses any material weakness in its annual report, otherwise it is set to 1; Auditor Opinion $_{ij}$ is set to 1 when there is unqualified opinions in auditor's report, otherwise it is set to 0; Restatement $_{ij}$ is set to 0

if firm announces a restatement, otherwise it is set to 1; Big Four $_{ij}$ is set to 1 when firm's independent auditor is one of Big Four accounting firms, otherwise it is set to 0. The range for Reporting $_{1}$ is from 0 to 4.

Another measurement of reliable reporting is quantified by the absolute value of abnormal accruals (Johnson, Khurana, & Reynolds, 2002). Following the method used by Gordon et al. (2009), abnormal accruals are estimated via the cross-sectional accruals estimation model which was developed by Jones (1991). In this context, the second indicator of reliable reporting is determined as follows:

$$Reporting_2 = |Normal\ Accruals_{ij}|/(|Normal\ Accruals_{ij}| + |Abnormal\ Accruals_{ij}|\ )$$

where Total Accruals are defined as income before extraordinary items minus operating cash flows; Normal accruals are defined as total accruals minus abnormal accruals; Abnormal Accruals is the error term ϵ from the regression model:

$$TA_{ij}\ /\ A_{ij-1} = a_{ij}\ [1\ /\ A_{ij-1}\ ] + b_{ij}\ [\Delta REV_{ij}\ /\ A_{ij-1}\ ] + c_{ij}\ [PPE_{ij}\ /\ A_{ij-1}\ ] + \epsilon_{ij}$$

TA $_{ij}$ is total accruals for firm i in year j; A $_{ij-1}$ is total assets for firm i in year j; ΔREV $_{ij}$ is the change in net revenues for firm i in year j; PPE $_{ij}$ is the gross property plant and equipment for firm i in year j; ϵ_{ij} is the error term for firm i in year j.

Regulation Compliance. It has been described by Gordon et al. (2009) that regulation compliance can lower a firm's failure risk and improve firm performance. Based on the investigation of Keefe, King, and Gaver (1994), compliance with Generally Accepted Auditing Standards (GAAS) is associated with audit fees. In this context, one indicator of regulation compliance is determined as follows:

$$Compliance_1 = Auditor\ Fees_{ij} / Total\ Assets_{ij}$$

Another indicator of regulation compliance is connected with firms' settlements. It seems reasonable that a firm will get higher opportunities to be a plaintiff rather than a defendant through regulation compliance. Therefore, if a firm complies with regulations, it can gain more settlement gains and face fewer settlement losses (Gordon et al., 2009). In this context, the second indicator of regulation compliance is determined as follows:

$$Compliance_2 = Settlement\ Net\ Gain\ (Loss)_{ij} / Totl\ Assets_{ij}$$

where Settlement Net Gain (Loss) $_{ij}$ is the amount of settlement gains (losses) that reflects both the plaintiff's and the defendant's agreement on the ex-ante evaluations. Thereafter, all indicators used in internal control model and ERM model were summarized in Table 4.3.

Table 4.3: Summary of Internal Control and ERM Indicators

Variable	Indicator	Definition
ERM	Strategy 1	$\text{Strategy}_1 = (\text{Gross Sales}_{ij} - \mu_{\text{Gross Sales}_j})/\sigma_{\text{Gross Sales}_j}$ where Gross Sales $_{ij}$ is the gross sales of firm i in year j; $\mu_{\text{Gross Sales j}}$ is the average industry gross sales in year j; $\sigma_{\text{Gross Sales j}}$ is the standard deviation of gross sales of all firms in year j.
ERM	Strategy 2	$\text{Strategy}_2 = (\Delta\beta_{ij} - \mu_{\Delta\beta_j})/\sigma_{\Delta\beta_j}$ where $\Delta\beta_{ij}$ is the change of beta for firm i in year j; $\mu_{\Delta\beta\,j}$ is the average industry change of beta in year j; $\sigma_{\Delta\beta\,j}$ is the standard deviation of change of beta of all firms in year j.
IC & ERM	Operations 1	$\text{Operations}_1 = \text{Gross Sales}_{ij}/\text{Total Assets}_{ij}$
IC & ERM	Operations 2	$\text{Operations}_2 = \text{Gross Sales}_{ij}/\text{Number of Employees}_{ij}$
IC & ERM	Reporting 1	$\text{Reporting}_1 = \text{Material Weakness}_{ij} + \text{Auditor Opinion}_{ij} + \text{Restatement}_{ij} + \text{Big4}_{ij}$ where Material Weakness $_{ij}$ is set to – 1 when firm discloses any material weakness in its annual report, otherwise it is set to 0; Auditor Opinion $_{ij}$ is set to 0 when there is unqualified opinions in auditor's report, otherwise it is set to – 1; Restatement $_{ij}$ is set to – 1 if firm announces a restatement, otherwise it is set to 0; Big Four $_{ij}$ is set to 1 when firm's independent auditor is one of Big Four accounting firms, otherwise it is set to 0.
IC & ERM	Reporting 2	$\text{Reporting}_2 = \lvert\text{Normal Accruals}_{ij}\rvert/(\lvert\text{Normal Accruals}_{ij}\rvert + \lvert\text{Abnormal Accruals}_{ij}\rvert)$ where Abnormal Accruals is the error term ϵ from the regression model $\text{TA}_{ij} / \text{A}_{ij-1} = \text{a}_{ij}\,[1 / \text{A}_{ij-1}] + \text{b}_{ij}\,[\Delta\text{REV}_{ij} / \text{A}_{ij-1}] + \text{c}_{ij}\,[\text{PPE}_{ij} / \text{A}_{ij-1}] + \epsilon_{ij}$, TA $_{ij}$ is total accruals for firm i in year j; A $_{ij-1}$ is total assets for firm i in year j; ΔREV $_{ij}$ is the change in net revenues for firm i in year j; PPE $_{ij}$ is the gross property plant and equipment for firm i in year j; ϵ_{ij} is the error term for firm i in year j. Total accruals are defined as income before extraordinary items minus operating cash flows. Normal accruals are defined as total accruals minus abnormal accruals.
IC & ERM	Compliance 1	$\text{Compliance}_1 = \text{Auditor Fees}_{ij}/\text{ Total Assets}_{ij}$
IC & ERM	Compliance 2	$\text{Compliance}_2 = \text{Settlement Net Gain (Loss)}_{ij}/\text{Total Assets}_{ij}$ where Settlement Net Gain (Loss) $_{ij}$ is the amount of settlement gains (losses) that reflects both the plaintiff's and the defendant's agreement on the ex-ante evaluations.

Note: Adapted from "Enterprise Risk Management and Firm Performance: A Contingency Perspective." by L. A. Gordon, P. M. Loeb, and C. Y. Tseng, 2009, p. 325.

4.4.3 Moderating Variables

According to prior studies, there are various variables that have significant effects on both ERM and firm performance (Farrell & Gallagher, 2015; McShane et al., 2011; Don Pagach & Warr, 2010). With reference to COSO's description, the internal control integrated framework proposed, adopts some categories of objectives (operations, reporting, and compliance) which are in common with the ERM integrated framework. Therefore, these significant variables are assumed to have significant impacts on internal control too since both internal control and ERM act on firm performance in the aspect of managing risk. In this context, all the significant variables were evaluated as multiple moderating variables while investigating the relationships between internal control, ERM, and firm performance. Consistent with Don Pagach and Warr (2010), McShane et al. (2011), and Farrell and Gallagher (2015), the following moderating variables are identified in this research for the purpose of exploring their impacts on the direction and strength of relationship between predictor and criterion variables.

Size. Larger firms are more capable of maximizing growth opportunities than smaller ones to improve performance. In addition, larger firms are more likely to suffer from a complex business environment and be exposed to a wider range of risks (Beasley et al., 2008). According to the characteristic of COSO's frameworks, upfront costs and potential benefits of internal control and ERM are connected with firm size since the programs are required to make significant investments in people, process, and technology. Therefore, only larger firms are expected to drive greater value from engagement into internal control and ERM (Paape & Speklè, 2012). In this research,

firm size is expressed as follows:

$$Firm\ Size = ln\ (Book\ Value\ of\ Assets)$$

Leverage. Firms with higher leverage are more likely to suffer from bankruptcy and this adds extra financial distress costs to owners. Therefore, the excessive leverage may lead to the limitation of flexibility in firms' operations. Additionally, firms with higher leverage may lose opportunities to invest in profitable projects with positive value (Don Pagach & Warr, 2010). Nevertheless, financial leverage may have the opportunity to enhance firm value by decreasing free cash flows which have been invested in suboptimal projects (Jensen, 1986). According to Donald Pagach and Warr (2011), firms with higher leverage may derive greater value from risk management programs since internal control or ERM can increase firms' ability to reduce operational risks which are associated with debt capacity. In this research, leverage is expressed as follows:

$$Leverage = Book\ Value\ of\ Liabilities\ /\ Market\ Value\ of\ Equity$$

Sales Growth. Sales growth has been widely adopted as an indicator for reflecting future growth opportunities for firms. Titman and Wessels (1988) assert that firms with higher sales growth will achieve better performance by improving the profitability as well as firm value. In order to derive greater value from sales growth, firms may pursue more growth options, which could lead to the increased probability of financial distress. Therefore, the implementation of internal control and ERM seems to be important as it

can help firms to avoid unexpected events (Don Pagach & Warr, 2010). In this context, sales growth is conjectured to be positively associated with internal control and ERM. In this research, sales growth is expressed as follows:

$$Sales\ Growth = (Sales\ Revenue_t - Sales\ Revenue_{t-1})\ /\ Sales\ Revenue_{t-1}$$

Asset Opacity. Opaque assets are generally presented as intangible assets thus, firms with more opaque assets are often more difficult to be evaluated by outsiders (Pottier & Sommer, 2006). According to the arguments of Hoyt and Liebenberg (2011), firms are inclined towards establishing risk management programs when their assets are relatively more opaque. In addition, Don Pagach and Warr (2010) advocate that firms, whose operating income depend heavily on opaque assets have more difficulty in liquidating these assets quickly at a fair market value as a means of averting financial distress. In this context, asset opacity is conjectured to be negatively associated with firm performance. In this research, asset opacity is expressed as follows:

$$Asset\ Opacity = Intangible\ Assets\ /\ Book\ Value\ of\ Assets$$

Financial Slack. Financial slack measures a firm's ability to utilize highly liquid assets to make up for the short fall in operating cash flows. Therefore, firms with higher level of financial slack will put more emphasis on risk management programs so as to provide a greater cushion for financial distress (Don Pagach & Warr, 2010). However, less financial slack is required by highly levered firms since risks can be managed more thoroughly in order to reduce the probability of financial distress (Hoyt & Liebenberg,

2011). In this research, financial slack is conjectured to be positively associated with firm performance. The metric of asset opacity is expressed as follows:

$$Financial\ Slack = Cash\ and\ Short\ Term\ Investments\ /\ Book\ Value\ of\ Assets$$

Earnings Variability. Variability refers to the extent where data collected within a time period differs from each other while earnings variability is used to indicate the volatility existing in firms' earnings. Therefore, firms with higher earnings variability will be more exposed to risks and may suffer from the effects of lower tail outcomes (Don Pagach & Warr, 2010). According to the argument of Smith and Stulz (1985), reducing earnings variability in the presence of a convex income tax schedule can motivate a firm's engagement into risk management programs. In this context, steadier earnings can allow firms to derive more profitability. Thus, it is conjectured that earnings variability is positively associated with firm performance. In this research, earnings variability is expressed as follows:

$$Earnings\ Variability = \frac{\sqrt{\sum_{i=1}^{n}(E_i - \bar{E})^2/(n-1)}}{\bar{E}} \times 100\%$$

where E is the earnings before interest and taxes (EBIT).

Beta. As an important proxy for systematic risk, beta has been widely applied in prior studies relative to risk management. It is adopted to reflect the return volatility of a firm and it is measured by firm excess returns and market excess returns (Hoyt &

Liebenberg, 2011). In this regard, firms may intend to embrace risk management programs so as to smoothen the return volatility (Sharpe, 1964). On the other hand, beta is deemed as the tendency of a security's returns to respond to swings in the market. In this context, firms with a higher beta are conjectured to get more opportunities in achieving greater firm performance. In this research, beta is expressed as follows:

$$Beta = \frac{\sum_{t=1}^{n}(R_{it} - \bar{R}_i)(R_{mt} - \overline{R_m})}{\sum_{t=1}^{n}(R_{mt} - \overline{R_m})^2}$$

where R_i is the monthly return for firm i; R_m is the monthly market return.

International Diversification. International Diversification describes the condition where a firm's business is not restricted to the domestic site only but also abroad transections. It has been advocated by Hoyt and Liebenberg (2011) that international diversification is associated with costs which are caused by conflicts of unresolved agencies. Meanwhile, international diversification can also enhance firm performance from scope economies and risk reduction (Bharadwaj et al., 1999). In addition, Standard & Poor's (2005) argued that firms are motivated to get benefits from the adoption of risk management since the diversification makes the business environment relatively more complex. In this research, a dummy variable is used to indicate the status of international diversification. It takes a value of 1 for firms with geographic segments outside of China and 0 otherwise. The metric is expressed as follows:

$$Int\_Div = \begin{cases} 1, & if\ Revenue\ from\ Abroad\ Country > 0 \\ 0, & otherwise \end{cases}$$

Industrial Diversification. Industrial Diversification refers to the status of firms that do not operate on a single industry only. Quite similar to international diversification, the theory suggests that industrial diversification is associated with costs and benefits (Hoyt & Liebenberg, 2011). In this context, firms can derive greater value from industrial diversification through profits gained from large internal capital markets, scope economies, and risk reduction (Bharadwaj et al., 1999). Additionally, the vast majority of empirical studies have proved that diversified firms tend to trade at a discount relative to undiversified firms (Martin & Sayrak, 2003). Based on the description of Standard & Poor's (2005), industrial diversification is another factor that is likely to affect the motivation of a firm into embracing the risk management programs. In this research, the industrial diversification is also measured by a dummy variable. It takes a value of 1 for firms with income from non-single segments, and 0 otherwise. The metric is expressed as follows:

$$Ind\_Div = \begin{cases} 1, & if\ Revenue\ from\ Secondary\ Industry > 0 \\ 0, & otherwise \end{cases}$$

Dividend Yield. Dividend yield measures how much a firm will pay out in dividends for each dollar invested in the equity position. In the absence of any capital gains, dividend yield is an effective indicator which expresses the return on investment in the financial market. Therefore, investors may view the disbursement of dividends as a good sign for which a firm has exhausted its growth opportunities (Allayannis &

Weston, 2001). In this context, the dividend yield will be negatively associated with firm value. However, if dividends reduce the free cash flows which can be used for the costs of managerial perquisite consumption, then dividend yield should be positively associated with the firm value (Lang & Stulz, 1994). In this research, the dividend yield is conjectured to negatively affect the adoption of internal control and ERM. The metric is expressed as follows:

$$Dividend\ Yield = Annual\ Dividends\ Per\ Share / Stock\ Price\ Per\ Share$$

Insider Share Ownership. An insider is normally a senior officer or a director of a firm. In addition, any person or entity that beneficially trades corporate stock based on material non-public knowledge is also regarded as an insider. However, the insider used in this research is defined as any shareholder who owns more than 10% of a firm's voting shares. McConnell and Servaes (1990) insist that firms with a low level of insider share ownership will effectively align the interest of managers and shareholders. Therefore, a high level of insider share ownership will negatively affect firm value (Hoyt & Liebenberg, 2011). In this research, insider ownership and its squared value are conjectured to be positively associated with the adoption of internal control and ERM. The metric is express as follows:

$$Insiders = Outstanding\ Shares\ Owned\ by\ Insiders / Total\ Shares\ Outstanding$$

$$Insider\ Sq = Insiders \times Insiders$$

Thereafter, all moderating variables used in this research are summarized in Table 4.4.

Table 4.4: Summary of Moderating Variables

Name	Measurement
Size	$Firm\ Size = ln\ (Book\ Value\ of\ Assets)$
Leverage	$Leverage = \frac{Book\ Value\ of\ Liabilities}{Market\ Value\ of\ Equity}$
Sales Growth	$Sales\ Growth = \frac{Sales\ Revenue_t - Sales\ Revenue_{t-1}}{Sales\ Revenue_{t-1}}$
Asset Opacity	$Asset\ Opacity = \frac{Intangible\ Assets}{Book\ Value\ of\ Assets}$
Financial Slack	$Financial\ Slack = \frac{Cash\ and\ Short\ Term\ Investments}{Book\ Value\ of\ Assets}$
Earn Variability	$Earnings\ Variability = \frac{\sqrt{\sum_{i=1}^{n}(E_i - \bar{E})^2/(n-1)}}{\bar{E}} \times 100\%$
Beta	$Beta = \frac{\sum_{t=1}^{n}(R_{it} - \bar{R_i})(R_{mt} - \overline{R_m})}{\sum_{t=1}^{n}(R_{mt} - \overline{R_m})^2}$
Int_Div	$Int\_Div = \begin{cases} 1, & if\ Revenue\ from\ Abroad\ Country > 0 \\ 0, & otherwise \end{cases}$
Ind_Div	$Ind\_Div = \begin{cases} 1, & if\ Revenue\ from\ Secondary\ Industry > 0 \\ 0, & otherwise \end{cases}$
Dividend Yield	$Dividend\ Yield = \frac{Annual\ Dividends\ Per\ Share}{Stock\ Price\ Per\ Share}$
Insiders	$Insiders = \frac{Outstanding\ Shares\ Owned\ by\ Insiders}{Total\ Shares\ Outstanding}$
Insider Sq	$Insider\ Sq = Insiders \times Insiders$

4.5 Population and Sample

As world economy is changing rapidly, operating pressures for Chinese firms have turned to become more sensitive than ever before. In this context, the conflict between risks and benefits creates challenge for firms in China to set out to implement a relevant

risk management system that guards them against the increasingly uncertain crisis which may be forth coming. However, the concept of both internal control and ERM have only been introduced and practiced in China for a short-time. In addition, the Chinese governance had also just required its publicly listed firms to comprehensively establish ERM in the last few years. Therefore, the current status for firms in China can be classified into four categories: firms which have adopted neither internal control nor traditional risk management; firms which have adopted internal control but not traditional risk management; firms which have adopted internal control and traditional risk management but not ERM; and firms which have adopted both internal control and ERM. This specific classification makes Chinese firms the most appropriate and suitable sample to be used for the purpose of exploring the relationships between internal control, ERM, and firm performance.

Due to the fact that both internal control and ERM require vast resources to be invested into people, process, and technology, it is hereby noted that only larger firms are more likely to engage in and implement these programs effectively and efficiently (Paape & Speklè, 2012). Therefore, the unit of analysis used for this research was selected from publicly listed firms in China. In order to obtain the available and consistent data, the population was deliberately confined to Chinese listed companies because their financial statements are made available publicly. Thus, non-public firms were excluded. Moreover, it is noted that the accounting standards adopted by the non-financial firms may vary across each other, hence there is no uniformity. In contrast, all publicly traded firms in China need to accept the Accounting Standards for Business

Enterprises (ASBE) and the Independent Auditing Standards (IAS) as measures, hence their financial statements were not only made public but were also more detailed and reliable, comparatively.

In 2006, the EICSC was first founded by the CMOF as a means to standardize the internal control activities. In 2007, the sound risk management framework was first announced by the CIRC as a means to identify the assessment of risk categories and the constitution of risk controls. In 2008, the basic standard to normalize enterprise internal control was first announced by the CMOF. In 2009, the guidelines for the implementation of ERM for life insurance markets in China was first announced by the CIRC. In 2012, a requirement for all Chinese state-owned firms to comprehensively implement ERM was first set by the SASAC. According to the time schedule of landmark events relative to internal control and ERM in China, data used in this research were obtained from the seven-year period which lasted between 2008 to 2014.

Due to irreversible incidents such as bankruptcy, suspension, acquisition, and merger, some of the publicly listed firms known in China may not have existed during the entire research duration. In that regard, it can be said that making an attempt to investigate all publicly listed firms in a dynamic capital market like China for a period of seven years is not easy. In the context of this research, the sample was deliberately confined to the Shanghai Shenzhen CSI 300 Index. This is because the sample drawn from the CSI 300 Index held 60%－70% market capitalizations of all publicly listed firms in China, thus, firms in the index were more likely to embrace internal control and

ERM relative to others. In addition, the industry weight distribution of the CSI 300 Index is consistent with the industry weight distribution of the entire capital market in China (as shown in Figure 4.7). Therefore, the sample of the CSI 300 Index can be deemed to be a good indicator which reflects all the publicly traded firms in China.

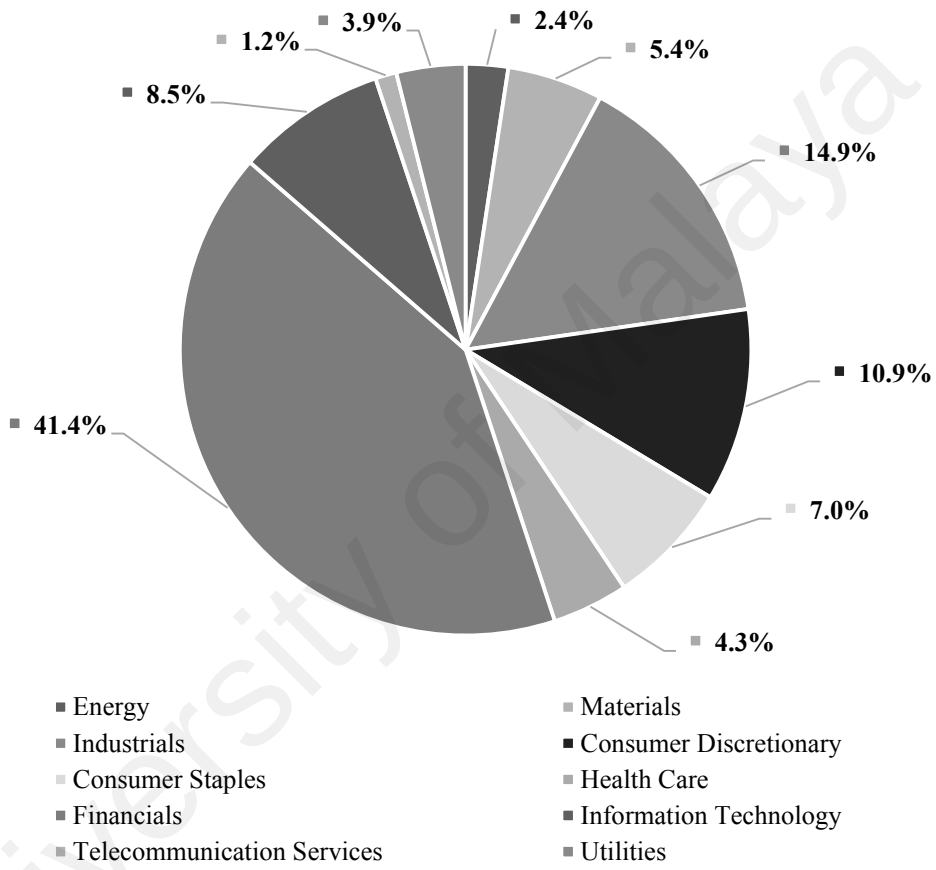

Figure 4.7: Industry Weight Distribution of CSI 300 Index

4.6 Data Collection

The collection of data stream used in this research is mainly dependent on the Bloomberg Database. In addition, the WFT was also adopted as the Standby Database. Since the WFT has the advantage of providing specific information of the financial market in China, it could supplement for any possible insufficiency served by Bloomberg. Nevertheless, neither the status of internal control nor ERM for Chinese

publicly traded firms could be found from the above databases. In this context, a content analysis was designed to exploit the relative data from the public information via the firms' financial statements and other media. Although there is no consolidated approach to doing content analysis, the more commonly applied procedure involves eight steps (Harris, 2001), which are represented in Figure 4.8.

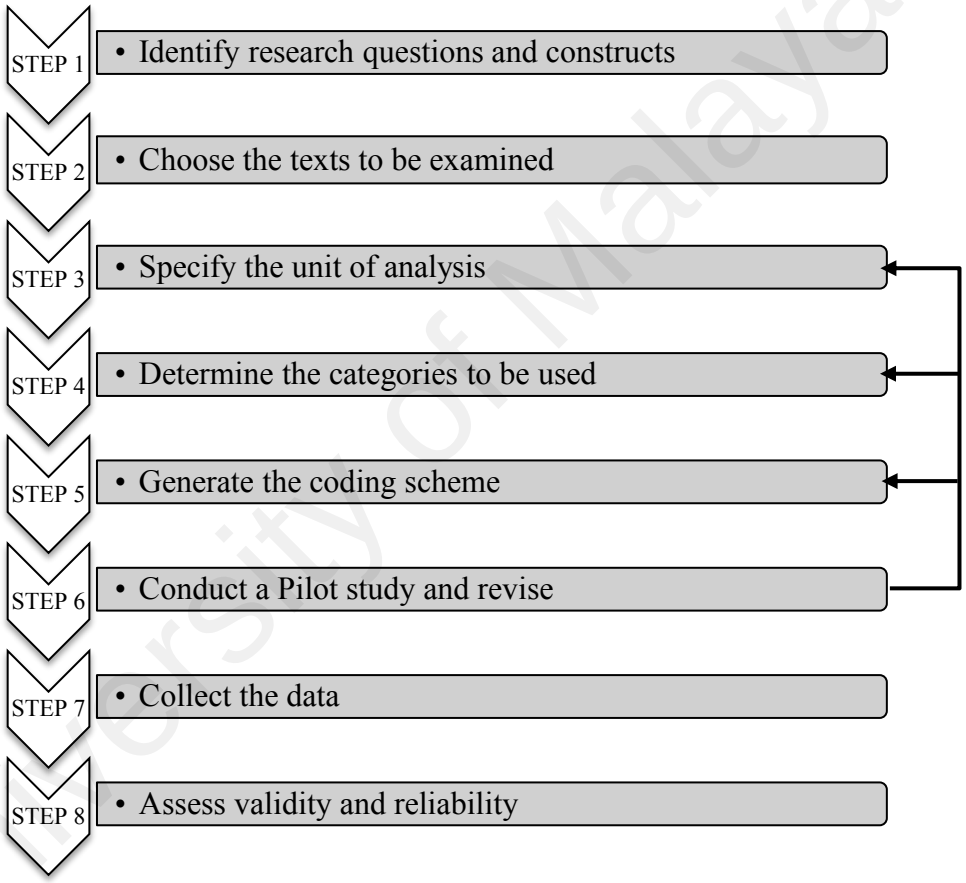

Figure 4.8: Procedure of Content Analysis. Adapted from "Content Analysis of Secondary Data: A Study of Courage in Managerial Decision Making," by H. Harris, 2001, p.194.

Since firms in China were not required to directly report the status of internal control and ERM, a detailed search for information of internal control and ERM is necessary. Adapting the method used by Hoyt and Liebenberg (2011), the search focused on phrases with some keywords (as shown in Table 4.5). These particular

search strings were selected because they refer to prominent methods for the implementation and management of internal control and ERM (Liebenberg & Hoyt, 2003). The search strings were manually reviewed within contexts in order to determine the successful adoption and engagement of internal control and ERM. By combining the search strings with the eight-step procedure, the content analysis approach used in this research is designed as follows:

Questions:

1. How to identify a firm's adoption of internal control?
2. How to identify a firm's adoption of traditional risk management?
3. How to identify a firm's adoption of enterprise risk management?

Texts:

Financial Reports; Internal Control Reports; Supervisory Committee Reports

Unit of Analysis:

CSI 300 Index Firms

Categories:

1. Firms adopt neither internal control nor traditional risk management.
2. Firms adopt internal control but not traditional risk management.
3. Firms adopt internal control and traditional risk management but not ERM.
4. Firms adopt both internal control and ERM.

Coding Scheme:

All the search strings used in the content analysis approach are further illustrated in Table 4.5.

Table 4.5: Summary of Coding Scheme

Internal Control Adoption	TRM Adoption	ERM Adoption
Internal Audit Department	Risk Management	Risk Management Department
Internal Control System	Risk Control	Risk Management System
Chief Internal Control Officer	Risk Assessment	Chief Risk Officer
Internal Control Framework	Risk Hedging	ERM Framework
Audit Committee	Risk Aversion	Risk Management Committee
Internal Control Audit	Risk Deflection	Enterprise Risk Management
Internal Control Management	Risk Defence	Consolidate Risk Management
Sound Internal Control	Risk Appetite	Strategic Risk Management
Well-Established Internal Control	Particular Risk	Holistic Risk Management
Rational Internal Control	Principle Risk	Integrated Risk Management

Pilot Study:

According to the requirement, 30 firms were sampled from the CSI 300 Index randomly. Based on the coding scheme, five years data were collected and examined for reliability with Cronbach's Alpha (as shown in Table 4.6). According to the criterion suggested by Cicchetti (1994), a reliability of 0.7 or higher is considered to be acceptable.

Table 4.6: Reliability of 30 Sampled Firms

Program	Cronbach's Alpha	N of Items	Cases Valid
Internal Control	0.871	5	30
TRM	0.838	5	30
ERM	0.896	5	30

Collection:

As the data collected via the search strings have shown very good reliability in the sample, it is reasonable to conclude that the coding scheme used in the content analysis approach is eligible for the current research. Accordingly, the data used to identify the status of internal control and risk management for the CSI 300 Index firms could be accurately collected through the content analysis. The results of the collected data were simply summarized in Figure 4.9.

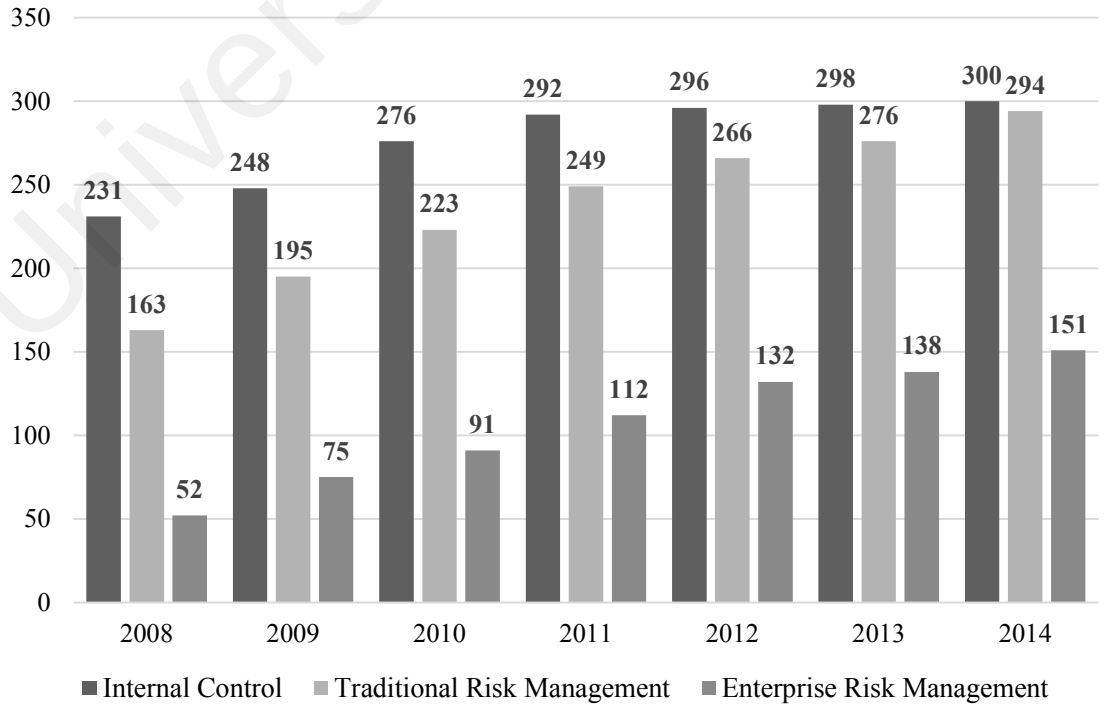

Figure 4.9: Status of Internal Control and Risk Management Adoption

Validity and Reliability:

This research applied the Cronbach's Alpha to measure the reliability of the collected data. According to the guidelines suggested by Cicchetti (1994), the reliability of collected data is unacceptable if alpha value is less than 0.7, the reliability is fair if alpha value is between 0.7 and 0.8, the reliability is good if alpha value is between 0.8 and 0.9, and the reliability is excellent if alpha value is greater than 0.7. In the context of this research, the reliability of the seven-year data that were collected from the content analysis approach was examined and presented in Table 4.7. The results indicate that these data are reliable enough to be used in this research.

Table 4.7: Reliability of CSI 300 Index Firms

Program	Cronbach's Alpha	N of Items	Cases Valid
Internal Control	0.818	7	300
TRM	0.904	7	300
ERM	0.956	7	300

4.7 Data Analysis

As stated earlier, this research was designed to use the Partial Least Squares-based Structural Equation Modeling (PLS-SEM) as a quantitative methodology to analyse the collected data. Compared to the regression-based approaches, SEM is a more appropriate method for exploring the relationships between internal control, ERM, and firm performance. Known as the first-generation technique (Anderson & Gerbing, 1988), regression models are applied to analyse one level of linkage between dependent and independent constructs at one time. Therefore, regression-based approaches are deemed

to be too weak for analysing realistic and complex situations in real practice. It has been highlighted by Haenlein and Kaplan (2004) that there are limitations for using the regression models and they include its oversimplified model structure, limited variable observation, and omitted measurement error. In contrast, the SEM model is deemed as a second-generation techniques and when used, it can overcome the limitations of the regression-based approaches. The SEM can simultaneously, present a comprehensive analysis of the relationships among more dependent and independent variables (Bagozzi & Fornell, 1982). Since there are multiple relationships in the current research design, the SEM technique was thus adopted so as to construct a complete model that has numerous latent variables. In addition, the SEM makes it possible for investigating the mediating and moderating effects for the entire model designed. All of these cannot be achieved through the application of the regression models.

In general, there are two techniques that could be used to estimate the parameters of the SEM. These encompass the covariance-based approach and the variance-based approach (Schumacker & Lomax, 2010). These two methods are also known as the Maximum Likelihood SEM and the Partial Least Squares SEM (Kock & Lynn, 2012). Recently, more researchers have started using the PLS as an alternative of the covariance-based SEM (CBSEM) because the PLS is more superior to the CBSEM on practical grounds. According to the study of Hair, Sarstedt, Pieper, and Ringle (2012), there are four major common reasons for adopting the PLS. These reasons are based on the following factors: non-normal data, small sample size, formative measures, and focus on prediction. Different from the CBSEM, the PLS is a distribution-free approach

that estimates with ordinary least squares (OLS) method rather than maximum likelihood method. Therefore, the PLS makes no distributional assumption and can work well with non-normal data. Since the PLS is a limited information estimation procedure, the appropriate sample size is much smaller than that required for a full information procedure. Compared to the CBSEM, the PLS is a more effective estimation method. It can deal with both the reflective and formative indicators. In addition, the PLS is more inclined towards being more appropriate for studies where the objective is prediction (Chin & Newsted, 1999). Due to the non-normal distribution of the enterprise-level data as well as the utilization of both the reflective and formative measurement models, this research thus, chooses the PLS-SEM method as its main research methodology.

Base on the function of PLS-SEM, there is a major difference between the reflective model and the formative model. In the reflective measurement model, all indicators should be highly correlated because the reflective indicators are all dependent on the construct (as shown in Figure 4.10). In contrast, each indicator in the formative measurement model can cause the formation in the unobservable variable. Therefore, the formative indicators can be either positive, negative, or zero when correlated with each other (Haenlein & Kaplan, 2004). It has been emphasized in statistical literature that hierarchical construct models can also be specified by using reflective and formative constructs (Petter, Straub, & Rai, 2007). With reference to the PLS, multidimensional construct models should be conceptualized through the repeated use of manifest variables. In this context, higher-order latent variables can be created by

representing all the manifest variables that have been used in the underlying lower-order latent variables (Wetzels, Odekerken-Schröder, & Van Oppen, 2009). This research adopts a second-order construct so as to comprehensively estimate firm performance and the effectiveness of internal control and ERM. As advocated by Hair, Hult, Ringle, and Sarstedt (2013) the main reason for applying a higher-order construct is to reduce the number of relationships noted in the structural model whilst making the PLS model more parsimonious and easier to grasp.

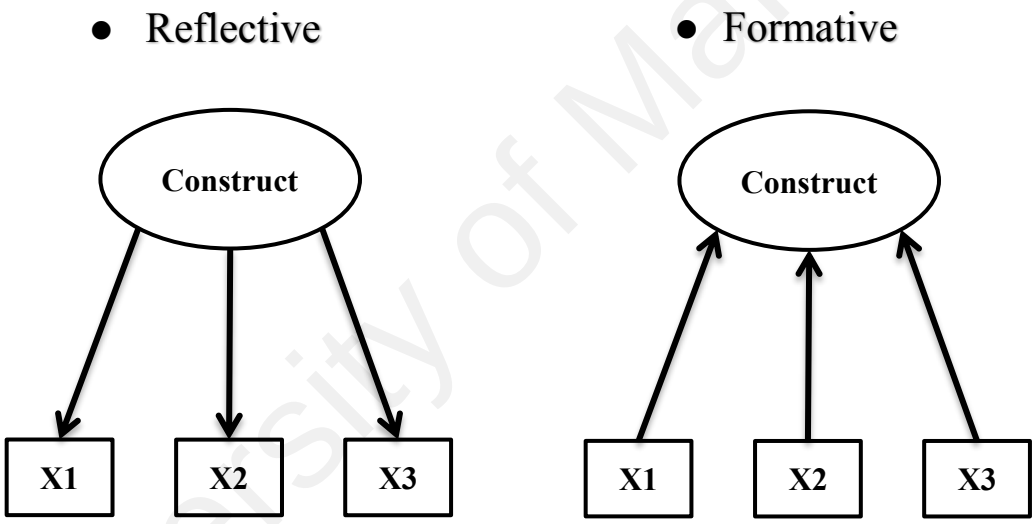

Figure 4.10: Reflective vs. Formative Measurement Models

The conceptual framework developed for this research is illustrated in Figure 4.11. The framework demonstrates three second-order measurement models which used the PLS-SEM for the purpose of separately estimating internal control effectiveness, ERM effectiveness, and firm performance. Since the manifest variables in every first-order measurement model were reflective indicators that was affected by the latent construct, all the first-order measurements then adopted the reflective models. However, the measurement models applied in the second-order constructs was distinguished from

each other. As was described previously, firm performance in this research is quantified through both the accounting-based aspect and the market-based aspect. Therefore, either the accounting performance or the market performance should be dependent on the entire performance of the firm. For this purpose, a reflective-reflective second-order measurement model was constructed for estimating firm performance. The mathematical expression noted for this model is written as follows:

1st Order Latent Variable

$$ROA = \alpha_1 \, Accounting \; Performance + \in_1$$

$$ROS = \alpha_2 \, Accounting \; Performance + \in_2$$

$$ROE = \alpha_3 \, Accounting \; Performance + \in_3$$

$$P/E = \beta_1 \, Market \; Performance + \delta_1$$

$$M/B = \beta_2 \, Market \; Performance + \delta_2$$

$$TobinsQ = \beta_3 \, Market \; Performance + \delta_3$$

2nd Order Latent Variable

$$Accounting \; Performance = \Gamma_1 \, Firm \; Performance + \zeta_1$$

$$Market \; Performance = \Gamma_2 \, Firm \; Performance + \zeta_2$$

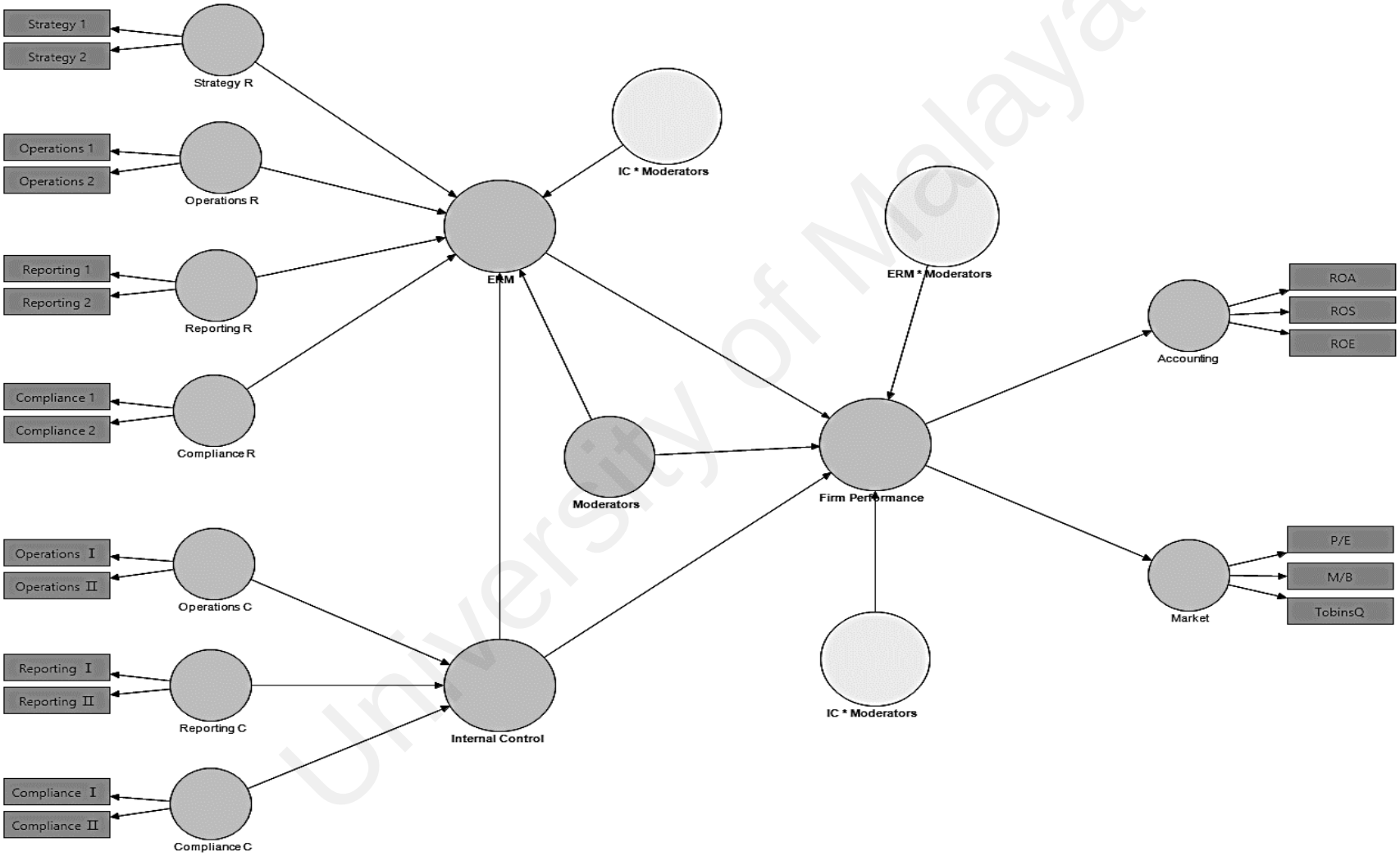

Figure 4.11: Partial Least Square-Structural Equation Model

where α is the loadings of manifest variables of accounting performance; ∈ is the measurement error of manifest variables of accounting performance; β is the loadings of manifest variables of market performance; δ is the measurement error of manifest variables of market performance; Γ is the path coefficient between first-order constructs and firm performance; ζ is the measurement error of the first-order constructs.

Unlike the constructs used in firm performance, the measurements used in the second-order constructs for both internal control effectiveness and ERM effectiveness were based on formative models. Since the estimation of effectiveness is measured through the achievements of major objectives noted in COSO's integrated frameworks, any change in the objectives would cause a fluctuation in the program effectiveness. In this context, two reflective-formative second-order measurement models were constructed separately for estimating internal control effectiveness and ERM effectiveness. The mathematical expressions constructed can be written as follows:

1st Order Latent Variable

$$Operations_{\text{I}} = \gamma_1 \, Operations\ C + \omega_1$$

$$Opertions_{\text{II}} = \gamma_2 \, Operations\ C + \omega_2$$

$$Reporting_{\text{I}} = \eta_1 \, Reporting\ C + \sigma_1$$

$$Reporting_{\text{II}} = \eta_2 \, Reporting\ C + \sigma_2$$

$$Compliance_{\text{I}} = \mu_1 \, Compliance\ C + \pi_1$$

$$Compliance_{\text{II}} = \mu_2 \, Compliance\ C + \pi_2$$

2nd Order Latent Variable

$$Internal\ Control\ Effectiveness = \Pi_1\ Operations\ C + \Pi_2\ Reporting\ C + \Pi_3\ Compliance\ C + \xi$$

where γ is the loadings of manifest variables of operations c; ω is the measurement error of manifest variables of operations c; η is the loadings of manifest variables of reporting c; σ is the measurement error of manifest variables of reporting c; μ is the loadings of manifest variables of compliance c; π is the measurement error of manifest variables of compliance c; Π is the path coefficient between first-order constructs and internal control effectiveness; ξ is the measurement error of the first-order constructs.

1st Order Latent Variable

$$Strategy_1 = \varphi_1\ Strategy\ R + \iota_1$$

$$Strategy_2 = \varphi_2\ Strategy\ R + \iota_2$$

$$Operations_1 = \theta_1\ Operations\ R + \varsigma_1$$

$$Operations_2 = \theta_2\ Operations\ R + \varsigma_2$$

$$Reporting_1 = \phi_1\ Reporting\ R + \varpi_1$$

$$Reporting_2 = \phi_2\ Reporting\ R + \varpi_2$$

$$Compliance_1 = \rho_1\ Compliance\ R + \vartheta_1$$

$$Compliance_2 = \rho_2\ Compliance\ R + \vartheta_2$$

2nd Order Latent Variable

$$ERM\ Effectiveness = \Omega_1\ Strategy\ R + \Omega_2\ Operations\ R + \Omega_3\ Reporting\ R + \Omega_4\ Compliance\ R + \psi$$

where φ is the loadings of manifest variables of strategy r; ι is the measurement error of manifest variables of strategy r; θ is the loadings of manifest variables of operations r; ς is the measurement error of manifest variables of operations r; ϕ is the loadings of manifest variables of reporting r; ϖ is the measurement error of manifest variables of reporting r; ρ is the loadings of manifest variables of compliance r; ϑ is the measurement error of manifest variables of compliance r; Ω is the path coefficient between first-order constructs and ERM effectiveness; ψ is the measurement error of the first-order constructs.

As mentioned earlier, the aim of this research is to investigate the impact of internal control and ERM on firm performance. In addition, the relationship between internal control and ERM would also be clarified. Due to that intention, the structural model used in the PLS-SEM was constructed for estimating the multiple relationships occurring among internal control effectiveness, ERM effectiveness, and firm performance. It has been noted that both internal control and ERM act on firm risk in different extent although the frameworks of internal control and ERM share similar objectives in terms of operations, reporting, and compliance. Due to this, it is conjectured that ERM may have a mediating effect on the relationship between internal control and firm performance. Based on the theoretical concept of financial distress, underinvestment cost, information asymmetry, and modern portfolio, various variables (firm size, financial leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield,

and insiders) are conjectured to have significant effects on both firm performance and the effectiveness of internal control and ERM. In order to better understand the relationships between internal control, ERM, and firm performance, all these variables would be examined as moderators in the PLS-SEM model. Accordingly, the mathematical expression developed for the structural model is written as follows:

Mediating Effect

$$Firm\ Performance = \Lambda_1\ ERM + \Lambda_2\ Internal\ Control + \varrho$$

Moderating Effect

$$Firm\ Performance = \Theta_1\ Internal\ Control + \Theta_2\ Moderator + \Theta_3\ IC * Moderator + \varepsilon$$

$$Firm\ Performance = \Psi_1\ ERM + \Psi_2\ Moderator + \Psi_3\ ERM * Moderator + \kappa$$

$$ERM = \Phi_1\ Internal\ Control + \Phi_2\ Moderator + \Phi_3\ IC * Moderator + \tau$$

where Λ_1 is the path coefficient between ERM and firm performance; Λ_2 is the path coefficient between internal control and firm performance; ϱ is the measurement error; Φ_1 is the path coefficient between ERM and internal control after moderating; Φ_2 is the path coefficient between ERM and moderator; Φ_3 is the path coefficient between ERM and a new variable which calculated by internal control times moderator; τ is the measurement error; Ψ_1 is the path coefficient between firm performance and ERM after moderating; Ψ_2 is the path coefficient between firm performance and moderator; Ψ_3 is the path coefficient between firm performance and a new variable which calculated by ERM times moderator; κ is the measurement error; Θ_1 is the path coefficient between firm performance and internal control after moderating; Θ_2 is the path coefficient

between firm performance and moderator; Θ_3 is the path coefficient between firm performance and a new variable which calculated by internal control times moderator; ε is the measurement error.

In order to support the results extracted from the SEM, this research applies the Univariate Difference Test (UDT) after analysing the outcomes of both the inner and outer models seen in the PLS-SEM. The UDT is used to investigate whether there are significant differences in firm performance, framework objectives, and firm-specific characteristics among firms that adopt neither internal control nor traditional risk management; among firms that adopt internal control but not traditional risk management; among firms that adopt internal control and traditional risk management but not ERM; and among firms that adopt both internal control and ERM. All information about the adoption of risk management programs are collected from a content analysis. By combining the UDT with the PLS-SEM, the accuracy and authenticity of the data analysis can be further improved. Throughout the entire research period, primary processing of raw data was done by running them through statistical software such as Excel 2013, Minitab 17, and SPSS 23. After that, the processed data were inputted into Smart PLS 2.0 for complete modeling.

4.8 Reliability and Validity

4.8.1 Evaluation of the Measurement Model in PLS-SEM

Before applying the PLS algorithm, it is necessary to evaluate the quality of the entire model used. This research follows a multi-level process and it separately evaluates the reliability and validity of both the measurement models and the structural models seen in the PLS-SEM. For the purpose of evaluating the quality of the measurement models, this research adopted indicator reliability, construct reliability,

convergent validity, and discriminant validity as measures. As both the reflective and formative indicators were used in the PLS-SEM, the criteria for validating reflective constructs and formative constructs should be differentiated. The basic definition of the evaluation procedure is described as follows.

Indicator Reliability. The indicator reliability reveals the extent of the indicator's variance which can be explained by the underlying latent construct. According to Götz, Liehr-Gobbers, and Krafft (2010), a common threshold criterion is that more than 50% of the indicator's variance should be explained by the latent variable. In this context, the factor loading of a latent construct on a reflective indicator is insisted on being greater than 0.7. However, Hulland and Business (1999) have emphasized that weak loadings will occur in empirical research if the applied scales have not been developed for long. Therefore, reflective indicators with factor loadings of less than 0.4 should be eliminated from the measurement models in the PLS approach. Contrary to reflective measurement models, the indicator reliability for formative constructs makes little sense. Although the weight of formative indicators frequently interpret their contribution to the constructs, formative indicators with small weights cannot be deemed as s sign of poor measurement model (Chin, 1998). Since the formative indicators do not necessarily need to be correlated, the elimination of indicators with small weights may lead to the omission of a substantial part of the latent variable (Jarvis, MacKenzie, & Podsakoff, 2003).

The evaluation of the indicator reliability for first-order constructs in the PLS-SEM is summarized in Table 4.8. It can be observed that most of the indicators in the reflective measurement models are larger than 0.7, which meets the threshold value of acceptable reliability. Although the factor loadings of some indicators were less than the

criteria, these manifest variables have factor loadings with a value of greater than 0.4. Therefore, it is not essential to eliminate these reflective indicators from the measurement model. Table 4.9 describes the scores of the indicator reliability for second-order constructs in the PLS-SEM. The results indicate that the path coefficients of both the accounting and market performance were beyond the common cut-off threshold of 0.7. Nevertheless, this criterion cannot be used to judge the formative indicators on the constructs of internal control and ERM. Accordingly, even if the path coefficients of variables in the formative measurement models were slightly small, these indicators should not be eliminated because the structure of the second-order measurement model was created through the conceptual framework. Consequently, the indicator reliability for the PLS-SEM is deemed fairly adequate.

Construct Reliability. The construct reliability interprets how adequate all the reflective indicators, which are assigned to a same latent variable, can jointly measure the construct. In this context, an adequate construct reliability generally requires a strong relationships among the assigned reflective indicators (Rodgers & Pavlou, 2003). Accordingly, composite reliability is a useful approach that can be used to evaluate the construct reliability. Based on the definition of Fornell and Larcker (1981), the composite reliability for the reflective measurement model should be expressed as follows:

$$Composite\ Reliability = \frac{\left(\sum_i \mathcal{F}_{ij}\right)^2}{\left(\sum_i \mathcal{F}_{ij}\right)^2 + \sum_i Var\left(\mathcal{E}_{ij}\right)}$$

where F_i is the factor loading of the indicator i for a latent construct; j explains the flow index across all reflective measurement models; E_i is the measurement error of indicator i. The threshold criterion for composite reliability is that values greater than 0.6 are

considered to be adequate (Götz et al., 2010).

Table 4.8: Indicator Reliability of First-Order Construct

Construct	Indicator	Category	Factor Loading	T-Statistic
Accounting	ROA	Reflective	0.941496	202.635388
	ROS	Reflective	0.895125	75.903939
	ROE	Reflective	0.580318	11.231324
Market	P/E	Reflective	0.474623	5.723654
	M/B	Reflective	0.961241	112.176077
	TobinsQ	Reflective	0.971496	163.798497
Operations C	Operations Ⅰ	Reflective	0.439917	2.621758
	Operations Ⅱ	Reflective	0.994801	3.431647
Reporting C	Reporting Ⅰ	Reflective	0.438808	2.570806
	Reporting Ⅱ	Reflective	0.959346	3.349750
Compliance C	Compliance Ⅰ	Reflective	-0.953597	3.176033
	Compliance Ⅱ	Reflective	-0.411738	2.988987
Strategy R	Strategy 1	Reflective	0.901312	4.346264
	Strategy 2	Reflective	0.472949	3.412461
Operations R	Operations 1	Reflective	-0.402019	2.519832
	Operations 2	Reflective	-0.986163	3.462485
Reporting R	Reporting 1	Reflective	0.494940	2.622468
	Reporting 2	Reflective	0.936275	3.979459
Compliance R	Compliance 1	Reflective	-0.967064	3.757227
	Compliance 2	Reflective	-0.465338	3.069655

Table 4.9: Indicator Reliability of Second-Order Construct

Construct	Indicator	Category	Path Coefficient	T-Statistic
Firm Performance	Accounting	Reflective	0.843876	71.090392
	Market	Reflective	0.842460	47.192454
Internal Control	Operations C	Formative	0.261039	2.841313
	Reporting C	Formative	0.405428	3.389718
	Compliance C	Formative	0.869209	4.292991
ERM	Strategy R	Formative	0.916369	5.609247
	Operations R	Formative	0.286607	2.584608
	Reporting R	Formative	-0.235853	2.400701
	Compliance R	Formative	-0.363779	2.478630

In addition to the composite reliability, Cronbach's alpha is another approach that is frequently applied to judge the construct reliability for the reflective measurement model. The Cronbach's alpha measures internal consistency by quantifying how well a set of reflective variables can describe a unidimensional latent variable. The alphas will be low if the measurement model has multidimensional structure. The mathematical expression of Cronbach's alpha can be presented as follows:

$$Cronbach's\ alpha = \left(\frac{N}{N-1}\right) \times \left(1 - \frac{\sum_{i=1}^{N} \upsilon_i{}^2}{\upsilon_t{}^2}\right)$$

where N is the number of indicators that is assigned to the latent construct; υ_i^2 is the variance of indicator i; υ_t^2 is the variance of the sum scores of all assigned indicators. According to Hair, Black, Babin, and Anderson (2010), the criterion of Cronbach's alpha is that values larger than 0.6 are sufficient. Different from the reflective measurement models, formative indicators should not be eliminated even if they have small weights. Therefore, no evaluation is required for the formative measurement

model to measure the internal consistency (Hulland & Business, 1999).

The evaluation of the construct reliability for the PLS-SEM in this research is specified in Table 4.10. In view of the composite reliability, all the latent constructs noted in the entire model, except reporting r, attained the threshold value of 0.6. Although the composite reliability of reporting r was slightly smaller than 0.6, it was very close to the cut-off criterion. In contrast to composite reliability, the Cronbach's alpha for all constructs in the measurement models was relatively weak. It can be noted from the statistics that only the accounting's alpha value was greater than 0.6. In addition, the alpha value of firm performance and market was approximate to the acceptable criteria. However, the alpha values for the rest of the constructs in the SEM were jointly small. Furthermore, since internal control and ERM acted as formative constructs, a discussion focussing on either the composite reliability or the Cronbach's alpha is meaningless. Due to the multidimensional structure that existed in the complete model, the Cronbach's alpha did not perform well in evaluating the construct reliability of this research. In this context, it can be concluded that the construct reliability for the PLS-SEM is acceptable but not perfect.

Convergent Validity. The convergent validity is based on the correlation between responses obtained from maximally different measurements for the same construct (Peter, 1981). As reflective indicators can be treated as different means to quantify the latent construct, convergent validity is thus, an essential criterion for evaluating the model quality of the PLS. Generally, the average variance extracted (AVE) is a common approach that is used to examine the convergent validity. According to Fornell and Larcker (1981), the AVE is formally expressed as follows:

Table 4.10: Construct Reliability of Measurement Model

Construct	No. of Indicator	Composite Reliability	Cronbach's Alpha
Firm Performance	2	0.754560	0.592068
Accounting	3	0.856896	0.770372
Market	3	0.737228	0.557313
Internal Control	3	—	—
Operations C	2	0.615389	0.245309
Reporting C	2	0.685250	0.126518
Compliance C	2	0.617092	0.022130
ERM	4	—	—
Strategy R	2	0.659915	0.093389
Operations R	2	0.639298	0.245309
Reporting R	2	0.593934	0.126518
Compliance R	2	0.604335	0.022130

$$AVE = \frac{\sum_i \mathcal{F}_i{}^2}{\sum_i \mathcal{F}_i{}^2 + \sum_i Var(\mathcal{E}_{ij})}$$

where F_i^2 is the squared factor loading of the indicator i for a latent construct; E_i is the measurement error of indicator i. Since AVE reveals the variance of indicators relative to the total amount of variance, a common threshold criterion of AVE is that value larger than 0.5 is judged as sufficient (Rodgers & Pavlou, 2003). Contrary to reflective measurement models, the convergent validity makes little sense for evaluating the formative constructs because indicators in the formative measurement models are not necessarily strongly interrelated (Götz et al., 2010).

The evaluation of convergent validity for the PLS-SEM is disclosed in Table 4.11. According to the common threshold criteria of the AVE, almost every constructs in the

research met the cut-off value of 0.5. However, the reporting r's AVE was just slightly smaller than the criterion which was very approximate to 0.5. As the evaluation of the convergent validity was not allowed for the formative constructs, the AVE of internal control and ERM was not discussed in this research. Consequently, it can be conjectured that the convergent validity for the entire PLS-SEM is fairly adequate for data analysis.

Table 4.11: Convergent Validity of Measurement Model

Construct	No. of indicator	AVE	Square Root of AVE
Firm Performance	2	0.549822	0.741500
Accounting	3	0.674811	0.821469
Market	3	0.632760	0.795462
Internal Control	3	—	—
Operations C	2	0.523594	0.723598
Reporting C	2	0.517568	0.719422
Compliance C	2	0.503264	0.709411
ERM	4	—	—
Strategy R	2	0.518022	0.719737
Operations R	2	0.531866	0.729291
Reporting R	2	0.481801	0.694119
Compliance R	2	0.502808	0.709090

Discriminant Validity. The discriminant validity is defined as the dissimilarity in measurements of different constructs. According to Hulland and Business (1999), the criterion for discriminant validity is that the shared variance between a latent construct and the assigned indicators should be greater than the variance shared with other latent constructs. In this context, the discriminant validity is considered to be adequate if the square root of the AVE in a latent variable is greater than other correlation values

between the latent variable and any other constructs in the model (Fornell & Larcker, 1981). However, evaluation of the discriminant validity for formative measurement models is identical to the application of the AVE. As it is not essential for the formative indicators on a latent variable to be correlated with each other, discriminant validity is thus, not a reasonable criterion for evaluating the quality of the formative models.

The evaluation of the discriminant validity for the PLS-SEM is illustrated in Table 4.12. In this table, it is observed that the square root of the AVE for firm performance is larger than any correlation between firm performance and other latent constructs. Since accounting and market are two reflective indicators of firm performance, the correlation existing between them is by no means judged as the discriminant validity. This research utilizes similar indicators for estimating the effectiveness of both internal control and ERM. In this context, the correlation among the homologous constructs such as operations c and operations r, reporting c and reporting r, compliance c and compliance r, is noted to be quite large. However, the non-homologous constructs correlations appears to be smaller than the relative square root of the AVE. As mentioned in the previous section, the AVE is not discussed for formative constructs. Therefore, the discriminant validity for internal control and ERM is not investigated in this research. According to the descriptions of statistics displayed in Table 4.12, the discriminant validity for the PLS-SEM is adequate. Due to the acceptable level of indicator reliability, construct reliability, convergent validity, and discriminant validity, all measurement models used in this research can be attested to be valid and reliable.

Table 4.12: Discriminant Validity of Measurement Model

	Firm Performance	Accounting	Market	Internal Control	Operations C	Reporting C	Compliance C	ERM	Strategy R	Operations R	Reporting R	Compliance R
Firm Performance	**0.741500**											
Accounting	0.843876	**0.821469**										
Market	0.842460	0.421905	**0.795462**									
Internal Control	-0.123733	-0.074426	-0.133603	—								
Operations C	-0.017258	0.022172	-0.050365	0.230243	**0.723598**							
Reporting C	-0.062496	-0.044550	-0.060541	0.434244	-0.024885	**0.719422**						
Compliance C	-0.107770	-0.070014	-0.111337	0.899209	0.091224	0.037762	**0.709411**					
ERM	-0.275932	-0.216225	-0.247951	0.470699	0.092847	0.201930	0.413834	—				
Strategy R	-0.246700	-0.198233	-0.216432	0.183752	0.170975	0.005265	0.155794	0.937596	**0.719737**			
Operations R	0.012204	-0.020504	0.039953	-0.227385	-0.997919	0.023374	-0.087049	-0.096825	-0.180030	**0.729291**		
Reporting R	-0.065688	-0.015693	-0.094902	0.358749	0.099331	-0.799074	-0.026401	0.253046	0.152341	-0.098657	**0.694119**	
Compliance R	-0.109386	-0.071733	-0.112333	0.898580	0.092107	0.037194	-0.998826	0.413817	0.156278	-0.087802	-0.025502	**0.709090**

Note: the matrix for discriminant validity is based on the latent variable correlations, while the bold fonts of statistics are replaced by the square root of AVE for the latent variables.

4.8.2 Evaluation of the Structural Model in PLS-SEM

In contrast to the CBSEM, statistical algorithm of overall goodness-of-fit is not available for the PLS-SEM since the distribution-free variance was assumed in this variance-based approach. In this context, non-parametrical tests are generally adopted to judge the quality of the structural equation model. According to Götz et al. (2010), a logical metric for evaluating the structural model of PLS is the coefficient of the determination (R^2) of the endogenous variables. The coefficient of the determination is interpreted as the proportion of latent construct's variance which can be explained by manifest indicators (Backhaus, Erichson, Plinke, & Weiber, 2015). Though there is no universal standard for the acceptable value of R^2, a common threshold is that R^2 greater than 0.67 reveals a substantial proportion of endogenous variable is explained by exogenous variable, R^2 between 0.33 and 0.67 reveals a moderate proportion of endogenous variable is explained by exogenous variable, R^2 less than 0.33 reveals a weak proportion of endogenous variable is explained by exogenous variable. In addition to the determination coefficient, the goodness of the structural model in PLS can also be evaluated through the t-statistics for path coefficients (Götz et al., 2010). The cut-off threshold for the t-statistic is 1.96, which represents the significance of the paths. Following the method developed by Cohen (1988), this research applies effect size as the third approach in evaluating the reliability and validity of the structural models. The mathematical expression of effect size can be defined as follows:

Multiple Regression

$$Effect\ Size = \frac{R^2}{1 - R^2}$$

Hierarchical Multiple Regression

$$Effect\ Size = \frac{{R_{incl}}^2 - {R_{excl}}^2}{1 - {R_{incl}}^2}$$

where R^2 is the squared multiple correlation; R_{incl}^2 is the determination coefficient of dependent latent variables with independent latent variables; R_{excl}^2 is the determination coefficient of dependent latent variables without independent latent variables. According to Chin (1998), the criterion of effect size is that a value of 0.35 means a large effect of exogenous variable on endogenous variable, a value of 0.15 means a medium effect of exogenous variable on endogenous variable, and a value of 0.02 means a small effect of exogenous variable on endogenous variable.

The evaluation of the structural model is summarized in Table 4.13. From here, it can be noted that the determination coefficient of ERM is located between 0.33 and 0.67. This means that the moderate proportion of ERM can be explained by internal control. In contrast, firm performance revealed a relatively low coefficient of determination in the structural model. Since this research was designed to investigate the relationships between internal control, ERM, and firm performance, impact factors other than internal control and ERM would not be considered while creating the PLS-SEM. However, factors that have impacts on both firm performance and the effectiveness of internal

control and ERM would be applied as moderating variables in the model. In respect of effect size, it appears that internal control showed a large effect on ERM while the effects of internal control and ERM on firm performance were moderate. In addition, all path coefficients in the structural model were significant as the t-statistics were completely larger than 1.96. In this context, it can be conjectured that reliability and validity of the structural model of the PLS-SEM used in this research is reasonably adequate but not perfect. A more detailed discussion about parameters in the entire model will be provided in Chapter five.

Table 4.13: Evaluation of Structural Model

Endogenous Construct	Exogenous Construct	R^2	Effect Size	Path Coefficient	T-Statistic
Firm Performance	Internal Control	0.139592	0.039965	0.220925	2.824037
Firm Performance	ERM	0.139592	0.026706	-0.270258	3.799724
ERM	Internal Control	0.474485	0.902895	0.688829	8.230684

4.9 Summary

This chapter has presented the statistical framework that was applied in this research. It outlines in detail, the research design together with the developed research questions and hypotheses. All the variables used in this research were divided into three categories encompassing key performance indicators, internal control and ERM metrics, and moderating variables. In order to better understand the research variables, specific definitions and mathematical expressions were illustrated. Following that, the selected population and sample were described and explained according to the research purpose.

The research methodology including data collection and data analysis procedures were discussed in detail. Collection of data streams was mainly dependent on the Bloomberg and WFT Databases. However, due to the weak disclosure of the information of internal control and ERM, secondary data extracted from the two main databases were considered inadequate. To better evaluate the status of internal control and ERM, an eight-step content analysis approach was adopted as a means to counter the inadequacy. In respect of the data analysis method, the PLS-SEM was specified and constructed for this research. In order to support the results extracted from the structural equation model, the univariate different test was also applied in this research. Additionally, the evaluation of reliability and validity were presented for both the measurement and structural models seen in the PLS approach. Justifications were made for all the procedures applied in this research.

CHAPTER 5: RESULTS AND ANALYSIS

5.1 Introduction

This research seeks to ascertain the multiple relationships existing among internal control, ERM, and firm performance so as to better understand the relevant concepts and functions in real practice. Yet China, as one of the major economies in the world, is a developing country in which the risk management evolved sluggishly as compared to other economic giants. In this regard, it is necessary to demonstrate how internal control and ERM can affect firm performance for the domestic firms in China in respect of managing and controlling risks. Specifically, this research focuses on the CSI 300 Index firms since they held 60%－70% of market capitalizations for all publicly listed firms in China. Additionally, as risk management programs are always long-term projects, this research is aimed at covering the period of time between 2008-2014 for the purpose of improving the validity and authenticity of research data at the enterprise-level.

In order to comprehensively assess the effects of internal control and ERM on firm performance, this research selected key performance indicators from both the accounting-based and market-based aspects. In this chapter, the ROA, ROS, and ROE will be examined as metrics of accounting performance while the P/E, M/B, and TobinsQ will be examined as metrics of market performance. According to prior studies, there are various moderating variables that have significant effects on both ERM and firm performance (Farrell & Gallagher, 2015; McShane et al., 2011; Don Pagach & Warr, 2010). In this regard, this chapter will test the moderating effects while investigating the correlations among internal control, ERM, and firm performance. In

this context, the moderators used in the research are Size, Leverage, Sales Growth, Asset Opacity, Financial Slack, Earn Variability, Beta, Int_Div, Ind_Div, Dividend Yield, and Insiders. In addition to the above, the underlying mediating effect of ERM on the relationship between internal control and firm performance will be further explored and analysed in this chapter too.

Based on the theoretical and statistical frameworks that were described in chapter four, this chapter estimates the relationships between internal control effectiveness, ERM effectiveness, and firm performance. This research uses both the PLS-SEM and the UDT approach to analyse data statistically. Accordingly, the following parts of the chapter are structured into three sections. The first section discusses how the proposed hypotheses will be tested and analysed by using the relative parameters noted in the PLS-SEM. In the second section, the findings noted for each research question will be thoroughly interpreted by means of comprehending the results. In the last section, the UDT will be applied by comparing firm performance, framework components, and firm-specific characteristics among four groups of firms where grouping was categorized by distinguishing the status of adoption of risk management programs such as internal control, traditional risk management, and ERM. With the help of the UDT, the adequacy of modeling and the accuracy of analysing will be further verified.

5.2 Results of Hypotheses Testing

5.2.1 Research Hypothesis Ⅰ

A general argument in the literature is that the enterprise internal control system is a foundation of sound operations since it can help to improve the whole network system within a firm. The enterprise internal control system can also help a firm to attain its business goals (Karagiorgos et al., 2010). In addition, internal control has been verified to enhance financial performance by acting on arithmetic and accounting, acknowledgement of budgeting, physical authorization and approval, and segregation of duties (Douglas et al., 2014). However, prior research looking at the benefits of internal control were mostly based on theoretical aspects. There has been, in fact, a lack of empirical studies, which are able to provide statistical evidence depicting whether internal control can add value to an organization. Based on this lack, one major objective of the current research is to use statistical analysis techniques to ascertain the connection between internal control and firm performance in China. The first assumption developed for this research is thus hypothesized as:

H1: There is a positive relationship between internal control and firm performance.

According to COSO's definition, internal control framework is proposed to provide reasonable assurance in regard to efficiency of operations, reliability of financial reporting, and compliance with applicable laws and regulations (Drogalas et al., 2005). In this context, this research examined the effectiveness of internal control through objectives of operations, reporting, and compliance. As mentioned in chapter four, each

objective was quantified with two indicators in the PLS-SEM. For the purpose of investigating the contribution of internal control at the enterprise level, both the accounting-based and market-based metrics were applied to estimate firm performance comprehensively. In the designed PLS-SEM model, the accounting performance was measured by return on assets (ROA), return on sales (ROS), and return on equity (ROE). Meanwhile, the market performance was measured by price to earnings ratio (P/E), market to book ratio (M/B), and Tobin's Q ratio (TobinsQ).

Figure 5.1 illustrates the model followed by the results drawn for hypothesis one. The analysis indicates that the path coefficient between internal control and firm performance is significant when the p-value is less than 0.005. It is hence, reasonable to assert that the establishment of internal control for firms in China can have positive effect on firm performance. However, since the path coefficient was only 0.136, the effect of internal control on firm performance is significant but not strong. As revealed in Figure 5.1, compliance (0.807) has the strongest influence on internal control and this means that the effectiveness of internal control in China was heavily dependent on compliance activities. On the contrary, reporting (0.117) was the weakest objective of internal control for firms in China. As the coefficient of accounting (0.846) was approximate to that of market (0.839), it seems clear that internal control had the same effect on investment and profitability. A more detailed analysis about the relationship between internal control and firm performance in China is discussed in the section on the interpretation of findings.

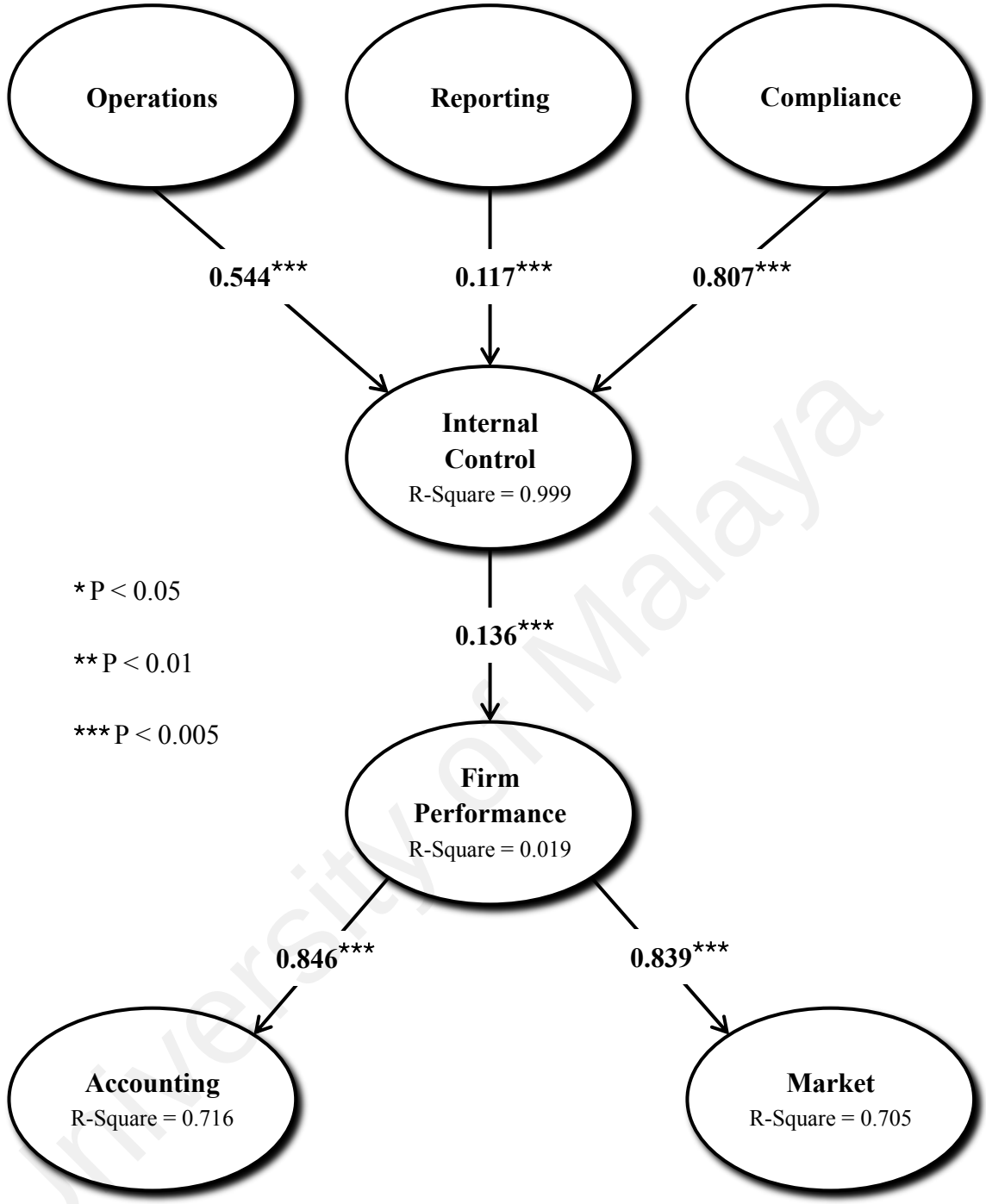

Figure 5.1: Relationship between Internal Control and Firm Performance

5.2.2 Research Hypothesis Ⅱ

Unlike internal control, arguments looking at the effectiveness of ERM and its relevant benefits to firms are more ambiguous (Hoyt & Liebenberg, 2011). The proponents have noted that establishing an effective ERM mechanism can lead to the

mitigation of stock price and earnings volatility, the improvement of capital efficiency, the reduction of external capital costs, and the promotion of interoperability between different risk management activities, all of which, will eventually contribute to the enhancement of firm performance (Beasley et al., 2008; Hoyt & Liebenberg, 2011). However, the opponents contended that the primary cause of embracing ERM is due to compliance exercise (Collier et al., 2007). In addition, despite the fact that ERM can help firms to avert excessive risk taking, it is however, less than satisfactorily during the global financial crisis. Consequently, the value implication of ERM has been questioned by some scholars and practitioners (Perrow, 2010; Power, 2009). In this context, one of the objectives of this research is to ascertain the association between ERM and firm performance in China. The second assumption developed for this research is thus hypothesized as:

H2: There is a positive relationship between ERM and firm performance.

Since the concept was first introduced, there are many definitions of ERM and the most widely acknowledged definition is the one seen in the ERM integrated framework introduced by COSO. According to the principles of ERM activities as stated by COSO, there are four objectives that need to be specified in the framework: strategy, operations, reporting, and compliance. In this context, this research attempts to estimate the effectiveness of ERM by examining firms' ability in achieving the four objectives stated. Adapting the metrics that were developed by Gordon et al. (2009), each objective was quantified by two indicators noted in the designed PLS-SEM. In this research, the

measurement of the successful strategy was expressed by sales opportunities and systematic risk. The operations efficiency was measured by organizational productivity. The reliability of reporting was affected by financial fraud, financial restatements, illegal earnings, independent auditor, and abnormal accruals. The regulation compliance was indicated by audit fees and settlements.

Figure 5.2 reveals the model and results for hypothesis two. Since the p-value of the path coefficient between ERM and firm performance was less than 0.005, it is reasonable to assert that there was a significant association between ERM and firm performance in China. However, the value of the path coefficient which was -0.279 demonstrated that the implementation of ERM can dampen the performance of firms in China. The negative effect of ERM, in this case, could be due to the large costs and the extended durations related to the program implementation. Therefore, it can be deduced that not all firms can get benefits by embracing ERM because the outcome may depend on other characteristics (moderators) such as firm size, sales growth, financial slack and others. Further analysis of the moderating effects will be presented in the section discussing the research hypothesis five. From Figure 5.2, it can be noted that strategy (0.961) and compliance (0.255) have positive effects on ERM but operations (-0.240) and reporting (-0.180) have negative effects. In this context, it is conjectured that there are defects in the ERM framework in terms of operations and reporting for firms in China. Further analysis noting the validity of the conjecture will be carried out in the section discussing the interpretation of findings.

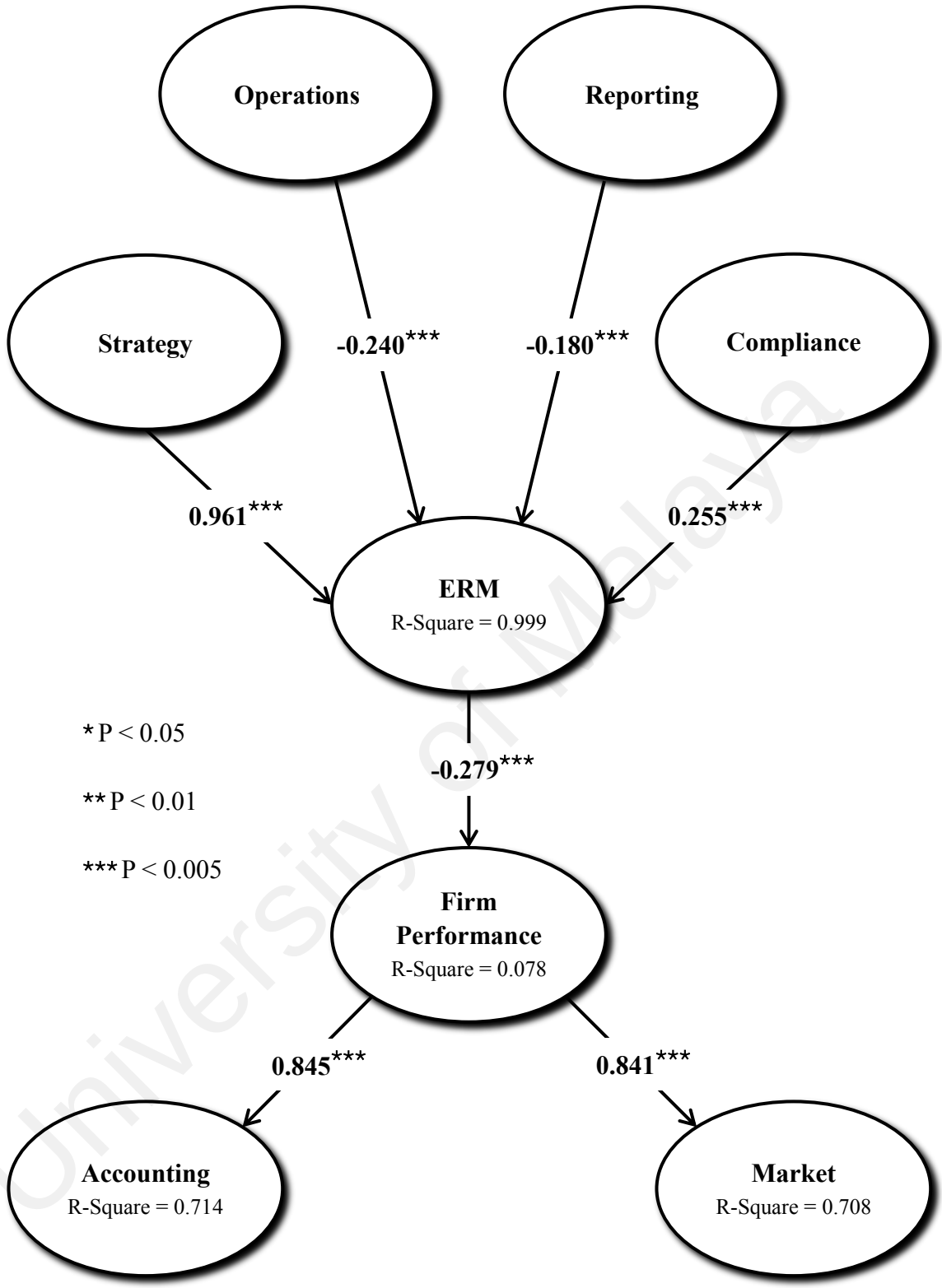

Figure 5.2: Relationship between ERM and Firm Performance

5.2.3 Research Hypothesis Ⅲ

As internal control is always adopted in defence of firm risks, it has been proposed by academics and industry commentators that the development of internal control mechanism should be done in collaboration with ERM (Hermanson & Hermanson, 1994). The view is echoed by Azimah Abdul Aziz (2013) who argued that ERM offers firms a more integrated and robust perspective to meet internal control requirements. In addition, it has been declared by COSO that the ERM framework is an expansion of the internal control framework. Therefore, internal control should be an internal part of ERM (Yanhong & Qing, 2013). In this context, there seem to be a latent connection between internal control and ERM. Accordingly, one objective of this research is to ascertain the relationship between internal control and ERM. The third assumption developed for this research is thus hypothesized as:

H3: There is a positive relationship between internal control and ERM.

In theory, establishing a sound internal control framework within organizations can benefit firms in terms of effective and efficient operations, reliable financial reporting, and compliant rules, laws, procedures (Yanhong & Qing, 2013). With this in mind, the effectiveness of internal control in this research is estimated in terms of operations, reporting, and compliance. However, although both internal control and ERM are relevant to risk management activities, only ERM is concerned with business strategy. In this regard, the effectiveness of ERM in this research would be examined by adding strategy into the measurement. It has been widely perceived that parameter estimates in

a regression model will change if additional variables are put into the existing model (Hair et al., 2010). Therefore, even if internal control and ERM in the designed PLS-SEM were evaluated by some homologous variables, the outputs of these two measurements would be completely different.

Figure 5.3 illustrates the model and results gained for hypothesis three. From this, it seems clear that the path coefficient between internal control and ERM is significant at the p-value of less than 0.005. It is reasonable to assert that the implementation of internal control mechanism has a strong positive effect on the establishment of ERM since the value of the path coefficient is 0.877. The finding indirectly demonstrates that the sound internal control framework was a cornerstone of effective and efficient ERM framework. It can be noted from Figure 5.3 that the parameters of operations had dropped from 0.580 to 0.519, the parameters of reporting had decreased from 0.638 to 0.574, and the parameters of compliance had reduced from 0.352 to 0.328 when strategy was added into the regression model. Compared to other variables, strategy (0.225) revealed the relatively weak influence on ERM. This indicates that firms in China can improve the effectiveness of ERM through the execution of strategy.

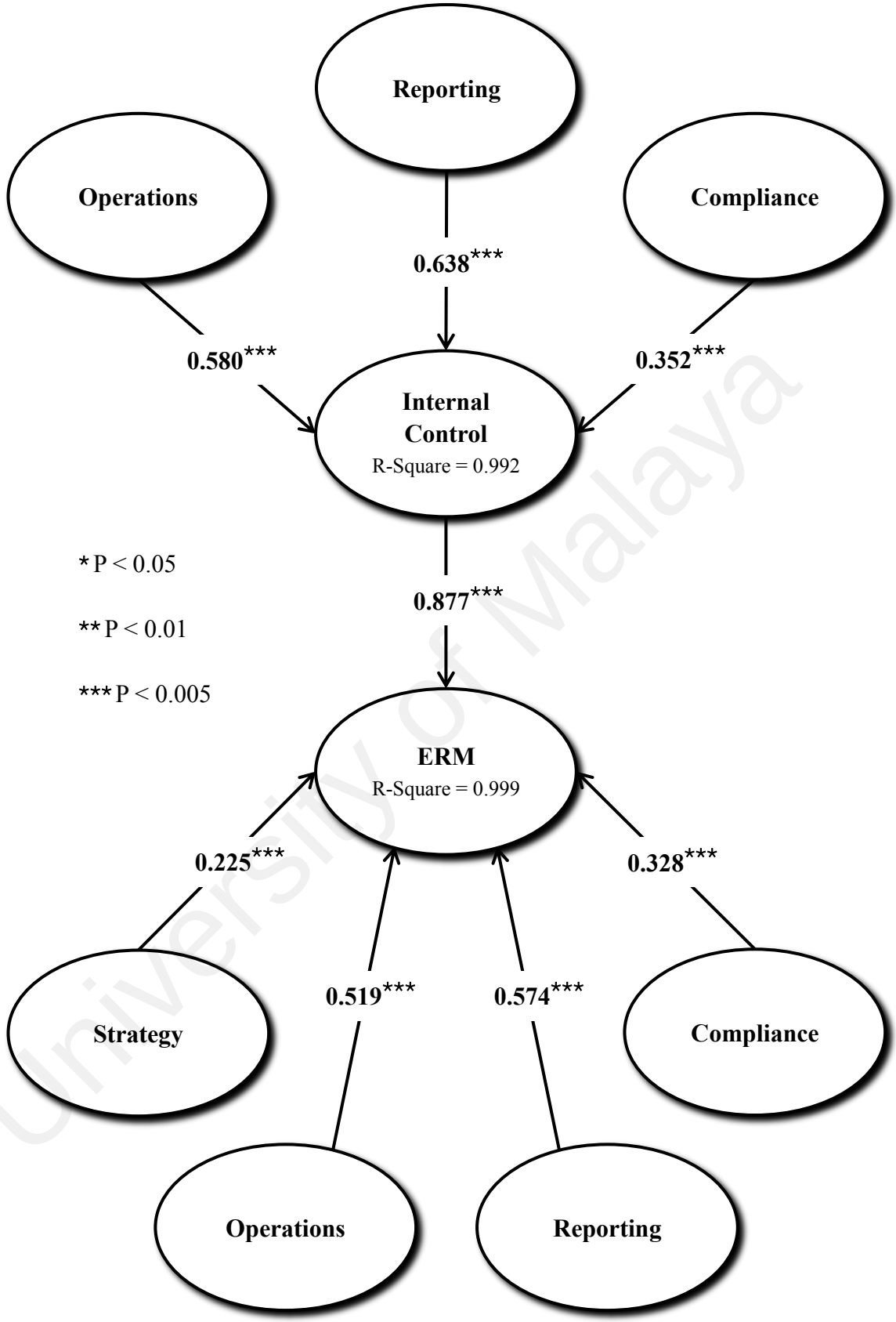

Figure 5.3: Relationship between Internal Control and ERM

5.2.4 Research Hypothesis Ⅳ

According to prior studies looking at ERM, scholars have found various variables such as firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders can have significant effects on both ERM and firm performance (Farrell & Gallagher, 2015; McShane et al., 2011; Don Pagach & Warr, 2010). Since the ERM integrated framework is supposed to be an expansion of the internal control integrated framework on risk management set up by COSO, it is reasonable to conjecture that these variables may have significant effects on internal control as well. In this context, the moderating effect of these variables should be estimated for the purpose of better investigating and interpreting the association between internal control and firm performance in China. The fourth assumption developed for this research is thus hypothesized as:

H4: The relationship between internal control and firm performance is moderated by firm-specific characteristics.

Based on theoretical definitions, a moderator variable can moderate the effect which the independent variable has on the dependent variable. Therefore, the moderator is supposed to change the strength or even the direction of the relationship between the predictor and the dependent variable (Lindley & Walker, 1993). There are different types of methods that can be applied to evaluate the moderators in empirical studies but in this research, the product indicator approach was adopted because it was proposed to

be appropriate for PLS (Chin, Marcolin, & Newsted, 2003). The product indicators were created by multiplying each indicator of the predictor by each indicator of the moderator; then all the product indicators were used to reflect a new interaction variable. Accordingly, the moderating effect in the PLS-SEM would be expressed as interaction between predictor and moderator variable in the current research. The results of moderations of all selected firm-specific characteristics on the relationship between internal control and firm performance are summarized in Table 5.1.

The first moderator estimated in the research is firm size. From the results, it can be seen that both firm size (-0.437) and internal control (-0.097) have significant negative association with firm performance. In addition, since the path coefficient between interaction variable (-0.104) and firm performance is statistically different from 0, it implies that the direct effect of internal control on firm performance was moderated by firm size. In order to test for differences in the strength of relationship between internal control and firm performance, this research plotted the interaction effect and then interpreted how the slope of firm performance on internal control was dependent on the value of firm size. The total sample was split into two groups according to the factor score of firm size. One group represented the sample with smaller firm size and the other group with larger firm size. It can be noted from Figure 5.4 below that the relationship between internal control and firm performance was strong for firms in China when they had a larger firm size. However, there was a weak relationship between internal control and firm performance in China if the firm size was smaller.

Table 5.1: Effect of Internal Control on Firm Performance Moderated by Moderators

Moderator	Relationship	Path Coefficient	Significance of Moderating Effect
Size	Internal Control → Firm Performance	-0.096544*	Significant
	Interaction → Firm Performance	-0.103765*	
	Size → Firm Performance	-0.437075***	
Leverage	Internal Control → Firm Performance	-0.152006*	Significant
	Interaction → Firm Performance	-0.272132***	
	Leverage → Firm Performance	-0.648779***	
Sales Growth	Internal Control → Firm Performance	0.131236***	Non-significant
	Interaction → Firm Performance	-0.000973	
	Sales Growth → Firm Performance	0.136351***	
Asset Opacity	Internal Control → Firm Performance	0.156613***	Significant
	Interaction → Firm Performance	0.156829***	
	Asset Opacity → Firm Performance	-0.076052*	
Financial Slack	Internal Control → Firm Performance	0.138100*	Significant
	Interaction → Firm Performance	-0.135999*	
	Financial Slack → Firm Performance	0.290666***	
Earnings Variability	Internal Control → Firm Performance	0.136474**	Non-significant
	Interaction → Firm Performance	-0.008411	
	Earnings Variability → Firm Performance	0.018471	
Beta	Internal Control → Firm Performance	0.113684**	Non-significant
	Interaction → Firm Performance	-0.015472	
	Beta → Firm Performance	-0.214772***	
Int_Div	Internal Control → Firm Performance	0.127821***	Non-significant
	Interaction → Firm Performance	-0.014624	
	Int_Div → Firm Performance	-0.078606	
Ind_Div	Internal Control → Firm Performance	0.125501***	Non-significant
	Interaction → Firm Performance	-0.056894	
	Ind_Div → Firm Performance	-0.045183	
Dividend Yield	Internal Control → Firm Performance	0.134714***	Non-significant
	Interaction → Firm Performance	-0.021011	
	Dividend Yield → Firm Performance	0.081188*	
Insider	Internal Control → Firm Performance	0.146169***	Non-significant
	Interaction → Firm Performance	0.022176	
	Insider → Firm Performance	-0.077831*	
Insider Sq	Internal Control → Firm Performance	0.146314***	Non-significant
	Interaction → Firm Performance	0.023825	
	Insider Sq → Firm Performance	-0.081399*	

Note: * Significant at P < 0.05, ** Significant at P < 0.01, *** Significant at P < 0.005; The effects of moderating variables on the relationship between internal control and firm performance are illustrated in Appendix A

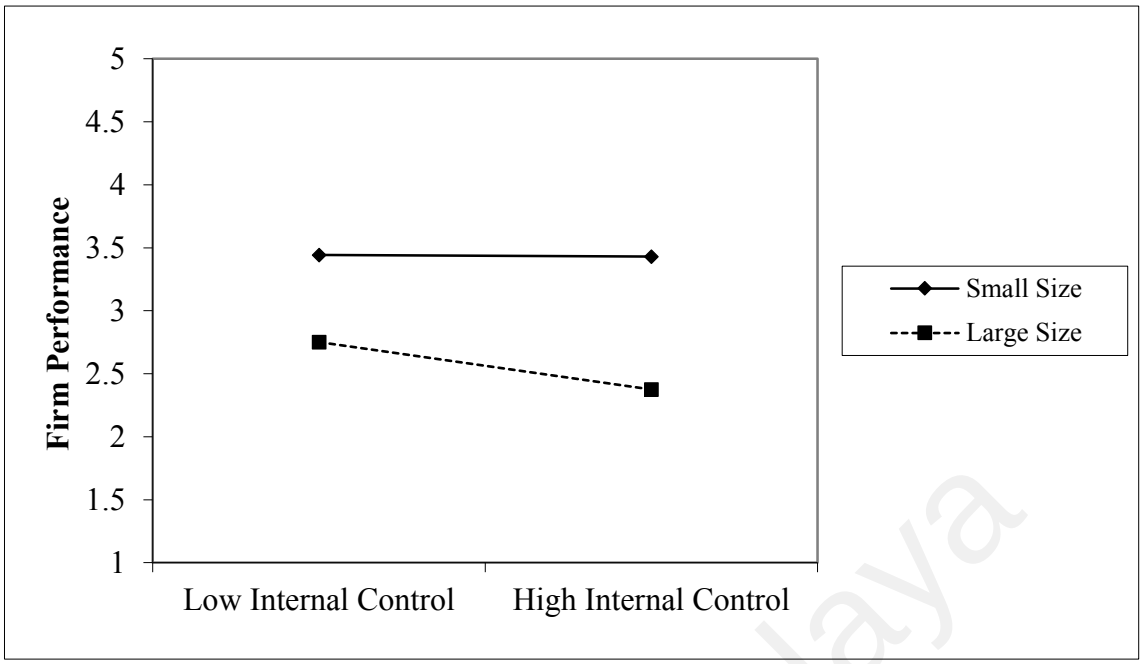

Figure 5.4: Moderating Effect of Firm Size on the Association between Internal Control and Firm Performance

The second moderator tested in this research is leverage. From Table 5.1, it can be seen that all three path coefficients observed in the model are significant. Additionally, after entering leverage into the model, both internal control (-0.152) and leverage (-0.649) were found to be negatively associated with firm performance. Therefore, it is reasonable to assert that the direct effect of internal control on firm performance was moderated by leverage. In this context, this research plotted the simple slopes to interpret the moderating effect by contrasting and comparing the association between internal control and firm performance for firms with higher and lower leverage. Figure 5.5 illustrates that the flat slope occurred for firms which used lower leverage. This means that there was a weak positive relationship between internal control and firm performance when firms in China applied lower leverage. In contrast, the steep slope occurred for firms which adopted higher leverage. This outcome indicates that the association between internal control and firm performance changed to become a strong

negative when firms in China turned to using higher leverage.

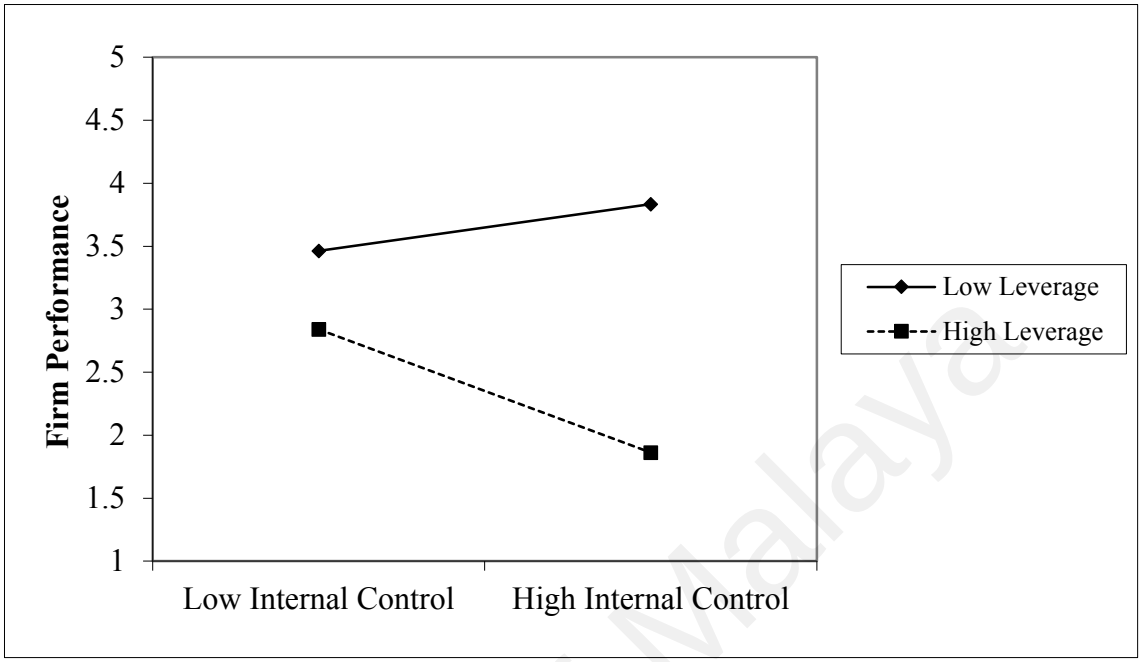

Figure 5.5: Moderating Effect of Leverage on the Association between Internal Control and Firm Performance

The third moderator evaluated in this research is sales growth. It can be noted that although both internal control (0.131) and sales growth (0.136) have significant positive effects on firm performance, it seems that the association between interaction variable (-0.001) and firm performance was not significant. Therefore, it can be ascertained that the direct effect of internal control on firm performance was not moderated by sales growth. In this context, the impact of internal control on firm performance was unrelated to sales growth for firms in China. Since the path coefficient between internal control and firm performance was strongly significant, it can be deduced that firms in China can enhance their performance by establishing internal control even if they do not have too much sales growth opportunities.

The fourth moderator estimated in this research is asset opacity. It reveals that the interaction variable has a significant positive effect on firm performance. Additionally, the relationship between internal control and firm performance was the same as the association between interaction variable and firm performance where the value of path coefficient was significant at 0.157. Nevertheless, the effect of asset opacity (-0.076) on firm performance was significantly negative. In this context, it is reasonable to assert that the direct effect of internal control on firm performance was moderated by asset opacity. In addition, this research also plotted the slopes so as to better indicate the moderating effect on the strength and direction of the particular relationship. From Figure 5.6, it can be noted that there was a weak negative association between internal control and firm performance for firms in China when the asset opacity was lower within organizations. In contrast, the relationship between internal control and firm performance changed to become a strong positive when there was a higher asset opacity within firms in China. Accordingly, the adoption of internal control can only add value to firms in China if the organizations own more opaque assets.

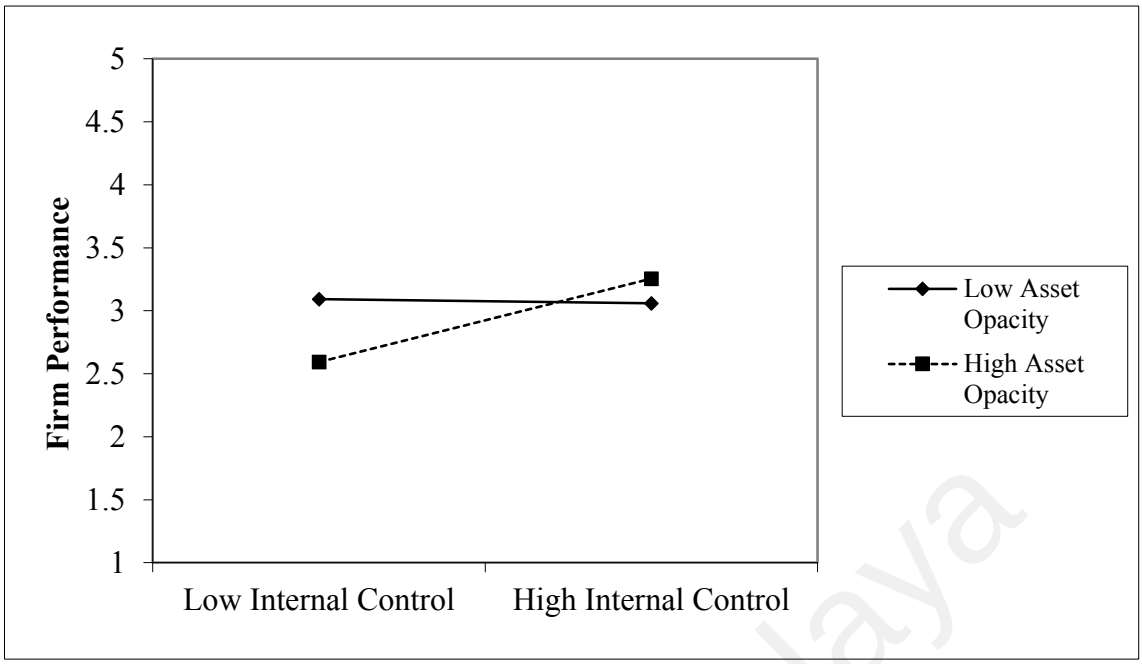

Figure 5.6: Moderating Effect of Asset Opacity on the Association between Internal Control and Firm Performance

The fifth moderator examined in the research is financial slack. It can be noted that both internal control (0.138) and financial slack (0.291) have significant positive effects on firm performance. In addition, the path coefficient between interaction variable (-0.136) and firm performance was significant at the p-value of less than 0.05. Therefore, it is reasonable to assert that the direct effect of internal control on firm performance was moderated by financial slack. In order to investigate the moderating effect of financial slack on the strength and/or direction of the association between internal control and firm performance in particular, this research plotted the simple slopes so as to illustrate the differences in the relationship between firms with high and low financial slack. Figure 5.7 reveals that the steep slope occurred for firms who applied lower financial slack. This indicates that there was a strong positive relationship between internal control and firm performance when firms in China experienced a lower financial slack. In contrast, the flat slope occurred for firms which experienced a higher

financial slack. This means that the association between internal control and firm performance will be weak when firms in China hold higher financial slack.

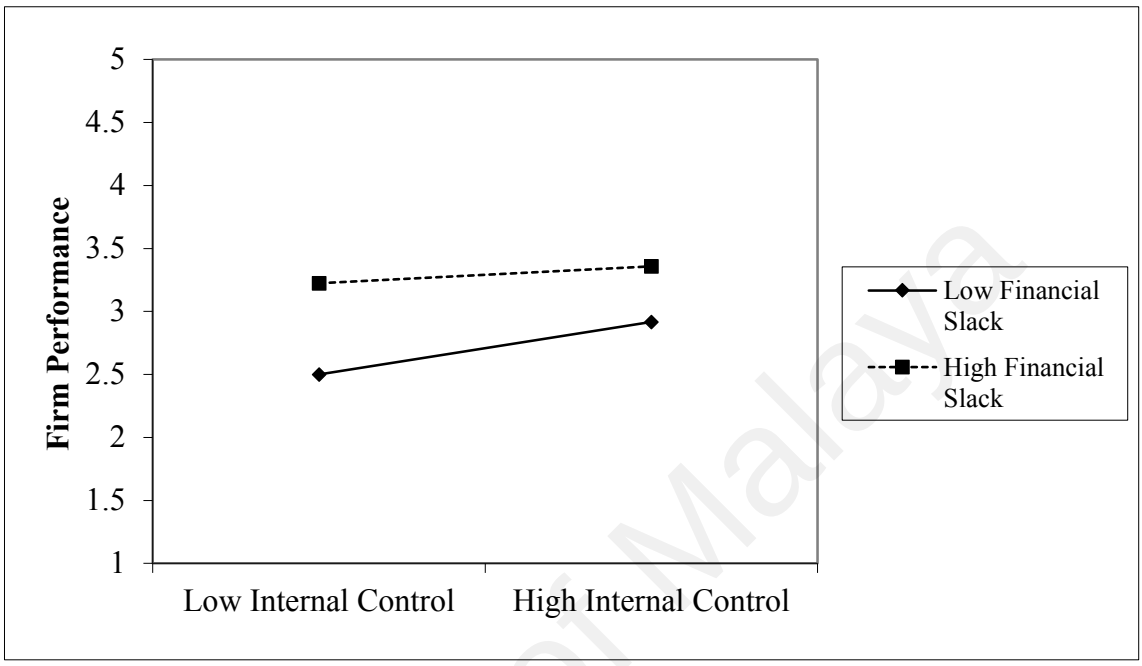

Figure 5.7: Moderating Effect of Financial Slack on the Association between Internal Control and Firm Performance

The sixth moderator estimated in this research is earnings variability. It seems clear that only internal control (0.136) has the significant positive effect on firm performance in the model. Furthermore, both the effects of interaction variable (-0.008) and earnings variability (0.018) on firm performance were non-significant at the p-value of greater than 0.05. In this context, it can be ascertained that the direct effect of internal control on firm performance was not moderated by earnings variability. Accordingly, the relationship between internal control and firm performance was unrelated to earnings variability for firms in China. As the path coefficient between internal control and firm performance was strongly significant, it can be said that firms in China can improve firm performance by embracing internal control, regardless of whether the earnings

within organizations are steady or not.

The seventh moderator evaluated in this research is beta. The path coefficients in the table indicate that internal control has a positive impact on firm performance while systematic risks have a negative influence. From the figure, it can be noted that both internal control (0.114) and beta (-0.215) showed significant effects on firm performance. However, the association between interaction variable (-0.015) and firm performance was not significant. Therefore, it is reasonable to assert that the direct effect of internal control on firm performance was not moderated by beta. Accordingly, the relationship between internal control and firm performance was not dependent on systematic risks for firms in China. In this context, no matter how much systematic risks firms in China face, they can still enhance firm performance by establishing internal control.

The eighth moderator tested in this research is international diversification. It seems clear that internal control (0.128) revealed a positive effect on firm performance but the relationship between international diversification (-0.079) and firm performance was negative. Even if internal control was significantly associated with firm performance, neither the effects of interaction variable (-0.015) nor international diversification (-0.079) on firm performance was significant at the p-value of less than 0.05. Therefore, it can be ascertained that the direct effect of internal control on firm performance was not moderated by international diversification. In other words, the impact of internal control on the improvement of firm performance was not connected to the international

diversification in China. Therefore, firms in China with a business scope of being either domestic or international, could be supposed to be adding value to firm performance while establishing internal control.

The ninth moderator estimated in this research is industrial diversification. It illustrates that only internal control (0.126) has a significant positive effect on firm performance. The figure further indicates that both the effects of interaction variable (-0.057) and industrial diversification (-0.045) on firm performance were non-significant at the p-value of greater than 0.05. Therefore, it is reasonable to assert that the direct effect of internal control on firm performance was not moderated by industrial diversification. In this context, the association between internal control and firm performance was not dependent on industrial diversification in China. Accordingly, regardless of whether firms in China had businesses and operations limited to one single industry or not, they could still engage in internal control for the purpose of enhancing firm performance.

The tenth moderator evaluated in this research is dividend yield. It can be seen that both internal control (0.135) and dividend yield (0.081) have significant positive effects on firm performance but the relationship between interaction variable (-0.021) and firm performance was not significant. Therefore, it can be deduced that the direct effect of internal control on firm performance was not moderated by dividend yield. In this context, the association between internal control and firm performance was unrelated to dividend yield in China. Since the path coefficient between internal control and firm

performance was strongly significant, an enhanced firm performance can be achieved by establishing internal control. Additionally, this specific valuation of internal control will not be destroyed even if firms in China would like to keep capital gains and not disburse dividends to investors.

The last moderator examined in this research is insider ownership. According to prior studies, both insider ownership and its squared value were evaluated as moderating variables. Therefore, the models and results for the moderating effects of insider ownership and the squared value are illustrated separately in Table 5.1. It can be noted that these two models represent quite similar results. Based on the results, it seems clear that internal control (0.146 & 0.146) revealed a positive effect on firm performance but the association between insider ownership (squared value) (0.022 & 0.024) and firm performance was negative. Even if both internal control and insider ownership (squared value) had significant effects on firm performance, the relationship between interaction variable (-0.078 & -0.081) and firm performance was not significant at the p-value of less than 0.05. In this context, it is reasonable to assert that the direct effect of internal control on firm performance was not moderated by insider ownership (squared value). Accordingly, the relationship between internal control and firm performance was not connected to insider share ownership for firms in China. In other words, firms in China with either higher or lower level of insider share ownership can increase their performance by embracing internal control.

Based on the investigation of the moderating effects discussed above, it can be concluded that among all the selected moderating variables, only firm size, leverage, asset opacity, and financial slack could be considered as effective moderators which can influence the strength and/or direction of the relationship between internal control and firm performance. In this context, it can be attested that the relationship between internal control and firm performance was moderated by firm size, leverage, asset opacity, and financial slack. Accordingly, firms in China have to pay more attention to these four specific characteristics if they want to improve firm performance by implementing internal control. A more detailed analysis of the effects of firm size, leverage, asset opacity, and financial slack on the association between internal control and firm performance in China will be discussed in the section on interpretation of findings.

5.2.5 Research Hypothesis V

As mentioned in the previous section, firm-specific characteristics encompassing firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders have been shown to make significant impacts on both the ERM and firm performance in many empirical studies. In addition, the identification of these characteristics is advocated to be important in respect of estimating the valuation of ERM (Farrell & Gallagher, 2015; Hoyt & Liebenberg, 2011; Don Pagach & Warr, 2010). Based on this, the current research adopted the characteristics to serve as moderating variables in exploring whether these variables also have significant effects on the relationship

between ERM and firm performance in firms in China. The fifth assumption developed for this research is thus hypothesized as:

H5: The relationship between ERM and firm performance is moderated by firm-specific characteristics.

In order to test the hypothesis stated, this research added several moderators into the existing PLS-SEM but based on one at a time. The testing results are summarized and reported separately in Table 5.2. The first moderator estimated in the research is firm size. It can be noted that both firm size (-0.404) and ERM (-0.006) have negative effects on firm performance but the association between ERM and firm performance was not significant at the p-value of less than 0.05. Furthermore, the path coefficient between interaction variable (0.023) and firm performance was not significant either. Therefore, it is reasonable to assert that the direct effect of ERM on firm performance was not moderated by firm size. In this context, the association between ERM and firm performance was not related to firm size in China. It is clear that the path coefficient between firm size and firm performance was significantly negative. In contrast, the relationship between ERM and firm performance was non-significant. Accordingly, this indicates that the improvement of firm performance cannot be realized by expanding firm size even if firms in China applied ERM as a buffer.

Table 5.2: Effect of ERM on Firm Performance Moderated by Moderators

Moderator	Relationship	Path Coefficient	Significance of Moderating Effect
Size	ERM → Firm Performance	-0.005956	Non-significant
	Interaction → Firm Performance	0.023083	
	Size → Firm Performance	-0.404191***	
Leverage	ERM → Firm Performance	-0.084394*	Significant
	Interaction → Firm Performance	0.203949***	
	Leverage → Firm Performance	-0.569679***	
Sales Growth	ERM → Firm Performance	-0.286652***	Non-significant
	Interaction → Firm Performance	-0.033599	
	Sales Growth → Firm Performance	0.147008***	
Asset Opacity	ERM → Firm Performance	-0.303915***	Non-significant
	Interaction → Firm Performance	-0.043085	
	Asset Opacity → Firm Performance	-0.075432	
Financial Slack	ERM → Firm Performance	-0.242436	Non-significant
	Interaction → Firm Performance	-0.043465	
	Financial Slack → Firm Performance	0.239941***	
Earnings Variability	ERM → Firm Performance	-0.281810***	Non-significant
	Interaction → Firm Performance	0.067286	
	Earnings Variability → Firm Performance	-0.045607	
Beta	ERM → Firm Performance	-0.390275***	Non-significant
	Interaction → Firm Performance	-0.015492	
	Beta → Firm Performance	-0.338380***	
Int_Div	ERM → Firm Performance	-0.279417***	Non-significant
	Interaction → Firm Performance	0.036357	
	Int_Div → Firm Performance	-0.073481	
Ind_Div	ERM → Firm Performance	-0.311308***	Non-significant
	Interaction → Firm Performance	-0.033625	
	Ind_Div → Firm Performance	-0.102399**	
Dividend Yield	ERM → Firm Performance	-0.294643***	Significant
	Interaction → Firm Performance	0.042653*	
	Dividend Yield → Firm Performance	0.088416*	
Insider	ERM → Firm Performance	-0.274874***	Non-significant
	Interaction → Firm Performance	0.030160	
	Insider → Firm Performance	-0.059990*	
Insider Sq	ERM → Firm Performance	-0.275456***	Non-significant
	Interaction → Firm Performance	0.030603	
	Insider Sq → Firm Performance	-0.059779***	

Note: * Significant at P < 0.05, ** Significant at P < 0.01, *** Significant at P < 0.005; The effects of moderating variables on the relationship between internal control and firm performance are illustrated in Appendix B.

The second moderator tested in this research is leverage. It can be noted that all three path coefficients in the model were significant. Additionally, it was shown that ERM (-0.084) and leverage (-0.570) have negative effects on firm performance. Nevertheless, the relationship between interaction variable (0.204) and firm performance was positive. Therefore, it can be deduced that the direct effect of ERM on firm performance was moderated by leverage. In this context, this research plotted the simple slopes to illustrate the moderating effect on the strength and direction of the association between ERM and firm performance. Figure 5.8 reveals that there was a negative relationship between ERM and firm performance when firms in China used lower leverage. In contrast, the association between ERM and firm performance turned out to be positive when firms in China adopted higher leverage. Therefore, it is reasonable to assert that ERM can only add value to firms in China if the organizations chose to raise external capital from the creditors rather than from the investors.

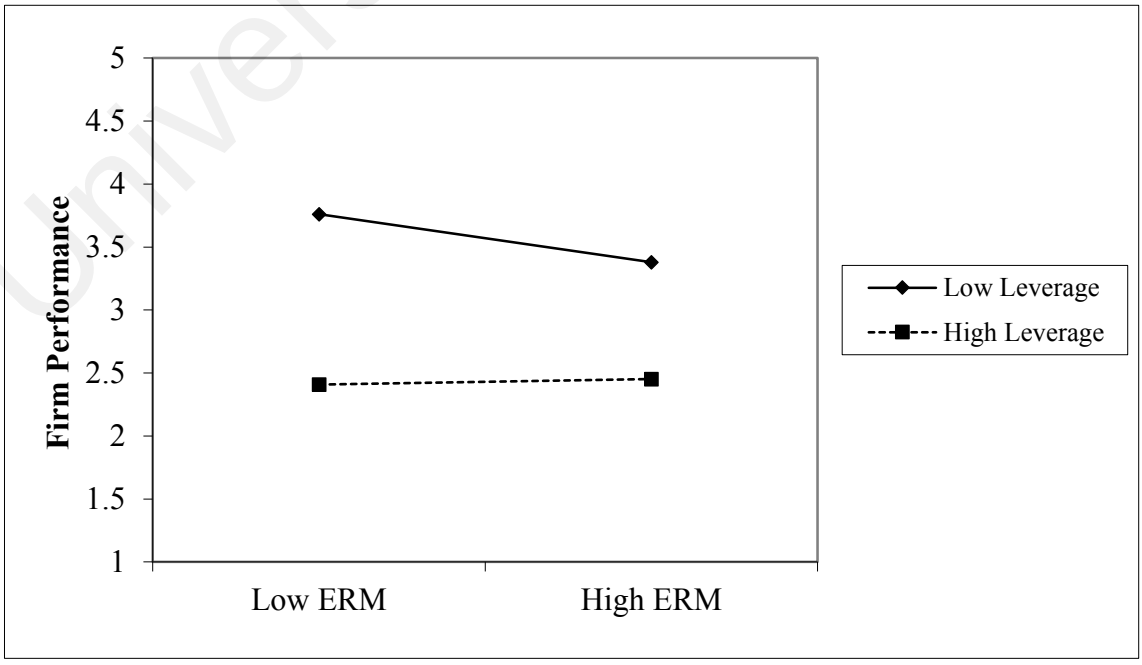

Figure 5.8: Moderating Effect of Leverage on the Association between ERM and Firm Performance

The third moderator evaluated in this research is sales growth. From Table 5.2, it seems clear that the effects of both ERM (-0.287) and sales growth (0.147) on firm performance were significant at the p-value of less than 0.005. Nevertheless, the path coefficient between interaction variable (-0.034) and firm performance was not significant. Therefore, it can be ascertained that the direct effect of ERM on firm performance was not moderated by sales growth. In this context, the impact of ERM on firm performance was not dependent on sales growth for firms in China. It is also noted that the association between ERM and firm performance was negative whereas the relationship between sales growth and firm performance was positive. Accordingly, it is reasonable to assert that ERM cannot benefit firms in China in terms of firm performance and this occurrence could be attributed to the large costs and extended durations caused by the implementation of ERM. Further, it appears that this situation would not be changed even if the firms had greater opportunities for sales growth.

The fourth moderator estimated in this research is asset opacity. The results illustrate that though both ERM (-0.304) and asset opacity (-0.075) influenced firm performance in a negative manner, however, only ERM made significant effect. Additionally, the association between interaction variable (-0.043) and firm performance was not significant at the p-value of less than 0.05. Therefore, it is reasonable to assert that the direct effect of ERM on firm performance was not moderated by asset opacity. Accordingly, the relationship between ERM and firm performance was not connected to firms' asset opacity in China. Since the path coefficient between ERM and firm performance was strongly significant, firms in China

would be unable to enhance firm performance even by embracing and implementing ERM. In addition, no matter how many opaque assets exist in the originations, the establishment of ERM will always negatively influence the performance of firms in China.

The fifth moderator examined in this research is financial slack. Based on the results reported, it can be noted that the effects of both ERM and financial slack on firm performance were strongly significant at the p-value of less than 0.005. In addition, the path coefficient between ERM (-0.242) and firm performance was negative but financial slack (0.240) was positively associated with firm performance. In contrast, the interaction variable (-0.043) has non-significant effect on firm performance. Therefore, it can be said that the direct effect of ERM on firm performance was not moderated by financial slack. In this regard, the association between ERM and firm performance was not related to financial slack in China. In other words, ERM cannot become value-added programs for firms in China regardless of whether higher or lower level of financial slack were held by the organizations.

The sixth moderator examined in this research is earnings variability. It can be noted that although both ERM (-0.282) and earnings variability (-0.046) have negative effects on firm performance, only ERM was significantly associated with firm performance. Furthermore, the path coefficient between interaction variable (0.067) and firm performance was non-significant as well. Therefore, it can be ascertained that the direct effect of ERM on firm performance was not moderated by earnings variability. In

this context, the relationship between ERM and firm performance was not dependent on earnings variability for firms in China. In addition, it revealed that the path coefficient between ERM and firm performance was strongly significant. Accordingly, the performance of firms in China can be reduced due to the implementation of ERM even if the firms' earnings were steady.

The seventh moderator evaluated in the research is beta. The path coefficients in the table indicates that both ERM and systematic risks have strong negative impacts on firm performance. In addition, it can be noted that even if the effects of ERM (-0.390) and beta (-0.338) on firm performance were significant, the association between interaction variable (-0.015) and firm performance was not significant at the p-value of less than 0.05. Therefore, it is reasonable to assert that the direct effect of ERM on firm performance was not moderated by beta. In this context, the relationship between ERM and firm performance was not connected to systematic risks for firms in China. In other words, no matter how much systematic risks firms in China take on, they would not be able to achieve any improvement in firm performance by adopting ERM.

The eighth moderator tested in this research is international diversification. The results indicate that ERM (-0.279) has a strong negative effect on firm performance whereas the relationship between international diversification (-0.073) and firm performance is weak negative. Although ERM was significantly associated with firm performance, neither the effects of interaction variable (0.036) nor international diversification (-0.073) on firm performance was significant at the p-value of less than

0.05. In this context, it can be seen that the direct effect of ERM on firm performance was not moderated by international diversification. Accordingly, the impact of ERM on the enhancement of firm performance was not dependent on firms' international diversification. Furthermore, firms in China whose business scope was either domestic or international, were by no means able to add value to firm performance even though they embraced ERM.

The ninth moderator estimated in this research is industrial diversification. The results show that all ERM (-0.311), industrial diversification (-0.102), and interaction variable (-0.034) indicated negative impacts on firm performance. Even if the effects of ERM and industrial diversification on firm performance were strongly significant, the path coefficient between interaction variable on firm performance was not significant at the p-value of less than 0.05. Therefore, it is reasonable to assert that the direct effect of ERM on firm performance was not moderated by industrial diversification. The result indicated that the association between ERM and firm performance was unrelated to industrial diversification in China. Moreover, regardless of whether firms in China held businesses and operations that were limited to one single industry or not, they would be unable to enhance firm performance even if they embraced ERM.

The tenth moderator examined in this research is dividend yield. The results illustrate that the interaction variable (0.043) has a significant positive effect on firm performance. In addition, the effects of ERM and dividend yield on firm performance were also significant where path coefficients were respectively estimated as -0.295 and

0.088. Therefore, it can be ascertained that the direct effect of ERM on firm performance was moderated by dividend yield. In order to investigate the moderating effect of dividend yield on the association between ERM and firm performance in particular, this research plotted the simple slopes to illustrate the differences manifested in the relationship between firms with higher and lower dividend yield. It can be noted from Figure 5.9 that the steep slope occurred for firms which applied lower dividend yield. This means that there was a strong negative relationship between ERM and firm performance when firms keep more capital gains on hand. In contrast, the flat slope occurred for firms which adopted higher dividend yield. This indicates that the negative association between ERM and firm performance changed to be weak when firms in China turned to disburse more dividends to their investors.

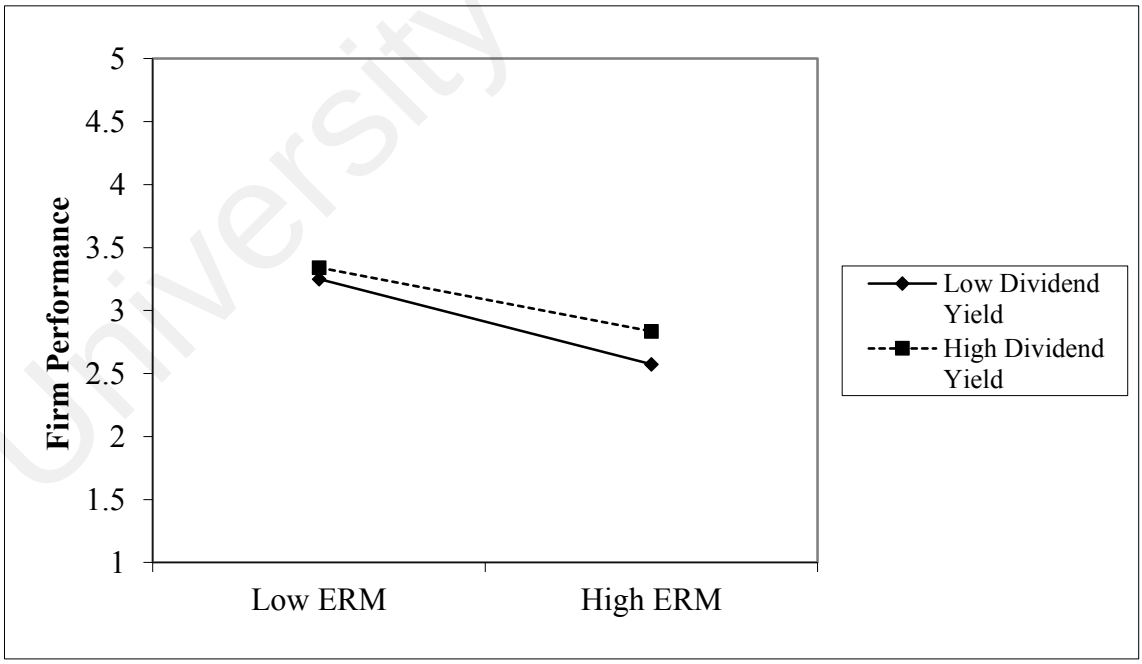

Figure 5.9: Moderating Effect of Dividend Yield on the Association between ERM and Firm Performance

The last moderator evaluated in this research is insider ownership. The moderating effects of both insider ownership and its squared value are tested in the research. Based on the results in Table 5.2, it seems clear that these two models were quite similar in terms of path coefficient and significant level. It can be noted that ERM (-0.275 & -0.275) has a strong negative influence on firm performance whereas the relationship between insider ownership (squared value) (-0.060 & -0.060) and firm performance was weak negative. Although the effects of both ERM and insider ownership (squared value) on firm performance were significant, the path coefficient between interaction variable (0.030 & 0.031) and firm performance was not significant at the p-value of less than 0.05. In this regard, it is reasonable to assert that the direct effect of ERM on firm performance was not moderated by insider ownership (squared value). In other words, the association between ERM and firm performance was not dependent on insider share ownership for firms in China. Additionally, it is deduced that firms with higher or lower level of insider share ownership would be unable to realize the goal of improving performance even by implementing ERM.

From the outcome of the investigation noting the moderating effects, it can be concluded that among all the selected moderating variables, only leverage and dividend yield were effective moderators which can influence the strength and/or direction of the relationship between ERM and firm performance. In this context, it can be deduced that the relationship between ERM and firm performance was moderated by leverage and dividend yield. In addition, only leverage can change the effect of ERM on firm performance from negative to positive for firms in China. Therefore, these firms have to

pay more attention to these two specific characteristics if they want to enhance firm performance when establishing ERM. A more detailed analysis of the impacts of leverage and dividend yield on the relationship between ERM and firm performance in China will be discussed in the section under interpretation of findings.

5.2.6 Research Hypothesis Ⅵ

It has been proved in the testing of research hypothesis three above that there was a significant relationship between the adoption of internal control and ERM. In addition, the results of hypothesis four and hypothesis five have also demonstrated that the strength and/or direction of the effects of internal control and ERM on firm performance was affected by some firm-specific characteristics. Therefore, an attempt to explore whether the association between internal control and ERM can be moderated by such firm-specific characteristics (firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders) becomes an essential part of the current empirical investigation. In this regard, the current research applies the firm-specific characteristics as moderators. It also conjectures that these moderating variables can exert significant influence on the relationship between internal control and ERM in firms in China. The sixth assumption developed for this research is thus hypothesized as:

H6$_a$: The relationship between internal control and ERM is moderated by firm-specific characteristics.

Table 5.3: Effect of Internal Control on ERM Moderated by Moderators

Moderator	Relationship	Path Coefficient	Significance of Moderating Effect
Size	Internal Control → ERM	0.905575***	Significant
	Interaction → ERM	0.070210***	
	Size → ERM	0.120585***	
Leverage	Internal Control → ERM	0.898873***	Significant
	Interaction → ERM	0.088531***	
	Leverage → ERM	0.096201***	
Sales Growth	Internal Control → ERM	0.877028***	Non-significant
	Interaction → ERM	-0.001308	
	Sales Growth → ERM	-0.001858	
Asset Opacity	Internal Control → ERM	0.876663***	Non-significant
	Interaction → ERM	-0.004623	
	Asset Opacity → ERM	-0.008080	
Financial Slack	Internal Control → ERM	0.877466***	Non-significant
	Interaction → ERM	-0.009353	
	Financial Slack → ERM	-0.025717***	
Earnings Variability	Internal Control → ERM	0.876857***	Non-significant
	Interaction → ERM	-0.011668	
	Earnings Variability → ERM	0.009025	
Beta	Internal Control → ERM	0.872501***	Significant
	Interaction → ERM	-0.043720**	
	Beta → ERM	-0.030433***	
Int_Div	Internal Control → ERM	0.874586***	Significant
	Interaction → ERM	-0.022795*	
	Int_Div → ERM	0.005531	
Ind_Div	Internal Control → ERM	0.872306***	Significant
	Interaction → ERM	-0.043470*	
	Ind_Div → ERM	-0.047801***	
Dividend Yield	Internal Control → ERM	0.877974***	Non-significant
	Interaction → ERM	-0.029357	
	Dividend Yield → ERM	0.005870	
Insider	Internal Control → ERM	0.876254***	Non-significant
	Interaction → ERM	0.012277	
	Insider → ERM	-0.009128	
Insider Sq	Internal Control → ERM	0.876304***	Significant
	Interaction → ERM	0.017881*	
	Insider Sq → ERM	-0.014061***	

Note: * Significant at P < 0.05, ** Significant at P < 0.01, *** Significant at P < 0.005; The effects of moderating variables on the relationship between internal control and firm performance are illustrated in Appendix C.

All moderating effects on the relationship between internal control and ERM are tested and summarized in Table 5.3. The first moderator estimated in this context is firm size. It shows that both internal control (0.849) and firm size (0.121) have significant positive effects on ERM. In addition, the association between interaction variable (0.070) and ERM was also strongly significant. Therefore, it seems clear that the direct effect of internal control on ERM was moderated by firm size. In this context, this research plotted the simple slopes of the moderating effect to interpret how the relationship between internal control and ERM was dependent on the value of firm size. Figure 5.10 reveals that the flat slope occurred for firms which had smaller firm size. This means that there was a strong positive association between internal control and ERM when firms were small in size. However, the steep slope occurred for firms which have larger firm size. This indicates that the positive relationship between internal control and ERM changed to become stronger when firms in China expanded their firm size.

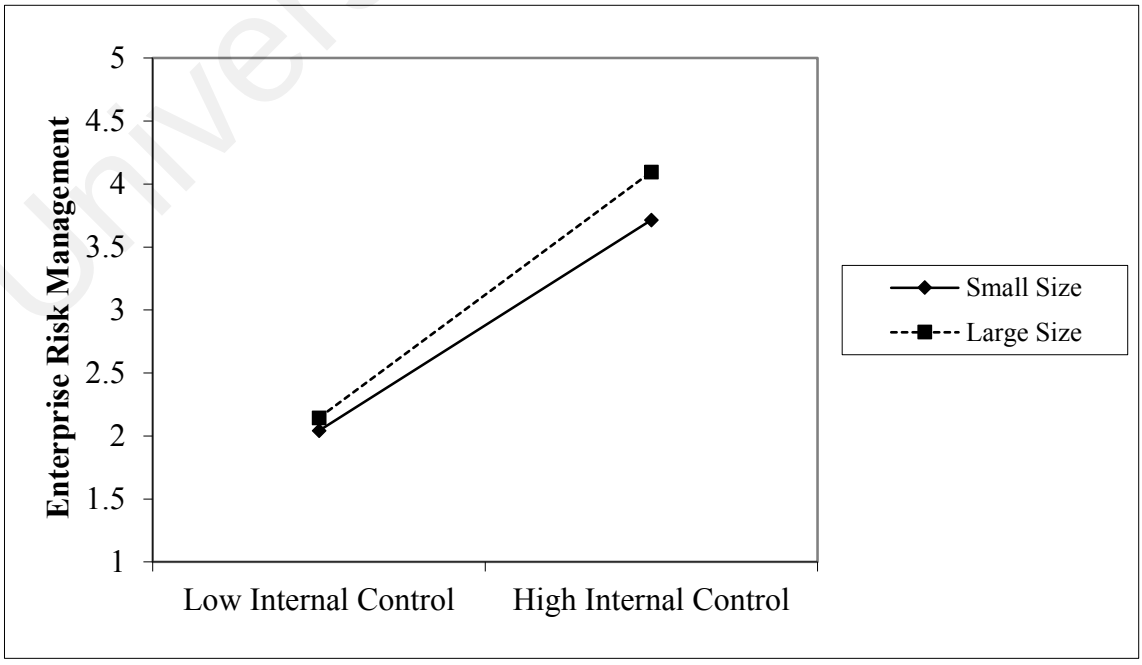

Figure 5.10: Moderating Effect of Size on the Association between Internal Control and ERM

The second moderator tested in this context is leverage. The results show that all three path coefficients in the model were significant at the p-value of less than 0.005. Additionally, both internal control (0.899) and leverage (0.096) were positively associated with ERM. Therefore, it is reasonable to assert that the direct effect of internal control on ERM was moderated by leverage. In this context, this research plotted the slopes to illustrate the differences in the relationship between internal control and ERM for firms with higher and lower leverage. It can be noted from Figure 5.11 that the flat slope occurred for firms which used lower leverage. This implies that there was a strong relationship between internal control and ERM when firms adopted lower leverage. Nevertheless, the steep slope occurred for firms which applied higher leverage and this means that the positive association between internal control and ERM turned to be stronger when firms in China turned to use higher leverage.

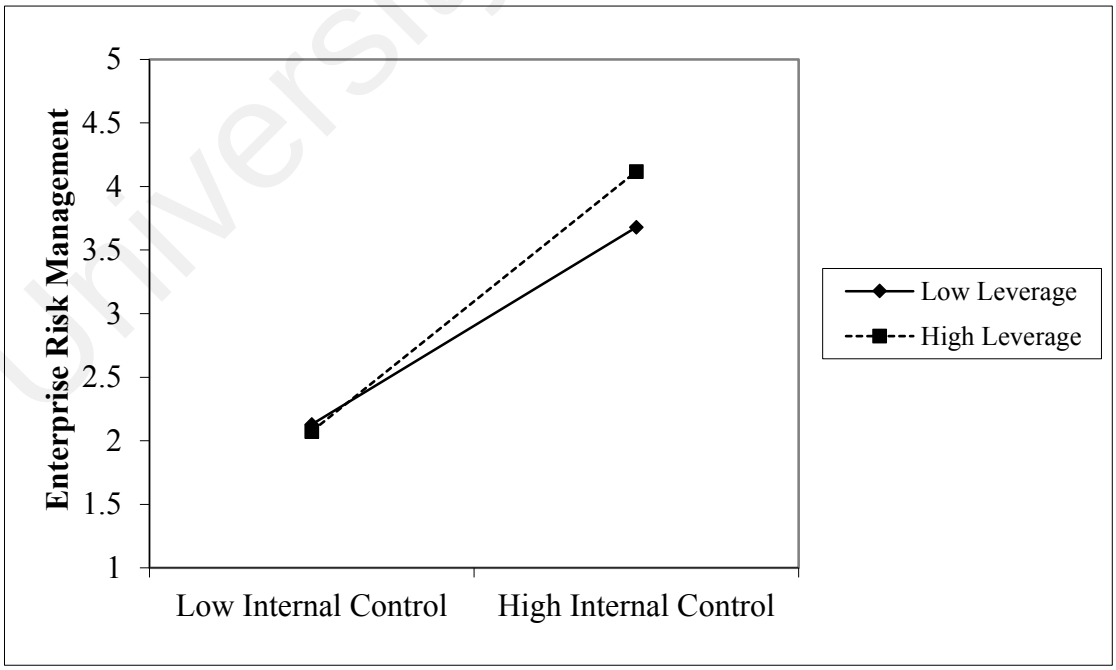

Figure 5.11: Moderating Effect of Leverage on the Association between Internal Control and ERM

The third moderator evaluated in this context is sales growth. It reveals that the association between internal control (0.877) and ERM was significant at the p-value of less than 0.005 whereas the effects of sales growth (-0.002) and interaction variable (-0.001) on ERM were not significant. Therefore, it can be asserted that the direct effect of internal control on ERM was not moderated by sales growth. In other words, the impact of internal control on ERM was unconnected with sales growth for firms in China. Since the path coefficient between internal control and ERM was strong positive, it is thus deduced that firms in China can increase the likelihood of embracing effective ERM by estimating sound internal control. This is regardless of whether the organizations have much sales growth opportunities or not.

The fourth moderator examined in this context is asset opacity. Table 5.3 indicates that internal control (0.877) has a significant positive effect on ERM. In contrast, the negative effect of asset opacity (-0.008) on ERM was not significant. In addition, the path coefficient between interaction variable (-0.005) and ERM was non-significant as well. In this context, it is reasonable to assert that the direct effect of internal control on ERM was not moderated by asset opacity. Accordingly, the relationship between internal control and ERM was unrelated to asset opacity for firms in China. As internal control was positively associated with ERM, it would mean that implementing internal control can enhance the firms' chances in engaging ERM. Additionally, this situation will not change even if there were many opaque assets existing in the firms.

The fifth moderator estimated in this context is financial slack. It demonstrates that the effects of both internal control and financial slack on ERM were significant at the p-value of less than 0.005. In addition, the path coefficient between internal control and ERM was 0.877 whereas the path coefficient between financial slack and ERM was -0.026. Moreover, the association between interaction variable (-0.009) and ERM was not significant. In this context, it can be seen that the direct effect of internal control on ERM was not moderated by financial slack. In other words, the association between internal control and ERM was not dependent on financial slack for firms in China. Therefore, it is deduced that firms in China which hold higher or lower financial slack can improve the effectiveness of ERM through increasing the effectiveness of internal control.

The sixth moderator evaluated in this context is earnings variability. The results display that only internal control (0.877) has significant positive effect on ERM. In contrast, neither the effects of earnings variability (0.009) nor interaction variable (-0.012) on ERM was significant at the p-value of less than 0.05. Based on this, it is hereby noted that the direct effect of internal control on ERM was not moderated by earnings variability. In this context, the association between internal control and ERM was unconnected with earnings variability for firms in China. Since the path coefficient between internal control and ERM was strongly significant, it can be said that no matter whether earnings were steady or not in these firms, the likelihood of embracing ERM could be enhanced if they have already established effective internal control.

The seventh moderator examined in this context is beta. The results indicate that all internal control, beta, and interaction variable have significant effects on ERM. In addition, the path coefficients in the model revealed that although the relationship between internal control (0.873) and ERM was strong positive, both beta (-0.030) and interaction variable (-0.044) were weakly negatively associated with ERM. Therefore, it is reasonable to assert that the direct effect of internal control on ERM was moderated by beta. In order to investigate the moderating effect of beta on the association between internal control and ERM in particular, this research plotted the simple slopes to compare the different strengths of the relationship for firms with higher and lower beta. Figure 5.12 illustrates that the steep slope occurred for firms with lower beta. This means that there was a strong positive relationship between internal control and ERM when firms were exposed to less systematic risks in China. However, the slope changed to a little bit flat for firms which have higher beta. This suggests that the strength of positive association between internal control and ERM would be reduced when firms in China experience too much systematic risks as a result of the market.

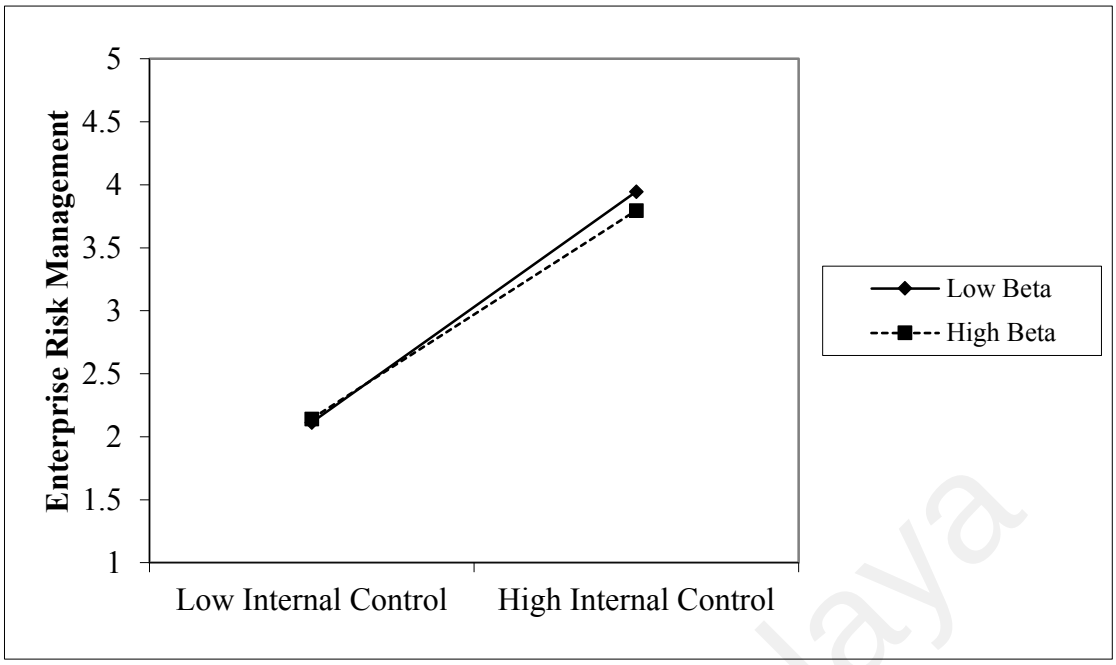

Figure 5.12: Moderating Effect of Beta on the Association between Internal Control and ERM

The eighth moderator tested in this context is international diversification. It demonstrates that both internal control (0.875) and international diversification (0.006) revealed positive effects on ERM. However, only the effect of internal control was significant. Since the path coefficient between interaction variable (-0.023) and ERM was negative significant at the p-value of less than 0.05, it is conjectured that the direct effect of internal control on ERM was moderated by international diversification. In this context, this research plotted the slopes to better explore the moderating effect of international diversification on the association between internal control and ERM. Results indicated in Figure 5.13 demonstrates that the slope for firms with higher international diversification was very close to the slope for firms with lower international diversification. This implies that even if international diversification had a moderating effect on the relationship between internal control and ERM, the effect was attested to be quite weak.

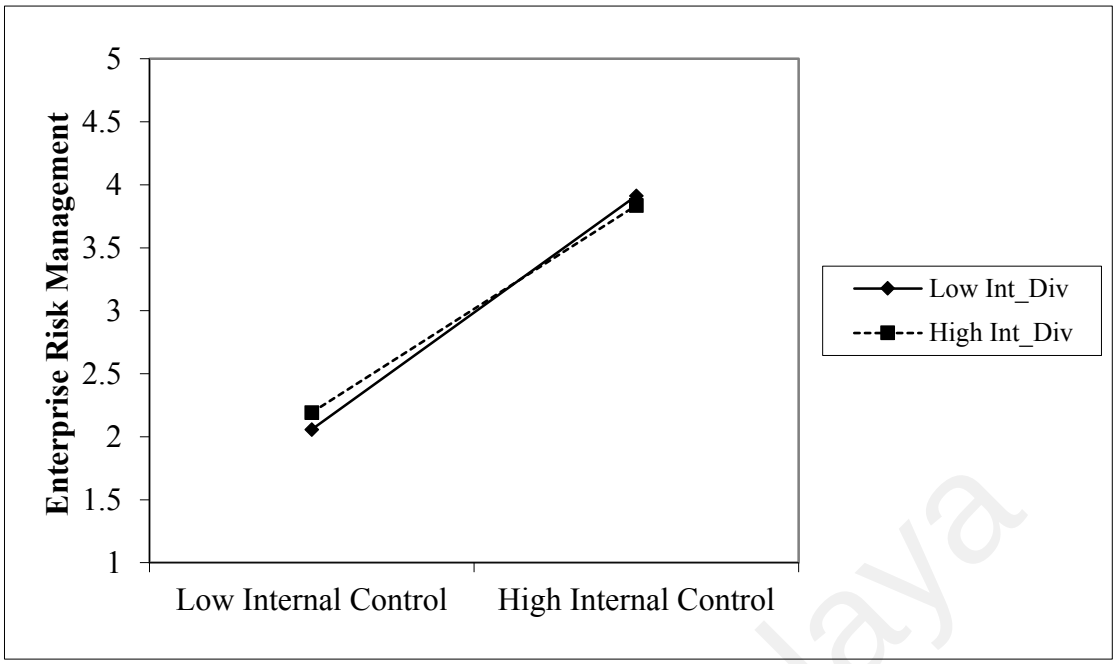

Figure 5.13: Moderating Effect of International Diversification on the Association between Internal Control and ERM

The ninth moderator estimated in this context is industrial diversification. Table 5.3 illustrates that the effects of internal control, industrial diversification, and interaction variable on ERM were all significant. In addition, the relationship between internal control (0.872) and ERM was strong positive. In contrast, the industrial diversification (-0.048) and interaction variable (-0.043) were weakly negatively associated with ERM. Therefore, it is reasonable to assert that the direct effect of internal control on ERM was moderated by industrial diversification. In this context, this research plotted the simple slopes to illustrate the moderating effect on the strength of the relationship between internal control and ERM for firms with higher or lower industrial diversification. Figure 5.14 reveals that there was a strong positive association between internal control and ERM when firms have lower degree of industrial diversification in China. However, the strength of the association was subdued to become slightly reduced when the degree of industrial diversification was higher.

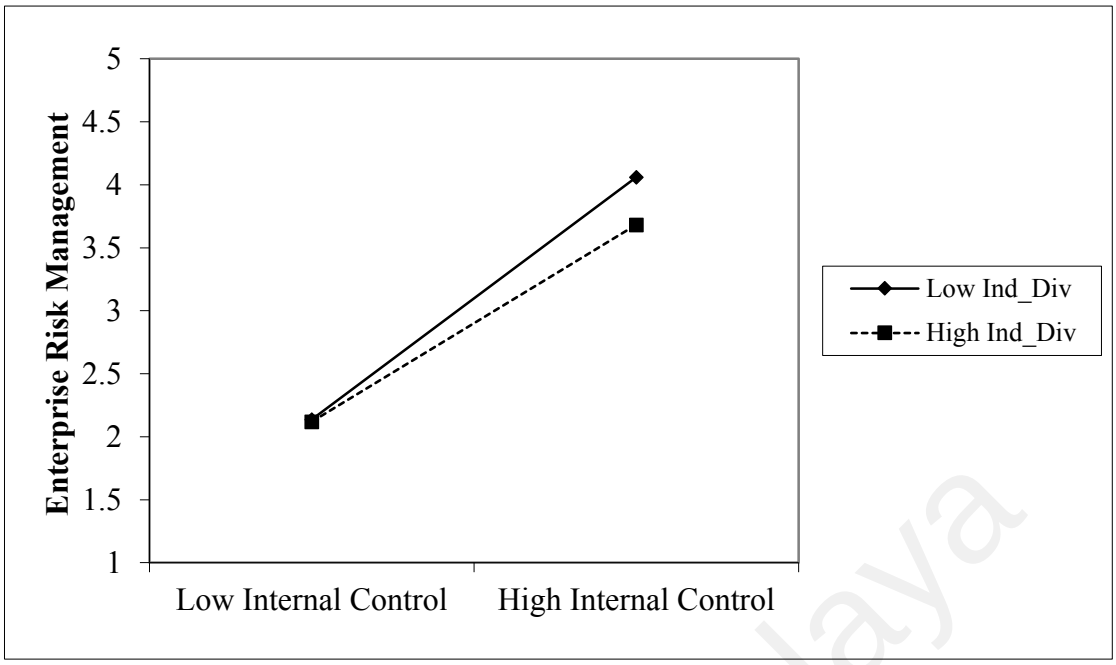

Figure 5.14: Moderating Effect of Industrial Diversification on the Association between Internal Control and ERM

The tenth moderator tested in this context is dividend yield. The results show that both internal control (0.878) and dividend yield (0.006) have positive effects on ERM, however, only the effect of internal control was significant. Furthermore, the relationship between interaction variable (-0.029) and ERM was not significant at the p-value of less than 0.05. In this context, it can be ascertained that the direct effect of internal control on ERM was not moderated by dividend yield. In other words, the association between internal control and ERM was unconnected with dividend yield for firms in China. As the path coefficient between internal control and ERM was strongly significant, it is thus possible for firms in China to establish effective ERM if they adopted sound internal control in their organizations and this would not be affected by the dividend distribution policy.

The last moderator evaluated in this context is insider ownership. Both insider ownership and its squared value were estimated as moderators in the PLS-SEM. From the results, it can be noted that the moderating effect of insider ownership and its squared value revealed quite different outcomes. Since the association between interaction variable (0.012) and ERM was not significant in the model of insider ownership, it can be deduced that insider ownership was not an effective moderating variable in the relationship between internal control and ERM. In contrast, all three path coefficients in the model of squared insider ownership were significant. Therefore, it is reasonable to assert that the direct effect of internal control on ERM was moderated by squared insider ownership. In this context, this research plotted the slopes to compare the moderating effects on the association between internal control and ERM for firms with different insider ownership. Figure 5.15 illustrates that the slope for firms with higher squared value of insider ownership was very close to the slope for firms with lower squared value of insider ownership. Accordingly, it can be concluded that even though insider ownership can moderate the relationship between internal control and ERM, its moderating effect was relatively weak.

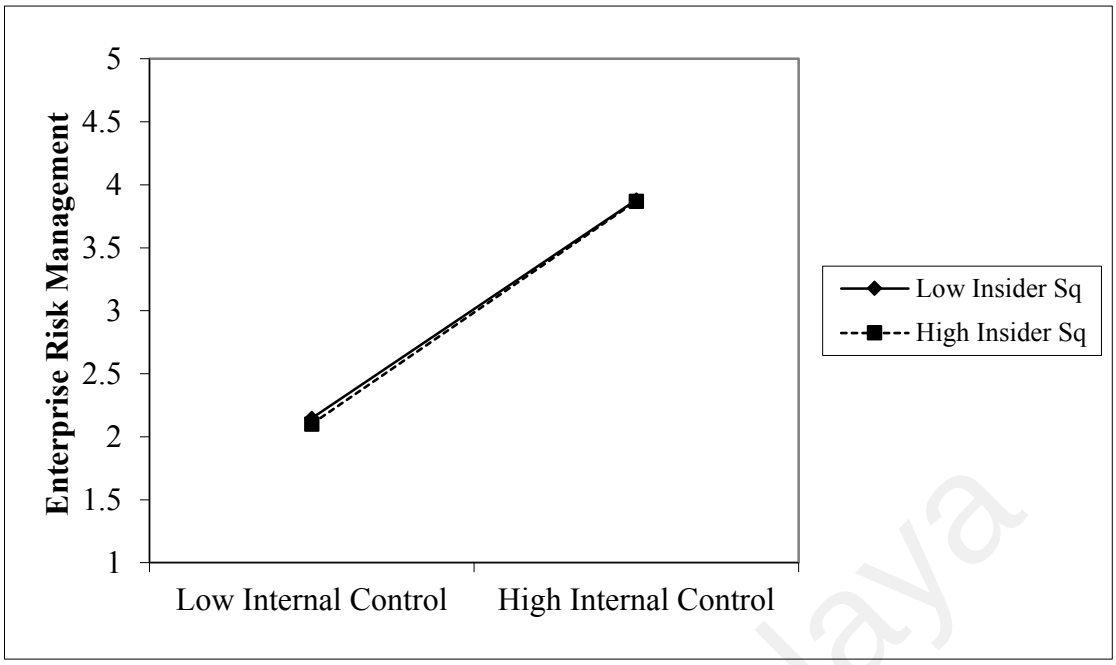

Figure 5.15: Moderating Effect of Insider Sq on the Association between Internal Control and ERM

Based on the investigation conducted on the moderating effects and the discussions that followed, it is hereby concluded that among all the selected moderating variables, only firm size, leverage, beta, international diversification, industrial diversification, and squared insider ownership were effective moderators which can influence the strength of relationship between internal control and ERM. Therefore, it can be deduced that the relationship between internal control and ERM is moderated by firm size, leverage, beta, international diversification, industrial diversification, and squared insider ownership. In addition, the moderating effects of international diversification and squared insider ownership were quite weak when compared to the other four effective moderators. In this regard, firms in China would have to pay more attention to these four specific characteristics if they want to establish sound internal control as well as effective ERM. A more detailed analysis of the effects of firm size, leverage, beta, international diversification, industrial diversification, and squared insider ownership on the

relationship between internal control and ERM in China will be discussed in the section under interpretation of findings.

5.3 Interpretation of Findings

5.3.1 Research Question Ⅰ

It has been demonstrated in the section of hypotheses testing that there was a significant positive relationship between internal control and firm performance for firms in China. Therefore, interpreting the effects of internal control on firm performance, as noted in the designed model, is an essential part of data analysis for this research. Accordingly, the interpretation of findings can benefit owners of firms in China in establishing sound internal control which would contribute to the improvement of firm performance. Compared to other statistical tools and methods of SEM, the Smart-PLS makes it possible to investigate the indirect effect that a particular exogenous latent variable has on the endogenous latent variable. For example, it can be illustrated from Figure 5.1 that operations had direct effect on internal control while internal control had direct effect on firm performance. In this regard, there might be potential indirect relationship between operations and firm performance. Therefore, even if there was no direct linkage between operations and firm performance in the designed model, the Smart-PLS would still examine the interdependency between them. In addition, since accounting was an indicator of firm performance, the indirect effect of operations on accounting may also be significant in this research. In this context, all of the effects that existed in the designed model were investigated to better understand the association between internal control adoption and firm performance in China.

It can be observed from Table 5.4 that all T-Statistics noted in the designed model were larger than 1.96. Based on this, it can be attested that the total effects of internal control on firm performance were highly significant. From the effects of internal control on both accounting (0.115) and market (0.114), it was noted that the values of these two standard beta were quite approximate. However, the association between internal control and accounting was a little bit stronger than the association between internal control and market. These results indicate that embracing internal control would enhance the performance of firms in China. In addition, compared to the impact on firms' investment, it appears that internal control can add more value on firms' profitability. This means that internal control can bring about more benefits to accounting performance rather than market performance for firms in China. Since internal control has been ascertained to be value-added programs in the research, exploring how to enhance the effectiveness of internal control would be meaningful for owners of firms in China as a matter of practice and reality.

Table 5.4: Total Effects of Internal Control on Firm Performance

Relationship	Std. Beta	Std. Error	T-Statistic	Significance
Firm Performance → Accounting	0.845964	0.018803	44.990821	***
Firm Performance → Market	0.839345	0.017324	48.448875	***
Internal Control → Firm Performance	0.136150	0.035766	3.806671	***
Internal Control → Accounting	0.115178	0.028987	3.973490	***
Internal Control → Market	0.114277	0.029977	3.812113	***
Operations → Internal Control	0.544140	0.093560	5.815937	***
Operations → Firm Performance	0.074085	0.029750	2.490241	*
Operations → Accounting	0.062673	0.024512	2.556783	*
Operations → Market	0.062182	0.024917	2.495571	*
Reporting → Internal Control	0.117383	0.033967	3.455812	***
Reporting → Firm Performance	0.015982	0.008143	1.962517	*
Reporting → Accounting	0.013520	0.006849	1.974082	*
Reporting → Market	0.013414	0.006814	1.968533	*
Compliance → Internal Control	0.807278	0.074779	10.795546	***
Compliance → Firm Performance	0.109911	0.024946	4.405911	***
Compliance → Accounting	0.092981	0.020111	4.623382	***
Compliance → Market	0.092253	0.020948	4.403951	***

Note: * Significant at P < 0.05, ** Significant at P < 0.01, *** Significant at P < 0.005.

Looking at the relationship uncovered among the three categories of objectives and firm performance in the designed model, it can be noted that compliance (0.110) was strongly associated with firm performance In addition, the effect of operations (0.074) on firm performance was second only to compliance. Consequently, reporting (0.016) had the weakest influence in comparison to operations and compliance. Thus, it is reasonable to assert that firms in China that wish to get benefits from internal control

should put special emphasis on the regulation compliance while establishing sound internal control. Furthermore, the results also revealed that the recognition degree of operations efficiency should be prior to reporting reliability for firms in China. From the outcome shown, it seems clear that the effects of the three categories of objects on accounting performance were close to that on market performance. However, the subtle differences make sense to firms in China when in actual practices. The relevant parameters shown in Table 5.4 demonstrate that all of the aspects of operations, reporting, and compliance appear to have slightly greater impacts on firm's profitability rather than on firms' investment. The results thus, support the earlier verdict noted in the hypotheses testing which states that if firms in China can engage in significant internal control frameworks, then the sound internal control would contribute towards enhancing firm performance, especially in the aspect of profitability.

5.3.2 Research Question Ⅱ

Different from the effect of internal control on firm performance, results also indicate that ERM is significantly associated with firm performance but the association is obviously negative in the designed model. It can be noted from Table 5.5 that ERM had negative effect on performance in both accounting (-0.236) and market (-0.235) aspects. This means that ERM cannot bring an improved profitability nor can it enhance firm investment at present. Due to the fact that ERM is a relatively new concept in Asia that was introduced in the past few years, there is no adequate empirical evidence that can give instructions to firms in China on how to establish successful ERM in real practice. In other words, compared to firms in European and American countries, it is

more difficult for firms in China to obtain benefits from ERM. Further, since the implementation and on-going maintenance of ERM frameworks require support from both the financial ability and human resource, huge costs would be imposed on firms and this indirectly, may reduce the value of ERM on their profits. In this context, interpreting the implications of ERM within organizations will help firms in China to optimize the ERM frameworks which will eventually contribute to the improvement of firm performance.

From previous discussions made, it has been ascertained that only mature ERM can add value to firm performance (Farrell & Gallagher, 2015). Nevertheless, the cognition of risk management at enterprise level for most firms in China, is not yet at the maturity stage. Therefore, firms in China seeking to enhance firm value from ERM, should accomplish mature ERM by increasing the effectiveness of ERM within their organizations. In this research, the effectiveness of ERM was estimated through firms' ability to achieve four categories of objectives (strategy, operations, reporting, and compliance) which were introduced by COSO's ERM integrated framework. The results shown in Table 5.5 reveal that the total effects of ERM on firm performance, as noted in the designed model, were highly significant since all t-statistics were larger than 1.96. It can further be noted that among the four categories of objectives, only strategy (0.961) and compliance (0.255), were positively associated with ERM. However, compared to the effect of compliance, strategy had a much stronger effect on ERM. Therefore, it is reasonable to assert that the effectiveness of ERM for firms in China would mostly be dependent on the success of the strategy applied. In addition, the performance of

compliance can also affect the maturity of ERM even if the influence of compliance was not as large as that of strategy. In other words, firms can optimize their ERM by increasing their strategy efficiency as well as their regulation compliance.

Table 5.5: Total Effects of ERM on Firm Performance

Relationship	Std. Beta	Std. Error	T-Statistic	Significance
Firm Performance → Accounting	0.845080	0.017051	49.562601	***
Firm Performance → Market	0.841152	0.017341	48.505738	***
ERM → Firm Performance	-0.279335	0.062652	4.485493	***
ERM → Accounting	-0.236061	0.051224	4.608364	***
ERM → Market	-0.234963	0.051360	4.574877	***
Strategy →ERM	0.960501	0.098042	9.796834	***
Strategy→ Firm Performance	-0.268302	0.047216	5.682472	***
Strategy→ Accounting	-0.226736	0.039313	5.767389	***
Strategy→ Market	-0.225683	0.040120	5.625150	***
Operations →ERM	-0.239863	0.043932	5.459790	***
Operations → Firm Performance	0.067002	0.017249	3.884380	***
Operations → Accounting	0.056622	0.013911	4.070217	***
Operations → Market	0.056359	0.014605	3.858973	***
Reporting →ERM	-0.179981	0.056706	3.173924	***
Reporting → Firm Performance	0.050275	0.025480	1.973109	*
Reporting → Accounting	0.042486	0.019906	2.134352	*
Reporting → Market	0.042289	0.020974	2.016214	*
Compliance →ERM	0.254845	0.041058	6.206953	***
Compliance → Firm Performance	-0.071187	0.015865	4.486933	***
Compliance → Accounting	-0.060159	0.013350	4.506299	***
Compliance → Market	-0.059879	0.013393	4.470929	***

Note: * Significant at P < 0.05, ** Significant at P < 0.01, *** Significant at P < 0.005.

Since operations (-0.240) and reporting (-0.180) were negatively associated with ERM, this research conjectures that the noneffective ERM for firms in China may be caused by defects in operations efficiency and reporting reliability. In order to evaluate the implications of efficient operations and reliable reporting within organizations, the analysis, in respect of the validity of the conjecture, should be based on their impacts on firm performance. This is traced to Table 5.5 which shows that both operations (0.067) and reporting (0.050) had significant positive effects on the performance for firms in China. In contrast, the effects of strategy and compliance on firm performance were negative even if they revealed a positive association with ERM. It is clear that the path coefficient between ERM and firm performance in the designed model was significant negative. Therefore, it is deduced that the apparently positive correlation which strategy and compliance had on ERM, would lead to adverse impacts on firm performance. In this context, it is reasonable to assert that the insufficient maturity of ERM for most firms in China were due to their weakness in strategy decision and regulation compliance. Accordingly, firms in China need to enhance the capacity of accomplishing successful strategy and standard compliance if they intend to improve the effectiveness of ERM.

According to the associations noted between the four categories of objectives and firm performance with regards to accounting and market, it can be noted that the absolute values of standard beta for the accounting performance were slightly larger than that for the market performance. This indicates that ERM in China were inclined towards acting on firms' profitability rather than on firms' investment. Looking at the

effects of the four categories of objectives in the ERM framework respectively, it is noted that strategy and compliance were negatively associated with both accounting and market performance whereas operations and reporting can impact firms' profitability and investment in a positive manner. In this context, it can be interpreted that Chinese firms that wished to get benefits from ERM should work on the efficiency and effectiveness of their operations as well as the timeliness, reliability, and transparency of their reporting. In other words, embracing ERM can make the efficient operations and the reliable reporting within organizations contribute to the improvement of profitability and enhancement of investment in China. In addition, since ERM was not a value-added program for most firms in China at present, the effectiveness of ERM should be increased by optimizing the strategy decision and the compliance with regulations.

5.3.3 Research Question Ⅲ

It has been stated by COSO that ERM framework is an expansion of internal control framework because ERM offers firms with more integrated and robust perspective in meeting the internal control requirements (Azimah Abdul Aziz, 2013). Some scholars and practitioners advocate that internal control should be an internal part of ERM (Yanhong & Qing, 2013). Therefore, firms which intend to embrace effective and efficient ERM need to implement sound internal control at the same time. In other words, the optimization of sound internal control should be done in collaboration with the establishment of ERM. However, accomplishing ERM is quite a rare sight for many firms in China even though internal control had been adopted and practiced for many years. In this context, it is necessary to investigate the relationship between internal

control and ERM within firms in China. Such a finding will benefit firms in enhancing the effectiveness of existing internal control as well as increase their capacity in engaging ERM.

From the outcome of the results discussed, it seems clear that internal control and ERM noted in the current research were estimated by the same categories of objectives which are operations, reporting, and compliance. In order to distinguish the categories of objectives in the internal control framework from the categories of objectives in the ERM framework, as noted in the designed model, this research named the predictors of internal control with suffix C and the predictors of ERM with suffix R. Since the measurements for both internal control and ERM in this research were structured as formative models, the potential indirect effects of operations c, reporting c, and compliance c on strategy r, operations r, reporting r, and compliance r were impossible to be evaluated and revealed through the algorithm of Smart-PLS. In this context, the association between the categories of objectives in internal control framework and the categories of objectives in ERM framework would not be discussed in the current research. Beyond that, the total effects of internal control on ERM are summarized in Table 5.6. As all t-statistics were seen to be much larger than 1.96, all effects noted in the designed model were considered as significant.

Table 5.6: Total Effects of Internal Control on ERM

Relationship	Std. Beta	Std. Error	T-Statistic	Significance
Internal Control → ERM	0.877114	0.017335	50.596474	***
Strategy R →ERM	0.225410	0.017008	13.253766	***
Operations R → ERM	0.518564	0.028627	18.114930	***
Operations C → Internal Control	0.579619	0.033926	17.084735	***
Operations C → ERM	0.508392	0.032775	15.511577	***
Reporting R → ERM	0.574466	0.028213	20.361801	***
Reporting C → Internal Control	0.637806	0.037957	16.803286	***
Reporting C → ERM	0.559429	0.036597	15.286187	***
Compliance R → ERM	0.327617	0.061724	5.307793	***
Compliance C → Internal Control	0.351719	0.066763	5.268137	***
Compliance C → ERM	0.308498	0.065573	4.704645	***

Note: * Significant at P < 0.05, ** Significant at P < 0.01, *** Significant at P < 0.005.

It can be noted from the table that the path coefficient between strategy r (0.225) and ERM is relatively small. This indicates that the achievement of strategic objective was weak in comparison to the accomplishments in the objectives of operations, reporting, and compliance for firms in China which adopted ERM. In addition, the effects of operations c (0.580), reporting c (0.638), and compliance c (0.352) on internal control adoption were significantly greater than the effects of operations r (0.519), reporting r (0.574), and compliance r (0.328) on ERM. In this context, it is reasonable to assert that the implementation of internal control for firms in China was appropriate whereas the effectiveness of ERM within the organizations still needed to be improved, especially in the strategy aspect. By comparing the effects of operation c, reporting c, and compliance c on ERM with the effects of operation r, reporting r, and compliance r

on ERM, it can be observed that the values of standard beta were not quite different. This finding supports the verdict noted in the hypotheses testing which indicates that internal control had a very close relationship with ERM within organizations.

In previous discussions, it was noted that both internal control and ERM were significantly associated with firm performance in China. In addition, since internal control (0.877) had a significant effect on ERM, it is reasonable to conjecture that there may be a mediating effect of ERM on the relationship between internal control and firm performance for firms in China. In this context, this research restructured the designed model by adding ERM as a mediator. The restructured model and results are illustrated in Figure 5.16. In order to test the significance of the mediating effect in the model, this research adopted the z-statistic (Sobel, 1982) which is formally defined as follows:

$$z = \frac{a \times b}{\sqrt{b^2 \times {s_a}^2 + a^2 \times {s_b}^2 + {s_a}^2 \times {s_b}^2}}$$

where a is the path coefficient between independent variable and mediator; b is the path coefficient between mediator and dependent variable; s^2 is the squared value of standard error.

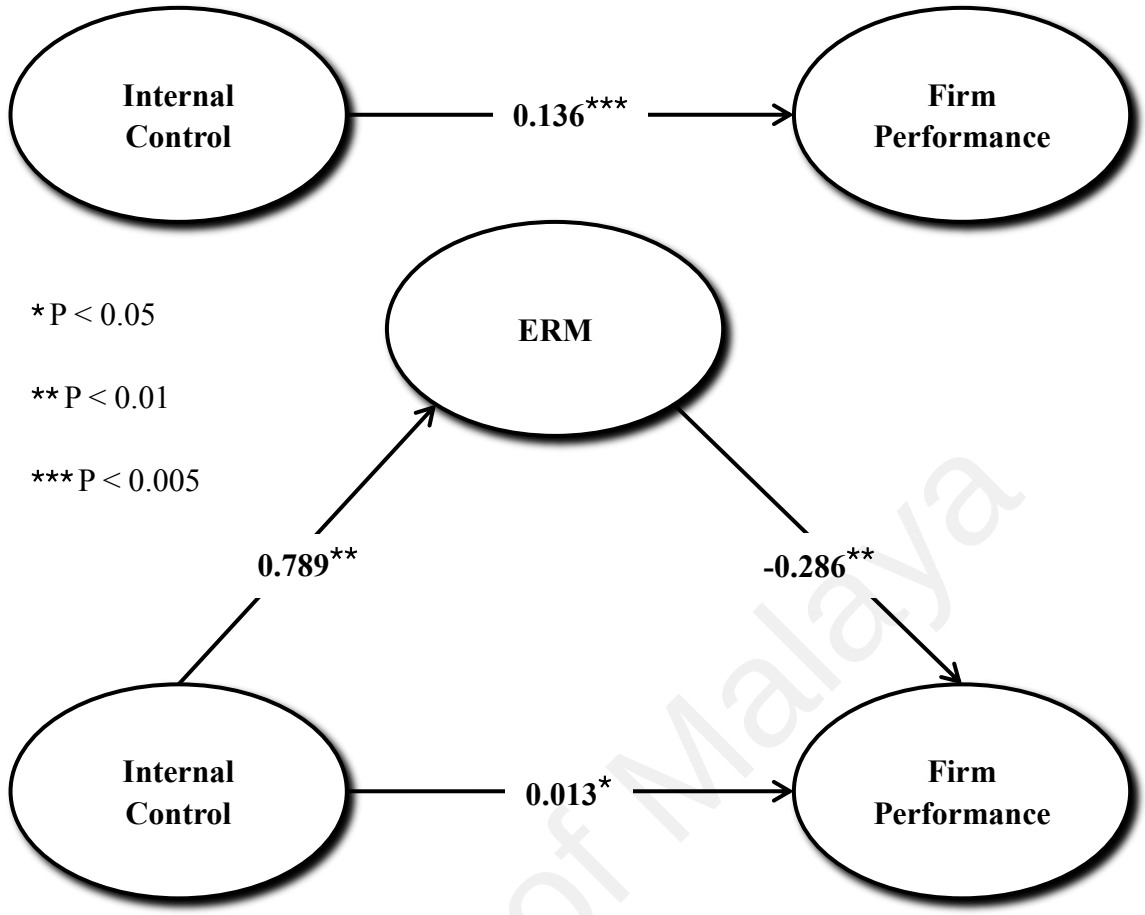

Figure 5.16: Mediating Effect of ERM on the Relationship between Internal Control and Firm Performance

From the results above, it can be noted that the path coefficient between internal control and ERM was 0.789 with a standard error of 0.013 while the path coefficient between ERM and firm performance was -0.286 with a standard error of 0.089. Further, the computed result of z-statistic was -3.208 which is an absolute value exceeding 1.96. Based on this, it is reasonable to assert that ERM is a significant mediator that can act on the association between internal control and firm performance in China. In other words, there is an indirect effect (-0.226) of internal control on the performance when firms in China using ERM. Additionally, it is clear that the direct effect of internal control on firm performance decreased when ERM intervenes the model. However, the effect is still significant. This indicates that ERM is a partial mediator rather than a full

mediator. Accordingly, even if both internal control and ERM could influence corporate governance in respect of risk management, firms in China are still unable to just adopt one and ignore the other because internal control and ERM work as complements instead of substitutions.

5.3.4 Research Question Ⅳ

It has been demonstrated in the section of hypotheses testing that among the selected moderators used in this research, only firm size, leverage, asset opacity, and financial slack had significant effects on the association between internal control and firm performance. In order to better interpret the moderating effects of these four special characteristics for firms in China, the current research compared the total effects noted in the moderated model with the original designed model. The results shown in respect of moderations in the relationship between internal control and firm performance in China are summarized in Table 5.7. From the statistics shown, it can be noted that the moderators acted only on the inner model. This means that there was no moderation for the outer model. In this context, the path coefficients between firm performance and accounting (0.846), firm performance and market (0.839), operations and internal control (0.544), reporting and internal control (0.117), and compliance and internal control (0.807) were consistent for both the original and the moderated models. Therefore, it is reasonable to assert that the association between the three categories of objectives (operations, reporting, and compliance) and internal control effectiveness would not change even if there was a difference in firm size, leverage, asset opacity, and financial slack within organizations. Additionally, the effects of firm performance on

profitability and investment were irrelevant to these four special characteristics.

However, since the moderating effects significantly influenced the relationship between internal control and firm performance, the potential and indirect effects in the model would, accordingly, be affected by the moderations. This suggests that after being moderated by firm size, both the significance level ($P < 0.05$) and path coefficient (-0.097) of the relationship between internal control and firm performance were reduced. In addition, the effects of internal control on firm performance had even turned to become negative. This is observed to be due to the moderation of firm size on internal control which was negatively associated with accounting performance (-0.082) as well as market performance (-0.081). The findings interpreted from the results imply that firm size could change the direction of the association between internal control and firm performance. This means that firm size is a determinant for firms in China to consider when thinking of establishing internal control which can add value to their organizations. This view is echoed by the consistent influential trend noted in the relationship between the three categories of objectives and firm performance in both profitability and investment aspects. In this regard, it is reasonable to assert that if firm size was relatively smaller for firms in China, both accounting and market performance can be improved by embracing internal control within organizations. However, if the firms developed to a relatively larger size, then the effectiveness of internal control cannot be satisfied by organizations because it no longer adds value to firm performance.

Table 5.7: Moderating Effects on the Relationship between Internal Control and Firm Performance

Relationship	Original Model	Moderated by Size	Moderated by Leverage	Moderated by Asset Opacity	Moderated by Financial Slack
Firm Performance → Accounting	0.845964***	0.845964***	0.845964***	0.845964***	0.845964***
Firm Performance → Market	0.839345***	0.839345***	0.839345***	0.839345***	0.839345***
Internal Control → Firm Performance	0.136150***	-0.096544*	-0.152006*	0.156613***	0.138100*
Internal Control → Accounting	0.115178***	-0.081672*	-0.128592*	0.132489***	0.116827*
Internal Control → Market	0.114277***	-0.081033*	-0.127586*	0.131453***	0.115913*
Operations → Internal Control	0.544140***	0.544140***	0.544140***	0.544140***	0.544140***
Operations → Firm Performance	0.074085*	-0.052533*	-0.082713***	0.085220***	0.075146*
Operations → Accounting	0.062673*	-0.044441*	-0.069972***	0.072093***	0.063570*
Operations → Market	0.062182*	-0.044093*	-0.069424***	0.071529***	0.063073*
Reporting → Internal Control	0.117383***	0.117383***	0.117383***	0.117383***	0.117383***
Reporting → Firm Performance	0.015982*	-0.011333*	-0.017843***	0.018384***	0.016211*
Reporting → Accounting	0.013520*	-0.009587*	-0.015094***	0.015552***	0.013714*
Reporting → Market	0.013414*	-0.009512*	-0.014976***	0.015430***	0.013606*
Compliance → Internal Control	0.807278***	0.807278***	0.807278***	0.807278***	0.807278***
Compliance → Firm Performance	0.109911***	-0.077938*	-0.122711*	0.126431***	0.111485*
Compliance → Accounting	0.092981***	-0.065932*	-0.103809*	0.106956***	0.094312*
Compliance → Market	0.092253***	-0.065416*	-0.102997*	0.106119***	0.093574*

Note: * Significant at P < 0.05, ** Significant at P < 0.01, *** Significant at P < 0.005.

Looking at the moderating effect of leverage for firms in China, it can be noted that the absolute value of the path coefficient (-0.152) between internal control and firm performance, as seen in the moderated model, was larger than that in the original model. Nevertheless, the direction of the relationship changed from positive to negative. In addition, the leverage moderated the effect of internal control on both aspects of accounting (-0.129) and market (-0.128) in a negative manner. Therefore, it can be deduced that leverage level within organizations can significantly influence the benefits of internal control on the enhancement of firm performance in China. The findings are supported by the changes seen in the relationship between the three categories of objectives and firm performance. Thus, it is clear that the effects of operations, reporting, and compliance on both accounting and market performance would dramatically decline from positive to negative while leverage moderated the model. These results indicate that if firms in China adopted lower leverage in their capital structure, the improvement of firm performance can be achieved through adopting internal control. However, if the leverage level turned out to be relatively higher, then establishing internal control would not add value to the firms since internal control were negatively associated with profitability and investment in that case.

Different from firm size and leverage, asset opacity had an enhancing moderating effect on the relationship between internal control and firm performance in China. From results, it is observed that total effects in the moderated model were strongly significant since all p-values were less than 0.005. In addition, the association (0.157) between internal control and firm performance increased when the moderation of asset opacity

exist in the model. Accordingly, the effect of internal control on both accounting (0.132) and market (0.131) performance were enhanced. In this context, it is reasonable to assert that asset opacity can significantly affect the strength of the relationship between internal control and performance for firms in China. The findings were echoed by the consistent influence trend seen in the relationship between the three categories of objectives and firm performance in both aspects of profitability and investment. It is further noted that all effects seen in the mentioned relationships increased by 15.030% (the difference between moderated model and original model divided by original model). This means that the efficient operations, reliable reporting, and standard compliance can contribute more to the improvement of accounting and market performance in China. Therefore, in the case where asset opacity is relatively lower in firms in China, it appears that adopting internal control can add value to firms. However, the influence noted would be relatively low and limited. In contrast, the internal control systems can bring more enhanced profitability and investment to firms if there were more opaque assets within organizations.

The last moderator tested in the model is financial slack. It can be noted that even if financial slack had an enhancing influence on the relationship between internal control and firm performance, its moderating effect was relatively smaller in comparison to asset opacity for firms in China. Compared to the original model, the significant level ($P < 0.05$) of the effect of internal control on firm performance decreased when the model was moderated by financial slack. However, the changes of significance for the three categories of objectives could be distinguished from each other. Based on this, it is

deduced that reporting remained the significance ($P < 0.05$) of its impact on firm performance while compliance reduced the relevant significance ($P < 0.05$) in the moderated model. Otherwise, the significant level ($P < 0.05$) of the relationship between operations and firm performance was constant. In this context, it is reasonable to assert that if firms in China have higher financial slack within organizations, then the regulation compliance would become less significant to the firm performance. In addition, it can be found that the moderating effect of financial slack would increase the effects in the mentioned relationships by 1.432%. Therefore, even though internal control can add value to firms with higher financial slack, the improvement in both accounting and market performance was not as outstanding as those for firms with lower financial slack.

5.3.5 Research Question V

Different from internal control, the moderators that was attested to have significant moderating effects on the association between ERM and firm performance were leverage and dividend yield. The results showing the influence of leverage and dividend yield on the total effects in the designed model are summarized in Table 5.8. It seems clear that the relationships between firm performance and accounting (0.845), firm performance and market (0.841), strategy and ERM (0.961), operations and ERM (-0.240), reporting and ERM (-0.180), and compliance and ERM (0.255) are constant regardless of whether the model was moderated by leverage and dividend yield or not. Therefore, it is reasonable to assert that the impact of firm performance in respect of profitability and investment for firms in China would not be varied even if there were

various policies of leverage and dividend yield within organizations. In addition, the direct effects of the four categories of objectives (strategy, operations, reporting, and compliance) on ERM effectiveness were not dependent on leverage and dividend yield either. However, since the relationship between ERM and firm performance was significantly influenced by the moderating effects, the potential indirect effects of the four categories of objectives on performance, with regards to accounting and market, were accordingly affected by the moderators.

From the results, it is further noted that except for the consistent relationships, the absolute values of all the other effects seen in the designed model had declined by 69.787% when the moderating effect of leverage was applied. Moreover, since ERM was demonstrated to be negatively associated with performance for firms in China, the decreased negative influence of ERM on both profitability (-0.071) and investment (-0.071) indicates that leverage level within organizations had a buffering moderating effect on the association between ERM and firm performance. In addition, due to the moderation of leverage, the impact of ERM was less significant ($P < 0.05$) on performance in both the accounting and market aspects. In this regard, it is reasonable to assert that if firms in China intend to use lower leverage, the establishment of ERM can exert a strong negative influence on profitability and investment. However, if the leverage level within organizations is higher, then the strength of the negative effect of ERM on accounting and market performance would be weakened. This finding is consistent with the influence trend seen in the relationship between the four categories of objectives and firm performance. Based on this, it can be said that strategy and

compliance were less negatively associated with profitability and investment in the moderated model. Additionally, the positive effect of operations (0.020) and reporting (0.015) on firm performance had become smaller and less significant than before. In this case, since the moderating effect of leverage was positive, it can be said that firms in China with higher leverage were likely to get benefits from ERM when the effectiveness of ERM was improved.

Looking at the moderation of dividend yield for firms in China, it can be observed that even if dividend yield had a significant influence on the association between ERM and firm performance, its moderating effect was relatively small because the absolute value of the total effects in the moderated model had just increased by 5.480%. Compared to the original model, the effect of ERM on both accounting (-0.249) and market (-0.248) performance had declined when the model was moderated by dividend yield. Since ERM has been attested to be negatively associated with firm performance, it is thus, reasonable to assert that dividend distribution policy within organizations can enhance the influence of ERM on performance in respect of profitability and investment. In addition, the effects of operations (0.071) and reporting (0.053) on firm performance were strengthened when dividend yield is taken into account. Since operations (0.059) and reporting (0.045) were positively associated with accounting and investment, firms which adopted higher dividend yield can get more benefits from efficient operations and reliable reporting. Accordingly, if firms in China held more capital grains within organizations, then ERM would negatively influence the performance. However, in the case where more dividends were distributed to investors, then the strength of the

negative relationship between ERM and firm performance can be weakened if firms in China improved the effectiveness of ERM.

Table 5.8: Moderating Effects on the Relationship between ERM and Firm Performance

Relationship	Original Model	Moderated by Leverage	Moderated by Dividend Yield
Firm Performance → Accounting	0.845080***	0.845080***	0.845080***
Firm Performance → Market	0.841152***	0.841152***	0.841152***
ERM → Firm Performance	-0.279335***	-0.084394*	-0.294643***
ERM → Accounting	-0.236061***	-0.071320*	-0.248997***
ERM → Market	-0.234963***	-0.070988*	-0.247839***
Strategy →ERM	0.960501***	0.960501***	0.960501***
Strategy→ Firm Performance	-0.268302***	-0.081061*	-0.283005***
Strategy→ Accounting	-0.226736***	-0.068503*	-0.239162***
Strategy→ Market	-0.225683***	-0.068184*	-0.238050***
Operations →ERM	-0.239863***	-0.239863***	-0.239863***
Operations → Firm Performance	0.067002***	0.020243*	0.070674***
Operations → Accounting	0.056622***	0.017107*	0.059725***
Operations → Market	0.056359***	0.017027*	0.059448***
Reporting →ERM	-0.179981***	-0.179981***	-0.179981***
Reporting → Firm Performance	0.050275***	0.015189*	0.053030***
Reporting → Accounting	0.042486***	0.012836*	0.044815***
Reporting → Market	0.042289***	0.012777*	0.044606***
Compliance →ERM	0.254845***	0.254845***	0.254845***
Compliance → Firm Performance	-0.071187***	-0.021507*	-0.075088***
Compliance → Accounting	-0.060159***	-0.018175*	-0.063456***
Compliance → Market	-0.059879***	-0.018091*	-0.063161***

Note: * Significant at P < 0.05, ** Significant at P < 0.01, *** Significant at P < 0.005.

5.3.6 Research Question Ⅵ

It has been ascertained that among all the investigated moderations, only firm size, leverage, beta, international diversification, industrial diversification, and squared insider ownership were significant moderators which can affect the relationship between internal control and ERM. The moderating effects of the six firm-specific characteristics for firms in China are summarized and represented in Table 5.9. From this, it can be noted that ERM served as a dependent variable for both structural model and measurement model in the PLS-SEM. In this regard, the moderating effects not only acted on the inner model but also influenced the association between ERM and its four categories of objectives (strategy r, operations r, reporting r, and compliance r). Nevertheless, the path coefficients between operations c and internal control, reporting c and internal control, and compliance c and internal control in the designed model were still consistent even if there was a difference in firm size, leverage, beta, international diversification, industrial diversification, and squared insider ownership within organizations. Based on this outcome, it can be deduced that the p-values of all the effects noted in the table were less than 0.005. In this context, it is reasonable to assert that the total effects in the moderated relationship between internal control and ERM were highly significant.

Table 5.9: Moderating Effects on the Relationship between Internal Control and ERM

Relationship	Original Model	Moderated by Size	Moderated by Leverage	Moderated by Beta	Moderated by Int_Div	Moderated by Ind_Div	Moderated by Insider Sq
Internal Control → ERM	0.877114***	0.905653***	0.898873***	0.872501***	0.874586***	0.872306***	0.877924***
Strategy R →ERM	0.225410***	0.267034***	0.231395***	0.223446***	0.224310***	0.219261***	0.226119***
Operations R → ERM	0.518564***	0.508549***	0.517944***	0.520839***	0.515106***	0.523957***	0.520268***
Operations C → Internal Control	0.579619***	0.579619***	0.579619***	0.579619***	0.579619***	0.579619***	0.579619***
Operations C → ERM	0.508392***	0.524934***	0.521004***	0.505718***	0.506927***	0.505605***	0.508861***
Reporting R → ERM	0.574466***	0.575889***	0.573117***	0.573623***	0.575972***	0.572123***	0.575028***
Reporting C → Internal Control	0.637806***	0.637806***	0.637806***	0.637806***	0.637806***	0.637806***	0.637806***
Reporting C → ERM	0.559429***	0.577631***	0.573307***	0.556486***	0.557816***	0.556362***	0.559945***
Compliance R → ERM	0.327617***	0.330011***	0.329672***	0.326107***	0.326911***	0.324842***	0.327058***
Compliance C → Internal Control	0.351719***	0.351719***	0.351719***	0.351719***	0.351719***	0.351719***	0.351719***
Compliance C → ERM	0.308498***	0.318535***	0.316151***	0.306875***	0.307609***	0.306807***	0.308783***

Note: * Significant at P < 0.05, ** Significant at P < 0.01, *** Significant at P < 0.005.

Although the effect of internal control on ERM was significantly altered by the moderators, the changes were not prominent. It can further be seen that the path coefficient (0.906) between internal control and ERM had increased by 3.254% due to the moderation of firm size. In addition, the consistent influence trend also manifested in the indirect impacts of operations c (0.525), reporting c (0.558), and compliance c (0.318) on ERM. These findings can thus, be interpreted as suggesting that the association between internal control and ERM would be dependent on firm size. This means that the establishment of sound internal control can make more contributions to the improvement of ERM if firms were larger in size. In addition, the moderating effects noted on the relationships between the four categories of objectives and ERM were distinguished from each other. Here, it can be noted that firm size enhanced the relationship (0.267) between strategy r and ERM by 18.466%. However, the association (0.509) between operations r and ERM was reduced by 1.931%. Beyond that the effects of reporting r (0.576) and compliance r (0.330) on ERM were improved by 0.248% and 0.731% respectively. Accordingly, this implies that the effectiveness of ERM can generate more benefits from operations efficiency when firm size is smaller. However, if firms in China expanded their size, then successful strategy, reliable reporting, and standard compliance can add more value to ERM.

Focusing on the moderating effect of leverage for firms in China, it is noted that the relationship (0.899) between internal control and ERM in the moderated model improved by 2.481%. In addition, the leverage strengthened the effects of operations c (0.521), reporting c (0.573), and compliance c (0.316) on ERM. The results revealed

that the significant positive association between internal control and ERM can be enhanced if firms in China were inclined towards using higher leverage in their capital structure. However, if the leverage level was lower, then the effectiveness of ERM would only be able to get relatively less benefits from the establishment of sound internal control within organizations. In contrast, the moderation of leverage in the designed model altered the relationships between the four categories of objectives and ERM in a different manner. Thus, the effects of operations r (0.518) and reporting r (0.573) on ERM decreased by 0.120% and 0.235% respectively when the model was moderated by leverage. In addition, the moderating effect increased the effects of strategy r (0.231) and compliance r (0.330) on ERM by 2.655% and 0.627% at the same time. In this context, it is reasonable to assert that the effectiveness of ERM is closely related to efficient operations and reliable reporting when firms in China adopted lower leverage. Nevertheless, if the firms used higher leverage, strategy decision and compliance with regulations can contribute more to ERM.

Different from firm size and leverage, beta had a buffering moderating effect on the association between internal control and ERM in China. It is observed that the path coefficient (0.873) between internal control and ERM reduced by 0.526% when the moderation of beta existed in the model. Accordingly, the effects of operations c (0.506), reporting c (0.556), and compliance c (0.307) on ERM weakened as well. In this context, it can be said that systematic risks can significantly affect the strength of the relationship between internal control and ERM for firms in China. However, the influence trend seen in the relationships between the four categories of objectives and

ERM in the designed model was not constant. Thus, it is noted that after being moderated by beta the effect of operation r (0.521) on ERM improved by 0.439%. However, the influence of strategy r (0.223), reporting r (0.574), and compliance r (0.326) on ERM decreased by 0.871%, 0.147%, and 0.461% respectively. Therefore, should firms in China be exposed to higher systematic risks, then the effectiveness of ERM can be enhanced through efficient operations. In contrast, successful strategy, reliable reporting, and standard compliance can bring about more effective ERM if there were not too much systematic risks in the Chinese market.

The moderation of international diversification seen in the relationship between internal control and ERM was buffering moderating effect as well. It is noted that the impact of internal control (0.875) on ERM decreased by 0.288%. The finding is also echoed by the consistent influence trend noted in the indirect effects between the three categories of objectives and ERM. It seems clear that the influence of operations c (0.507), reporting c (0.558), and compliance c (0.308) on ERM was reduced when the designed model was moderated by international diversification. Therefore, it can be attested that if firms in China intended to trade more in international market, then the establishment of sound internal control can exert a buffered positive influence on the effectiveness of ERM. However, if the trade and business for firms in China were limited to domestic markets only, then the influence of internal control on ERM would only be strengthened a little bit. It is observed that among the four categories of objectives, only reporting r (0.576) had an improved positive effect on ERM in the moderated model. In addition, the positive effects of strategy r (0.224), operations r

(0.515), and compliance r (0.327) on ERM were reduced by 0.488%, 0.667%, and 0.215% respectively. In this case, it is deduced that firms in China with lower international diversification can enhance the effectiveness of ERM by working on successful strategy, efficient operations, and standard compliance. In addition, reporting reliability can also add more value to ERM when the international diversification within organizations is higher.

Looking at the moderating effect of industrial diversification for firms in China, it appears that the path coefficient (0.872) between internal control and ERM was reduced by 0.548% in the moderated model. Since operations c, reporting c, and compliance c were positively associated with internal control in a consistent manner, the effects of operations c (0.506), reporting c (0.556), and compliance c (0.307) on ERM also decreased. This implies that the relationship between internal control and ERM was buffered when industrial diversification was taken into account. In this context, it is reasonable to assert that firms which had a lower degree of industrial diversification in China can improve the effectiveness of ERM by establishing sound internal control. However, in the case where higher degree of industrial diversification was adopted within organizations, then the strength of the positive association between internal control and ERM can be slightly weakened. In addition, the moderating effect of industrial diversification increased the impact of operations r (0.524) on ERM by 1.040%, while it decreased the impact of strategy r (0.219), reporting r (0.572), and compliance r (0.325) on ERM by 2.728%, 0.408%, and 0.847% respectively. Therefore, if firms in China engaged in multiple industries, then operations efficiency would be

more closely related to the effectiveness of ERM. In contrast, if the commerce was limited to a single industry, then the establishment of ERM can earn more benefits from strategy decision, reporting reliability, and compliance with regulations.

The last moderator examined in the model is squared insider ownership. It is observed that even if squared insider ownership had an enhancing influence on the relationship between internal control and ERM, its moderating effect would be relatively smaller in comparison to firm size and leverage for firms in China. Compared to the original model, the effect (0.878) of internal control on ERM was improved by 0.092% when the model was moderated by squared insider ownership. Additionally, the effects of operations c (0.509), reporting c (0.560), and compliance c (0.309) on ERM increased as well. Therefore, it is reasonable to assert that if firms in China have relatively higher insider ownership, then the effectiveness of ERM would be more dependent on sound internal control. In contrast, the strength of the relationship between internal control and ERM can be slightly weakened when the insider ownership within organizations altered to become relatively lower. However, except for compliance c, the influence trend seen in the path coefficients between the four categories of objectives and ERM was almost consistent. Thus, it can be noted that although the impact of compliance r (0.327) on ERM reduced by 0.171%, the impacts of strategy r (0.226), operations r (0.520), and compliance r (0.575) on ERM were enhanced by 0.315%, 0.329%, and 0.098% respectively. Accordingly, successful strategy, efficient operations, and reliable reporting would add more value to ERM if there were more insiders in firms in China. Nevertheless, ERM can acquire more

benefits from standard compliance if the number of insiders within organizations was smaller.

5.4 Analysis of Univariate Difference Test

5.4.1 Additional Analysis of Firm Performance

In order to verify the adequacy of modelling and the accuracy of analysing for the PLS-SEM, this research applied a Univariate Difference Test (UDT) which seeks to further ascertain the relationships between internal control, ERM, and firm performance in the context of China. The testing of the univariate difference was based on the independent-samples t-test which compared the means between two groups on the same variable. According to the status of establishment, in respect of internal control, traditional risk management and ERM noted in firms in China, findings suggest that all the firms sampled from the CSI 300 Index could be categorised into four groups: (1) firms which adopt neither internal control nor traditional risk management, (2) firms which adopt internal control but not traditional risk management, (3) firms which adopt internal control and traditional risk management but not ERM, and (4) firms which adopt both internal control and ERM. In the context of this research, the value implication of internal control, traditional risk management, and ERM on firm performance was explored by comparing the different means of key performance indicators (KPIs) between group (1) and (2), group (2) and (3), and group (3) and (4) separately. All computational processes noted in the independent t-test were accomplished through the SPSS.

Table 5.10 reflects the value implication of internal control on performance for the four groups of firms in China. Here, it is noted that there was a strongly significant difference (-13.348) in return on assets between firms without internal control and firms with internal control. Compared to firms with established internal control, the mean of the ROA for firms which did not engage in internal control was relatively large. The results indicate that internal control negatively affected the return on assets for firms in China. In addition, the difference (-29.410) in return on sales between group (1) and (2) was also strongly significant. It seems clear that the mean of the ROS for firms with internal control was much less than that for firms without internal control. This reveals that the establishment of internal control had reduced the return on sales. Beyond that, internal control was demonstrated to be negatively associated with the Tobin's Q because the difference (-1.938) between the two groups of firms was significantly negative. It is clear that both the ROA and ROS are indicators of accounting performance while the Tobin's Q is an indicator of market performance. Accordingly, the establishment of internal control can weaken both profitability and investment in firms in China. However, the findings noted in the UDT was quite different from the results noted in the PLS-SEM. Since the number of firms in group (1) was very small in comparison to the other groups, the large mean value of KPIs for firms without internal control could be a particular case, as is shown in this research. In this regard, the relationship between internal control and firm performance in firms in China need to be further investigated for verification purposes.

Table 5.10: Value Implication of Internal Control on Firm Performance

	(1) Firms without IC		(2) Firms with IC		Difference (2) – (1)	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Error**
ROA	20.709339	7.946689	7.361019	5.774517	-13.348321***	2.219933
ROS	42.145641	19.399010	12.735958	10.434778	-29.409683***	6.958339
ROE	6.130406	3.481604	4.068253	3.605930	-2.062153	1.334145
P/E	20.540244	9.569833	50.331098	138.886612	29.790854	49.373261
M/B	6.038357	3.004919	4.227834	2.914658	-1.810523	1.084203
TobinsQ	4.605754	2.352696	2.667951	1.779788	-1.937803**	0.680362

Note: IC is short for internal control; ROA is short for return on assets ratio; ROS is short for return on sales ratio; ROE is short for return on equity ratio; P/E is short for price to earnings ratio; M/B is short for market to book value ratio; TobinsQ is short for Tobin's q ratio; * Significant at $P < 0.05$, ** Significant at $P < 0.01$, *** Significant at $P < 0.005$.

Table 5.11 assesses the value implication of traditional risk management on firm performance by making a comparison between the performance of firms with internal control and the performance of firms with traditional risk management. It is observed that among the selected proxies of firm performance as noted in this research, only return on sales had a significant difference (-2.494) in mean between group (2) and (3). This shows that the ROS for firms which adopted only internal control was relatively larger than the ROS for firms which adopted both internal control and traditional risk management. In this case, it is reasonable to assert that traditional risk management within organizations were negatively associated with the return on sales for firms in China. Since the ROS is one indicator of accounting performance in the current research, it can be deduced that firms in China which engaged in traditional risk management would suffer a decline in profitability. These findings imply that the limitations of traditional risk management were quite evident in China and this is it had reduced the accounting performance within organizations. In this context, firms in China are recommended to establish a holistic and comprehensive risk management framework at enterprise-level as this can help firms to manage their enterprise risk management more effectively.

Table 5.11: Value Implication of TRM on Firm Performance

	(2) Firms with IC		(3) Firms with IC & TRM		Difference (3) – (2)	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Error**
ROA	7.361019	5.774517	6.588448	5.667985	-0.772571	0.717073
ROS	12.735958	10.434778	10.241866	9.391530	-2.494092*	1.211282
ROE	4.068253	3.605930	4.213903	3.697564	0.145651	0.463706
P/E	50.331098	138.886612	65.687719	198.268476	15.356621	23.670910
M/B	4.227834	2.914658	3.637463	2.484038	-0.590372	0.324737
TobinsQ	2.667951	1.779788	2.323152	1.338807	-0.344799	0.214193

Note: IC is short for internal control; TRM is short for traditional risk management; ROA is short for return on assets ratio; ROS is short for return on sales ratio; ROE is short for return on equity ratio; P/E is short for price to earnings ratio; M/B is short for market to book value ratio; TobinsQ is short for Tobin's q ratio; * Significant at $P < 0.05$, ** Significant at $P < 0.01$, *** Significant at $P < 0.005$.

Table 5.12 reveals the value implication of ERM on firm performance in China. It seems clear that there was a significant difference (-1.384) in return on assets between firms in group (3) and firms in group (4). Compared to firms which adopted both internal control and traditional risk management, the mean value of the ROA for firms which adopted ERM instead of traditional risk management was relatively small. This implies that ERM had negatively influenced the return on assets for firms in China. In addition, the influence trend is also consistently seen in the difference (-0.580) of the ROE between firms with traditional risk management and firms with ERM. Nonetheless, the value of the difference in return on equity between group (3) and (4) was not big. From the results, it can be interpreted that the impact of ERM in terms of ROE was not strikingly distinguished when viewed from the impact of traditional risk management. Furthermore, it can be seen that ERM was ascertained to be negatively associated with the M/B as the difference (-0.422) between firms with traditional risk management and firms with ERM was significantly negative. Beyond that, due to the significantly negative difference (-0.316) seen in the Tobin's Q, the ERM established within organizations affected the Tobin's Q negatively too. It suggests that the ROA and ROE were used to estimate accounting performance. However, the M/B and Tobin's Q can quantify the market performance. In the context of this research, it is reasonable to assert that the establishment of ERM can reduce both profitability and investment for firms in China, at present. In this regard, the findings noted in the UDT can be said to thoroughly support the results noted in the PLS-SEM.

Table 5.12: Value Implication of ERM on Firm Performance

	(3) Firms with IC & TRM		(4) Firms with IC & ERM		Difference (4) – (3)	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Error**
ROA	6.588448	5.667985	5.204609	4.170766	-1.383838***	0.430913
ROS	10.241866	9.391530	9.244803	8.197840	-0.997063	0.795544
ROE	4.213903	3.697564	3.633885	2.681185	-0.580018*	0.279307
P/E	65.687719	198.268476	63.686894	139.004105	-2.000826	15.742083
M/B	3.637463	2.484038	3.215379	1.599853	-0.422083*	0.178824
TobinsQ	2.323152	1.338807	2.006868	0.739830	-0.316284***	0.091454

Note: IC is short for internal control; TRM is short for traditional risk management; ERM is short for enterprise risk management; ROA is short for return on assets ratio; ROS is short for return on sales ratio; ROE is short for return on equity ratio; P/E is short for price to earnings ratio; M/B is short for market to book value ratio; TobinsQ is short for Tobin's q ratio; * Significant at $P < 0.05$, ** Significant at $P < 0.01$, *** Significant at $P < 0.005$.

5.4.2 Additional Analysis of Framework Objectives

In 2009, Gordon, Loeb, and Tseng developed an Enterprise Risk Management Index (ERMI) which was used to estimate the ERM program within an organization. This was accomplished by assessing the firm's ability to achieve the four categories of objectives that were noted in COSO's integrated framework. In the context of this research, the ERMI was adapted in which the indicators of strategic objective, operations objective, reporting objective, and compliance objective were combined into one structural equation model. In addition, since COSO deems the ERM integrated framework as an expansion of the internal control integrated framework, the objectives of operations, reporting, and compliance were also included in internal control. Accordingly, this research attempts to evaluate the effectiveness of internal control for firms in China by modeling the measurement with the indicators of operations, reporting, and compliance objectives. Although the ERMI was noted to be a valid and appropriate solution in the research conducted by Gordon et al. (2009), it has never been applied by other academics and industry commentators in the field of risk management, especially in the context of China. In this regard, clarifying the relationship between risk management programs (internal control, traditional risk management, and ERM) and COSO's framework objectives (strategy, operations, reporting, and compliance) through the UDT appears to be significant enough for the purpose of optimizing both the model design and the research design applied in this research.

Table 5.13 reveals the relationship between internal control and objectives noted in COSO's integrated framework. Here, it is noted that there was a strongly significant

difference (650341.504) in operation $_2$ between firms without internal control and firms with internal control. Compared to firms which did not embrace internal control, the mean value of operation $_2$ for firms which established internal control was strikingly large. In this case, it is reasonable to assert that operations efficiency had positively influenced internal control for firms in China. In addition, the differences noted in the indicators of compliance objective between group (1) and group (2) were also significant. Since the mean values of compliance $_1$ as well as compliance $_2$ for firms with internal control were slightly larger than that for firms without internal control, it is deduced that listed firms in China which established internal control were more likely to achieve compliance with regulations. It was further observed that there was no significant difference for the indicators of either strategic objective or reporting objective. Due to the fact that the objective of strategy was not insisted to be achieved in COSO's integrated internal control framework, the significant effect of strategy on internal control was not essential to be existed in this research. In contrast, the objective of reporting should have been significantly associated with internal control for firms in China but this was not ascertained in the UDT. It is possible that this was caused by the low abnormal accruals within firms in China. In general, the findings noted in the UDT simply attests that the measurement of internal control in the PLS-SEM was acceptable but not perfectly adequate.

Table 5.13: Relationship between Internal Control and COSO Framework Objectives

	(1) Firms without IC		(2) Firms with IC		Difference (2) – (1)	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Error**
Strategy $_1$	-0.129674	0.427776	-0.063800	0.900108	0.065874	0.182015
Strategy $_2$	0.110807	0.617224	-0.029138	1.092279	-0.139945	0.250445
Operations $_1$	0.601692	0.318046	0.700880	0.405909	0.099187	0.121366
Operations $_2$	1230958.055468	537103.231038	1881299.559720	2185318.100029	650341.504252*	310661.890798
Reporting $_1$	2.750000	0.462910	2.936709	0.433879	0.186709	0.170788
Reporting $_2$	1.000000	0.000000	1.000000	0.000000	0.000000	0.000000
Compliance $_1$	0.000048	0.000048	0.000164	0.000419	0.000116*	0.000050
Compliance $_2$	-0.003394	0.007172	0.003700	0.007000	0.007094*	0.002655

Note: IC is short for internal control; Strategy $_1$ and Strategy $_2$ are indicators of strategic objective in COSO's framework; Operations $_1$ and Operations $_2$ are indicators of operations objective in COSO's framework; Reporting $_1$ and Reporting $_2$ are indicators of reporting objective in COSO's framework; Compliance $_1$ and Compliance $_2$ are indicators of compliance objective in COSO's framework; * Significant at $P < 0.05$, ** Significant at $P < 0.01$, *** Significant at $P < 0.005$.

Table 5.14 presents the relationship between traditional risk management and COSO's framework objectives. It is noted that operations $_1$ had a significant difference (0.124) in mean between group (2) and group (3). Therefore, the operations objective for firms which adopted both internal control and traditional risk management was relatively larger than the operations objective for firms which adopted only internal control. These results indicate that the establishment of traditional risk management could improve the achievement of efficient operations for firms in China. In addition, it seems clear that traditional risk management was demonstrated to be positively associated with reporting $_1$ since the difference (0.244) between the two groups of firms was highly significant. These findings imply that firms in China which adopted traditional risk management were more likely to enhance the reliability of both internal and external reporting. Since the difference (0.006) in the mean value of compliance $_2$ between groups (2) and (3) was significant as well, it can be said that traditional risk management had positive effect on standard compliance within organizations even if the effect was not strong enough. In this regard, it is reasonable to assert that traditional risk management was better than internal control in achieving reporting reliability for firms in China.

Table 5.14: Relationship between TRM and COSO Framework Objectives

	(2) Firms with IC		(3) Firms with IC & TRM		Difference (3) – (2)	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Error**
Strategy $_1$	-0.063800	0.900108	-0.093459	0.677072	-0.029658	0.108326
Strategy $_2$	-0.029138	1.092279	0.029576	0.999576	0.058715	0.135371
Operations $_1$	0.700880	0.405909	0.824455	0.591891	0.123575*	0.070503
Operations $_2$	1881299.559720	2185318.100029	1764433.820178	2425191.697645	-116865.739542	281821.898757
Reporting $_1$	2.936709	0.433879	3.180645	0.488985	0.243936***	0.060292
Reporting $_2$	1.000000	0.000000	1.000000	0.000000	0.000000	0.000000
Compliance $_1$	0.000164	0.000419	0.000143	0.000192	-0.000021	0.000048
Compliance $_2$	0.003700	0.007000	0.009607	0.039469	0.005907*	0.002376

Note: IC is short for internal control; TRM is short for traditional risk management; Strategy $_1$ and Strategy $_2$ are indicators of strategic objective in COSO's framework; Operations $_1$ and Operations $_2$ are indicators of operations objective in COSO's framework; Reporting $_1$ and Reporting $_2$ are indicators of reporting objective in COSO's framework; Compliance $_1$ and Compliance $_2$ are indicators of compliance objective in COSO's framework; * Significant at $P < 0.05$, ** Significant at $P < 0.01$, *** Significant at $P < 0.005$.

Table 5.15 evaluates the relationship between ERM and the framework objectives by making a comparison between the objective achievement of firms with traditional risk management and the objective achievement of firms with ERM. Here, it seems clear that there was a significant difference (0.257) in strategy $_1$ between firms in group (3) and firms in group (4). Compared to firms which adopted both internal control and traditional risk management, the mean value of strategic objective for firms which adopted ERM was relatively large. Therefore, it can be said that the establishment of ERM was positively associated with strategy decision for firms in China. In contrast, the relationship between ERM and operations efficiency was inversely interrelated as there was a significant negative difference (-0.100) in the mean value of operation $_1$ between firms with traditional risk management and firms with ERM. In this case, the results imply that the operations efficiency of firms in China may be slightly reduced while expanding internal control and/or traditional risk management into ERM. In addition, the influence trend was consistent in the relationship between ERM and reporting reliability within organizations. Since the differences seen in the two groups of firms in both compliance $_1$ and compliance $_2$ were not large, it is reasonable to assert that there was a significant but weak association between ERM and compliance with regulations for firms in China. In this context, it can be said that all the objectives noted in COSO's framework were significantly associated with ERM. Accordingly, the measurement of ERM in the PLS-SEM was ascertained to be appropriate in this research.

Table 5.15: Relationship between ERM and COSO Framework Objectives

	(3) Firms with IC & TRM		(4) Firms with IC & ERM		Difference (4) – (3)	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Error**
Strategy $_1$	-0.093459	0.677072	0.163933	1.368931	0.257392**	0.090573
Strategy $_2$	0.029576	0.999576	-0.036572	0.982828	-0.066148	0.088201
Operations $_1$	0.824455	0.591891	0.724048	0.475417	-0.100407*	0.046864
Operations $_2$	1764433.820178	2425191.697645	2049718.401900	3546225.065299	285284.581722	279807.352581
Reporting $_1$	3.180645	0.488985	3.075472	0.460746	-0.105173*	0.042576
Reporting $_2$	1.000000	0.000000	1.000000	0.000000	0.000000	0.000000
Compliance $_1$	0.000143	0.000192	0.000103	0.000105	-0.000040***	0.000013
Compliance $_2$	0.009607	0.039469	0.004386	0.006009	-0.005220*	0.002279

Note: IC is short for internal control; TRM is short for traditional risk management; ERM is short for enterprise risk management; Strategy $_1$ and Strategy $_2$ are indicators of strategic objective in COSO's framework; Operations $_1$ and Operations $_2$ are indicators of operations objective in COSO's framework; Reporting $_1$ and Reporting $_2$ are indicators of reporting objective in COSO's framework; Compliance $_1$ and Compliance $_2$ are indicators of compliance objective in COSO's framework; * Significant at $P < 0.05$, ** Significant at $P < 0.01$, *** Significant at $P < 0.005$.

5.4.3 Additional Analysis of Firm-Specific Characteristics

From the perspective of theoretical concepts which include financial distress, underinvestment cost, information asymmetry, and modern portfolio, previous studies have shown that various firm-specific factors significantly influence ERM and firm performance (Farrell & Gallagher, 2015; McShane et al., 2011; Don Pagach & Warr, 2010). Since the internal control framework has been argued to be closely connected with the ERM framework, this research conjectures that internal control was likely to be affected by those firm-specific characteristics. In order to better investigate the relationships between internal control, ERM, and firm performance in the context of firms in China, the firm-specific factors which include firm size, financial leverage, sales growth, asset opacity, financial slack, earnings variability, systematic risk, international diversification, industrial diversification, dividend yield, and insider ownership were selected as moderators. These were then examined in the designed PLS-SEM model. Further to that, the UDT was also adopted for estimating the association between the firm-specific characteristics and risk management programs in respect of internal control, traditional risk management, and ERM. Results extracted from the UDT are conducive for interpreting the moderating effects in the relationships between internal control, ERM, and firm performance.

Table 5.16 illustrates the association between internal control and firm-specific factors in the context of firms in China. It is observed that there was a strongly significant difference (-0.215) in financial slack between firms in group (1) and group (2). Here, it can be seen that the mean value of financial slack for firms which embraced internal control was smaller than that of firms which did not engage in internal control. This finding implies that firms in China were more likely to hold low financial slack when internal control was implemented in their daily administration. In addition, the

difference (0.030) in asset opacity between firms without internal control and firms with internal control was strongly significant as well. Since asset opacity was positively associated with internal control, it is deduced that asset opacity within organizations positively influence internal control. Beyond that, the difference (0.379) in the mean value of beta between the two groups of firms was also strongly significant. Thus, it is noted that the relationship between systematic risks and internal control was ascertained to be positive. Therefore, it is reasonable to assert that the establishment of internal control allowed firms in China to have more tolerance for risks in the market. Furthermore, it was observed that internal control was ascertained to be negatively associated with international diversification because the difference (-0.367) between firms in group (1) and firms in group (2) was significantly negative. The finding implies that firms with internal control were less international than firms without internal control. In contrast, there was a significant positive difference (0.266) in industrial diversification between the two groups of firms. Therefore, it can be said that firms in China were more likely to adopt internal control if their businesses and operations were associated with more diversified industries. Additionally, the relationship between dividend yield and internal control was ascertained to be positive in China. Since the difference (-0.987) in dividend yield between firms in group (1) and group (2) was significant negative, it can be concluded that firms engaged in internal control would be more likely to keep more capital gains and less likely to disburse dividends to their investors. Although beta, international diversification, industrial diversification, and dividend yield were significantly associated with internal control, they were not effective moderators which can significantly affect the effect of internal control on firm performance. However, firm size and leverage were demonstrated to have significant moderating effects on the relationship between internal control and firm performance even if these two firm-specific characteristics were not significantly associated with

internal control in the UDT.

Table 5.16: Association between Internal Control and Firm-Specific Characteristics

	(1) Firms without IC		(2) Firms with IC		Difference (2) – (1)	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Error**
Size	23.789156	1.022088	23.370082	1.154655	-0.419075	0.424569
Growth	0.210246	0.229535	0.276236	0.501764	0.065989	0.180003
Leverage	0.168275	0.314478	0.744942	1.013671	0.576667	0.361829
Slack	0.419249	0.148640	0.204227	0.141746	-0.215021***	0.052806
Opacity	0.001289	0.003198	0.031475	0.057908	0.030185***	0.006613
Beta	0.563925	0.203635	0.942506	0.217079	0.378581***	0.080142
Variability	0.190642	0.101638	0.286983	0.383820	0.096341	0.136845
Int_Div	1.000000	0.000000	0.632911	0.485091	-0.367089***	0.054577
Ind_Div	0.000000	0.000000	0.265823	0.444593	0.265823***	0.050021
Yield	2.098438	1.149027	1.111353	1.298407	-0.987084*	0.477418
Insider	0.000386	0.001083	0.003712	0.020927	0.003326	0.007439
Insider Sq	0.000001	0.000003	0.000446	0.002780	0.000445	0.000988

Note: IC is short for internal control; Growth is short for sales growth; Slack is short for financial slack; Opacity is short for asset opacity; Int_Div is short for international diversification; Ind_Div is short for industrial diversification; Yield is short for dividend yield; Insider is short for insider ownership; Insider Sq is short for squared value of insider ownership; * Significant at $P < 0.05$, ** Significant at $P < 0.01$, *** Significant at $P < 0.005$.

Table 5.17 examines the association between traditional risk management and firm-specific characteristics by comparing the mean value between firms with internal control and firms with traditional risk management. It is noted that international

diversification was significantly associated with traditional risk management for firms in China. Since the difference (0.199) in the mean value of international diversification between firms in group (2) and group (3) was strong positive, it is reasonable to assert that the implementation of traditional risk management improved the capacity of firms in China to diversify their business into international markets. In addition, the difference (0.125) in industrial diversification between firms which adopted internal control and firms which adopted traditional risk management was significant. Thus, it can be deduced that the relationship between industrial diversification and traditional risk management was ascertained to be positive. The results imply that firms in China were more likely to engage in traditional risk management if their businesses and operations were diversified into multiple industries. Beyond that, the difference (0.591) in the mean value of dividend yield was significantly positive between the two groups firms as well. This finding suggests that firms which established traditional risk management would be likely to pay more dividends to their investors. Additionally, insider and squared value of insider was seen to be significantly associated with traditional risk management for firms in China. Therefore, the insider ownership for firms which established only internal control was relatively smaller than the insider ownership for firms which established both internal control and traditional risk management. In this context, it is reasonable to assert that firms in China were likely to own much more insiders within their organizations when traditional risk management was thoroughly carried out. Since insider ownership was demonstrated to be an effective moderator that influenced the relationship between internal control and ERM, it can be deduced that traditional risk management might be a transition between internal control and ERM in China. In this regard, firms in China which had already adopted internal control and intend to engage ERM should establish traditional risk management before improving the effectiveness and efficiency of their risk management mechanisms in the long run.

Table 5.17: Association between TRM and Firm-Specific Characteristics

	(2) Firms with IC		(3) Firms with IC & TRM		Difference (3) – (2)	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Error**
Size	23.370082	1.154655	23.562531	0.943431	0.192449	0.140526
Growth	0.276236	0.501764	0.189478	0.336413	-0.086758	0.059599
Leverage	0.744942	1.013671	0.619987	0.679421	-0.124955	0.120398
Slack	0.204227	0.141746	0.183897	0.109583	-0.020330	0.017119
Opacity	0.031475	0.057908	0.028486	0.052867	-0.002988	0.006796
Beta	0.942506	0.217079	0.918332	0.242169	-0.024174	0.029911
Variability	0.286983	0.383820	0.108658	3.982300	-0.178325	0.449000
Int_Div	0.632911	0.485091	0.832258	0.374241	0.199347***	0.058570
Ind_Div	0.265823	0.444593	0.390323	0.488611	0.124500*	0.057203
Yield	1.111353	1.298407	1.702356	1.709483	0.591003***	0.175405
Insider	0.003712	0.020927	0.010402	0.042504	0.006690*	0.003372
Insider Sq	0.000446	0.002780	0.001909	0.011227	0.001463*	0.000710

Note: IC is short for internal control; TRM is short for traditional risk management; Growth is short for sales growth; Slack is short for financial slack; Opacity is short for asset opacity; Int_Div is short for international diversification; Ind_Div is short for industrial diversification; Yield is short for dividend yield; Insider is short for insider ownership; Insider is short for insider ownership; Insider Sq is short for squared value of insider ownership; * Significant at P < 0.05, ** Significant at P < 0.01, *** Significant at P < 0.005.

Table 5.18 reveals the association between ERM and firm-specific characteristics in China. It seems clear that there was a significant difference (0.415) in firm size between group (3) and (4). It is thus, noted that the mean value of firm size for firms with internal control and ERM was larger than that for firms with internal control and

traditional risk management. The results indicate that larger firms were more likely to embrace ERM. In addition, the influence trend was noted to be consistent in the difference (0.189) of leverage between firms with traditional risk management and firms with ERM. Thus, it is reasonable to assert that firms in China which have established effective ERM were endowed with the capacity to take higher leverage level within organizations. Further, it is observed that ERM was negatively associated with financial slack because the difference (-0.032) between firms in group (3) and firms in group (4) was significantly negative. However, the value of the difference in financial slack was not big. Therefore, the finding implies that the financial slack policy for firms which adopted ERM was not vastly different from the financial slack policy for firms that adopted traditional risk management. Beyond that, the difference (0.017) noted in asset opacity between the two groups of firms was significant. Since asset opacity was ascertained to be positively associated with ERM, it is deduced that firms in China which implemented ERM were likely to hold much more opaque assets. Nevertheless, firm size, financial slack, and asset opacity were demonstrated to be non-effective moderators in the relationship between ERM and firm performance in this research. In contrast, even if dividend yield was not found to be significantly associated with ERM in the UDT, it has a significant moderating effect on the association between ERM and firm performance in China.

Table 5.18: Association between ERM and Firm-Specific Characteristics

	(3) Firms with IC & TRM		(4) Firms with IC & ERM		Difference (4) – (3)	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Error**
Size	23.562531	0.943431	23.977403	1.142185	0.414872***	0.094999
Growth	0.189478	0.336413	0.179122	0.342872	-0.010356	0.0.0217
Leverage	0.619987	0.679421	0.808897	0.883007	0.188910**	0.071881
Slack	0.183897	0.109583	0.151433	0.105760	-0.032464***	0.009629
Opacity	0.028486	0.052867	0.045943	0.087607	0.017457**	0.006724
Beta	0.918332	0.242169	0.884523	0.237574	-0.033809	0.021417
Variability	0.108658	3.982300	0.297241	2.157013	0.188583	0.299743
Int_Div	0.832258	0.374241	0.816038	0.388370	-0.016220	0.033870
Ind_Div	0.390323	0.488611	0.391509	0.489243	0.001187	0.043569
Yield	1.702356	1.709483	1.513104	1.325666	-0.189253	0.133103
Insider	0.010402	0.042504	0.009870	0.043759	-0.000532	0.003834
Insider Sq	0.001909	0.011227	0.002003	0.011734	0.000094	0.001019

Note: IC is short for internal control; TRM is short for traditional risk management; ERM is short for enterprise risk management; Growth is short for sales growth; Slack is short for financial slack; Opacity is short for asset opacity; Int_Div is short for international diversification; Ind_Div is short for industrial diversification; Yield is short for dividend yield; Insider is short for insider ownership; Insider is short for insider ownership; Insider is short for insider ownership; Insider Sq is short for squared value of insider ownership; * Significant at $P < 0.05$, ** Significant at $P < 0.01$, *** Significant at $P < 0.005$.

5.5 Summary

This chapter tested the research hypotheses that had been proposed for this research as noted in chapter three. It further discusses the estimated relationships between internal control, ERM, and firm performance from the two perspectives of the

PLS-SEM and the UDT which were used as approaches to analyse data. Overall, the results indicate that the effects of internal control and ERM on accounting performance as well as market performance were significant for firms in China. However, the influence of internal control was quite different from the influence of ERM within organizations. Although the association between internal control and firm performance was noted to be positive, it was observed that ERM affected firm performance in a negative manner. Further, since internal control was significantly associated with ERM, it was noticed that ERM could serve as a mediator which acted on the relationship between internal control and firm performance. To further explore the relationships between internal control, ERM, and firm performance, the moderating effects of some firm-specific characteristics were evaluated and also interpreted in this chapter. From the investigation conducted, findings revealed that firm size, leverage, asset opacity, and financial slack were effective moderators that significantly influenced the association between internal control and firm performance. However, the impacts of ERM on firm performance were moderated by leverage and dividend yield only. Additionally, the moderations of firm size, leverage, systematic risk, international diversification, industrial diversification, and insider ownership were significant on the relationship between internal control and ERM. Since the interpretations in the PLS-SEM were not thoroughly consistent with the interpretations noted in the UDT, the relationships between internal control, ERM, and firm performance in China should be further investigated.

CHAPTER 6: DISCUSSION AND CONCLUSION

6.1 Introduction

In recent years, no other filed other than risk management have attracted such a significant attention since the global financial crisis broke out in 2008 (Huber & Scheytt, 2013; Millo & MacKenzie, 2009; Power, 2009). Due to the continuing economic uncertainties, along with unfortunate operational-risk events striking firms around the globe, risk management at the enterprise level, has become a serious concern for both academics and industry commentators in the last ten years. To deal with this issue, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) was organized and it then proposed and optimized the Internal Control Integrated Framework and the Enterprise Risk Management Integrated Framework for the purpose of providing a reasonable guarantee for organizations in achieving business objectives in this trying times. Practiced by administrative officers, COSO's two frameworks have become the criterion reference of internal control and risk management for all entities throughout the world.

Although internal control and ERM have long been evaluated and investigated in European and American countries, they are still considered as less familiar concepts for prentice approaches in Asia, especially for firms whose core businesses are carried out in developing countries. Research and analyses of this nature have always been confined to the U.S. and Bermudian financial institutions (Arena et al., 2010; Farrell & Gallagher, 2015; Hoyt & Liebenberg, 2011). Consequently, the valuation implication of internal control and ERM for non-financial organizations are significantly insufficient. In addition, even if investigations on internal control or ERM were well developed, the mutual relationship between them has not been rigorously demonstrated by studies yet. Up to now, there is a shortage of empirical evidence which can show the assessment of

the functions of internal control and ERM by comparing the relevant effects on firm performance. In this regard, the purpose of this research is to address the shortcomings by exploring the relationships between internal control, ERM, and firm performance for publicly listed firms in China.

According to prior studies noted in the existing literature, firm-specific characteristics such as firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders have been noted to be significantly associated with both ERM and firm performance (Farrell & Gallagher, 2015; McShane et al., 2011; Don Pagach & Warr, 2010). Nevertheless, whether those firm-specific characteristics can also affect internal control is a phenomenon which has not been clearly discussed yet. Therefore, this research adopted the firm-specific characteristics as moderating variables in the attempt to clarify whether the relationships between internal control, ERM, and firm performance can be moderated in publicly listed firms in China. Accordingly, this research attempts to answer the following questions:

1. What is the relationship between internal control and firm performance?
2. What is the relationship between ERM and firm performance?
3. What is the relationship between internal control and ERM?
4. Do firm-specific characteristics moderate the relationship between internal control and firm performance?
5. Do firm-specific characteristics moderate the relationship between ERM and firm performance?
6. Do firm-specific characteristics moderate the relationship between internal control and ERM?

In order to better figure out the research questions, this study applied the Partial Least Squares Structural Equation Modeling (PLS-SEM) which includes both the reflective and formative hierarchical construct models. The research also used the Univariate Difference Test (UDT) to compare the differences of firm performance across internal control adoption, traditional risk management adoption, and ERM adoption, so as to get a better understanding of the functions of risk management programs for firms in China. This chapter discusses the conclusions drawn from both the PLS-SEM and UDT approaches which were also interpreted in chapter five. This chapter begins with the summary of findings which were obtained from the hypotheses testing. In the next section, the implications of the findings are emphasized by analyzing the mediating and moderating effects in the relationships between internal control, ERM, and firm performance. Based on the contributions and limitations of this study, recommendations for future research are also proposed. This chapter concludes with a summary of the whole research.

6.2 Summary of Findings

This research was designed mainly based on the modern portfolio theory (MPT) which states that each risk exposure in the ERM framework is not controlled in isolation but is rather to be managed within a portfolio context (Gordon et al., 2009). Therefore, the effects of internal control and ERM on individual risks for firms in China were not evaluated. Since risk exposures can lead to the uncertainty and volatility of firm performance as a whole, the association between risk management mechanisms (internal control and ERM) and firm performance was estimated instead. Additionally, due to the portfolio characteristic of internal control and ERM frameworks on risk management activities, scholars and commentators had proposed that every department in a firm, whose daily operations are connected to a certain type of risks, should

participate in the process of risk assessing and managing (Arena et al., 2011). Accordingly, there should be a potential relationship among all departments or all risk management activities within the firm. In this context, the relationship between internal control and ERM was conjectured to be existing and it was then examined.

Several hypotheses were developed for this research. The first hypothesis was stated as "Internal control has a positive effect on firm performance in China". Literature suggests that internal control is the foundation of sound operations because it can enhance the whole network of systems within firms and impact firms in attaining their business goals (Karagiorgos et al., 2010). In addition, the establishment of internal control can add value to financial performance by improving areas of arithmetic and accounting, acknowledgment of budgeting, physical authorization and approval, and segregation of duties for firms (Douglas et al., 2014). The results of the hypotheses testing were traced to hypothesis one which indicates that internal control was positively associated with firm performance in China at a statistically significant level (as shown in Figure 5.1). In order to comprehensively assess the effects of internal control on firm performance, this research quantified firm performance from both the accounting-based (profitability) and market-based (investment) aspects. The parameters used in the PLS-SEM revealed that internal control can influence the profitability and investment of firms in China in a positive manner (as shown in Table 5.4). This result provides evidence to support the theoretical benefits noted in previous studies.

The second hypothesis of the research was stated as "ERM has a positive effect on firm performance in China". Arguments noting the benefits of ERM in literature have been ambiguous (Hoyt & Liebenberg, 2011). On one hand, proponents assert that effective ERM mechanisms can mitigate stock price and earnings volatility, enhance

capital efficiency, reduce capital costs, and promote interoperability between different risk management activities (Beasley et al., 2008). It has been claimed that all these theoretical benefits would eventually add value to firm performance. On the other hand, opponents argue that the effects of ERM on averting excessive risk taking in firms are very limited (Power, 2009). In this research, the results of the testing for hypotheses two demonstrated that ERM was negatively associated with firm performance in China at a statistically significant level (as shown in Figure 5.2). This result contradicted the outcomes noted by prior studies which states that ERM could enhance firm performance. For the purpose of better understanding the function of ERM in listed firms noted in China, this research also assessed the effectiveness of ERM through the achievements of the objectives (strategy, operations, reporting, and compliance) in COSO's frameworks. The PLS-SEM model disclosed the indirect effects of the objectives on firm performance (as shown in Table 5.5). Since strategy and compliance were inversely related to both accounting and market performance, it implies that ERM in China cannot add value to either profitability or investment.

The third hypothesis of the study was stated as "Internal control has a positive effect on ERM in China". In this regard, academics and industry commentators have been suggesting that the development of internal control should be collaborated with ERM (Hermanson & Hermanson, 1994). In addition, COSO deems the ERM framework as an expansion of the internal control framework. Since ERM offers firms with more integrated and robust perspective to meet the internal control requirements, internal control is thus, deduced to be an internal part of ERM (Azimah Abdul Aziz, 2013; Yanhong & Qing, 2013). The results of the testing for hypothesis three indicated that the relationship between internal control and ERM was statistically significant in a positive manner (as shown in Figure 5.3). This outcome has already been demonstrated

above and it showed that internal control was significantly associated with firm performance for listed firms in China. Likewise, the association between ERM and firm performance was also significant in China. Linked to this, the current research further examined the mediating effect of ERM on the relationship between internal control and firm performance. The results revealed that there was an indirect effect of internal control on firm performance for firms in China when viewed through ERM (as shown in Figure 5.16). The outcome supported the argument which states that firms who intend to embrace the effective and efficient ERM need to implement sound internal control at the same time.

The fourth hypothesis of this research was stated as "Firm-specific characteristics have significant moderating effects on the relationship between internal control and firm performance". Prior studies noted in the literature provided evidence to show that there were some firm-specific characteristics that can influence ERM as well as firm performance (Farrell & Gallagher, 2015; McShane et al., 2011; Don Pagach & Warr, 2010). Since the ERM framework has been suggested to be an expansion of the internal control framework, the effects of those firm-specific characteristics should be evaluated while investigating the relationship between internal control and firm performance. This research adopted firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders as the moderating variables. The results extracted from the hypotheses testing for hypothesis four highlighted that among all the selected moderators, only firm size, leverage, asset opacity, and financial slack significantly moderated the effects of internal control on firm performance (as shown in Table 5.1). Table 5.7 summarizes the moderating effects in the PLS-SEM. Here, it is disclosed that larger firm size and higher leverage can change the direction of the association between

internal control and firm performance in China. However, higher asset opacity and higher financial slack can strengthen the effects of internal control on firm performance.

The fifth hypothesis tested in this research was stated as "Firm-specific characteristics have significant moderating effects on the relationship between ERM and firm performance in China". Literature has suggested that the identification of those variables which may influence both ERM and firm performance is an essential process while estimating the valuation of ERM (Farrell & Gallagher, 2015; Hoyt & Liebenberg, 2011; Don Pagach & Warr, 2010). In this regard, this research examined the moderating effects of firm size, leverage, sales growth, asset opacity, financial slack, earnings variability, beta, international diversification, industrial diversification, dividend yield, and insiders on the association between ERM and firm performance in China. The results of the testing for hypothesis five indicated that leverage and dividend yield moderated the effects of ERM on firm performance at a statistically significant level (as shown in Table 5.2). It can be noted from Table 5.8 that higher leverage weakened the relationship between ERM and firm performance. However, higher dividend yield strengthened the effects of ERM on firm performance. Since ERM is demonstrated to be inversely related to profitability and investment in China, this result suggested that firms in China with higher leverage and lower dividend yield were more likely to get benefits from ERM if the effectiveness of ERM was improved.

The sixth hypothesis noted in this research was stated as "Firm-specific characteristics have significant moderating effects on the relationship between internal control and ERM in China". Previous studies have ascertained that the strength and/or direction of the effects of internal control and ERM on firm performance was affected by some firm-specific characteristics. Therefore, this research further evaluated the

moderating effects of these firm-specific characteristics on the association between internal control and ERM. The results of the testing for hypothesis six revealed that firm size, leverage, beta, international diversification, industrial diversification, and squared insider ownership significantly moderated the relationship between internal control and ERM (as shown in Table 5.3). According to the results noted in Table 5.9, there was evidence to suggest that the positive effect of internal control on ERM can be strengthened by larger firm size, higher leverage, and higher insider ownership in China. Nevertheless, the degree of the association between internal control and ERM within Chinese firms can be weakened by higher systematic risks, higher international diversification, and higher industrial diversification.

In order to verify the adequacy of the modeling and the accuracy of analysing for the PLS-SEM model applied, this research also adopted the UDT as a means to further ascertain the relationships between internal control, ERM, and firm performance in China. By comparing the differences in KPIs, this research explored the effects of internal control, traditional risk management, and ERM on firm performance. The results further indicated that internal control reduced the return on assets, return on sales, and Tobin's Q for firms in China (as shown in Table 5.10). It contradicted the findings seen in the testing for hypothesis one which suggests that internal control makes positive effects on firm performance. In addition, the establishment of traditional risk management decreased return on sales for firms in China (as shown in Table 5.11). The consistent influence trend was also found to exist in the association between ERM and firm performance. From the results shown in Table 5.12, it is noted that return on asset, return on equity, market book ratio, and Tobin's Q were all lowered by ERM in China. This result thoroughly supports the findings seen in the testing for hypothesis two.

In the PLS-SEM model, the effectiveness of both internal control and ERM were quantified through the achievements of relative framework objectives (strategy, operations, reporting, and compliance). Each objective was reflected by two indicators. Although these indicators were valid and appropriate in the study conducted by Gordon et al. (2009), no other studies have ever demonstrated them in the field of risk management, particularly in studies focussing on China. In that regard, this research also examined the associations between framework objectives and risk management programs (internal control, traditional risk management, and ERM) by comparing the differences noted in these indicators. The results reflected in the UDT indicated that only operations and compliance were associated with internal control at a statistically significant level (as shown in Table 5.13). This finding confirmed that the measurement of internal control in the PLS-SEM model was acceptable but not perfectly adequate. In addition, compared to internal control, it appears that traditional risk management was better for achieving reporting reliability for firms in China (as shown in Table 5.14). Since each framework objective has indicators that were significantly associated with ERM (as shown in Table 5.15), it is hereby suggested that the measurement of ERM in the PLS-SEM was appropriate in this research.

The last part of the UDT was to estimate the relationship between the selected firm-specific characteristics and risk management programs in terms of internal control, traditional risk management, and ERM. The results presented in Table 5.16 revealed that firms with lower financial slack, higher asset opacity, more systematic risks, lower international diversification, higher industrial diversification, and lower dividend yield were more likely to embrace internal control in China. In addition, compared to internal control, firms in China which have implemented traditional risk management may get higher international diversification, higher industrial diversification, higher dividend

yield, and higher insider ownership within organizations (as shown in Table 5.17). However, if firms in China expanded their internal control and traditional risk management into ERM, then the firms would be endowed with the capacity to take larger firm size, higher leverage, lower financial slack, and higher asset opacity (as shown in Table 5.18). Although the interpretations noted in the PLS-SEM model were not thoroughly consistent with those noted in the UDT, the findings of this research can provide key insights of value implications of both internal control and ERM in China, or even for Asian and/or other developing countries.

6.3 Implications of Findings

Over the past decade, business frauds and failures of corporate governance have caused risk management to be the fundamental concern in the management process of organizations. It is believed that embracing effective risk management programs should benefit firms in improving firm performance (Beasley et al., 2008; Hoyt & Liebenberg, 2011; Kleffner et al., 2003; Nocco & Stulz, 2006). Nonetheless, there was a different argument noted in literature which considered risk management as a compliance exercise or as an "after-the-fact inspection" (Bowling & Rieger, 2005; Bruce, 2005; Collier et al., 2007). Therefore, the controversy about whether risk management are value-added programs could make executive sponsors confused in their option of implementing internal control and/or ERM. In addition, since investigations and analyses have been limited to financial institutions in European and American countries (Farrell & Gallagher, 2015; Hoyt & Liebenberg, 2011), there is hence, a lack of empirical evidence showcasing non-financial organizations in the Asian perspective. This research was thus designed to evaluate the relationships between internal control, ERM, and firm performance for public-listed firms in China. The findings of the study have several significant implications for practitioners and organizations located in

China.

This research conducted and examined the association between internal control and firm performance. The results suggested that firms in China need to adopt internal control because embracing such sound internal control could enhance firm performance. In addition, compared to the effects on market performance, internal control added more value on accounting performance. This implied that the adoption of internal control framework could bring more benefits to profitability rather than investment for firms in China. Therefore, it is suggested that inside managers rather than outside investors, were more likely to have greater interests in committing the necessary financial support and using abundant human resources for the purpose of implementing internal control. According to prior empirical studies, different maturity stages of risk management programs could create distinct effects on firms (Ballantyne, 2013; Farrell & Gallagher, 2015). Accordingly, understanding how to increase the effectiveness of internal control would be meaningful for all practitioners. Since COSO's internal control integrated framework served as the most popular and most widely accepted guideline for the implementation of sound internal control in China, this research also examined the effectiveness of internal control through the aspects of operations, reporting, and compliance. The results suggested that firms in China needed to put special emphasis on regulation compliance because the effectiveness of internal control was mostly dependent on the achievement of compliance objective. Additionally, the recognition degree of operations efficiency should be prior to reporting reliability while establishing sound internal control in China.

To further explore the benefits of internal control within firms in China, this research also provided some insights into the moderating effects of firm-specific

characteristics on the association between internal control and firm performance. The results gained implied that firm size, leverage, asset opacity, and financial slack were significant moderators which could influence internal control along with firm performance in China. In this context, firms in China with smaller size were more likely to improve profitability and investment through engaging internal control. However, if the firm size expanded to become larger, then the function of internal control would be restricted until it no longer adds value to firm performance. The analysis of this research suggested that internal control was negatively associated with firm performance if firms in China adopted higher leverage in their capital structure. Therefore, firms with lower leverage level are encouraged to establish internal control and to take the benefits of enhancing their accounting and market performance. If there were fewer opaque assets within firms in China, the effects of internal control on firm performance would be quite limited. In contrast, internal control was likely to bring with much growth of profitability and investment if asset opacity was higher in organizations. In addition, the results implied that although internal control could add value to firms in China with higher financial slack, the improvement noted in firm performance would not be as outstanding as those for firms with lower financial slack.

Since ERM is a relatively new concept in Asia, there was thus no adequate empirical evidence to guide firms in China on how to implement ERM frameworks successfully. In this regard, understanding the implications of ERM within organizations could assist executive sponsors in optimizing ERM. The results of the testing for the association between ERM and firm performance implied that embracing ERM would negatively affect profitability and investment for firms in China. Thus, it is advocated that only mature ERM could add value to firms (Farrell & Gallagher, 2015). However, the risk management efforts for most firms in China were just in the nascent stage.

Accordingly, Chinese practitioners need to strive to accomplish ERM maturity by improving the effectiveness of ERM. Among the four objectives noted in COSO's ERM integrated framework, only strategy and compliance were seen to be positively associated with ERM in China. Therefore, the analysis of this research suggested that firms in China need to increase their capacity of accomplishing successful strategies and standard compliance for the purpose of engaging in effective ERM. Since operations and reporting in the framework provided positive effects on firm performance in China, it is deduced that firms in China should work on the efficiency and effectiveness of their operations as well as the timeliness, reliability, and transparency of reporting. The results implied that the establishment of ERM could make efficient operations and reliable reporting contribute to the improvement of profitability and the enhancement of investment.

Different from internal control, the adoption of ERM and the relative effects on firm performance were moderated by leverage and dividend yield. Nevertheless, ERM effectiveness was not dependent on policies of leverage and dividend yield. The results gained from this research implied that if firms in China have lower leverage level within organizations, then engaging ERM would exert a strong negative influence on accounting and market performance. However, if higher leverage was adopted in the capital structure, then the strength of the negative influence of ERM on profitability and investment would be buffered. The analysis of this research suggested that leverage moderated the association between ERM and firm performance in a positive manner. Therefore, firms with higher leverage were more likely to get benefits from ERM when the effectiveness of ERM is improved to reach the maturity stage. In contrast, dividend yield adversely affected the relationship between ERM and firm performance in China. The results implied that the dividend distribution policy could strengthen the effects of

ERM on profitability and investment. Since ERM was negatively associated with firm performance, holding more capital gains could make firms in China suffer a decline in performance due to the adoption of ERM. In cases where more dividends were distributed to investors, then the slump of firm performance could be buffered if the practitioners enhance the effectiveness of ERM.

Although internal control has long been practiced in China, the accomplishment of ERM is still very rare for most firms in China. In order to enhance the effectiveness of existing internal control as well as increase the capacity of engaging ERM, this research attempted to explore the association between internal control and ERM in China. The results suggested that internal control has very close relationship with ERM in China. In addition, ERM was noted to be a significant mediator between internal control and firm performance. Therefore, even if both internal control and ERM could influence corporate governance in respect of managing and controlling risk exposures, Chinese executive sponsors should not just take one and ignore the other because internal control and ERM should be deemed as complementary rather than as substitutions for each other. The analysis of this research implied that the effectiveness of ERM still needs to be improved for firms in China even though internal control has been established in an appropriate manner.

The relationship between internal control and ERM was also moderated by firm-specific characteristics in China. In summary, it can be said that firm size, leverage, and insider ownership have strengthening effects on the association between internal control and ERM. The results further implied that firms in China with larger size, higher leverage level, and higher insider ownerships were more likely to improve the effectiveness of ERM by establishing sound internal control. In contrast, beta,

international diversification, and industrial diversification provide buffering effects on the relationship between internal control and ERM. This implied that firms which were exposed to lower systematic risks, dealt with less international transactions, and operated in a single industry could get more benefits from sound internal control whilst increasing ERM effectiveness. However, the moderating effects noted on the relationship between framework objectives and ERM could be distinguished from each other. The analysis of the study suggested that successful strategy could add more values to effective ERM when firms in China have larger firm size, use higher leverage level, face lower systematic risks, trade at domestic markets, operate in a single industry, and own more insiders. It is further noted that the improvement of ERM effectiveness is mainly dependent on efficient operations for firms with smaller size, lower leverage, higher beta, lower international diversification, higher industrial diversification, and higher insider ownership in China. Results gained also indicated that reliable reporting can bring in more effective ERM if firms have a larger size, adopt lower leverage, be exposed to lower systematic risks, carry on international business, engage in a single industry, and get many insiders. In contrast, it is noted that standard compliance can contribute more to ERM effectiveness when firms have a larger firm size, higher leverage level, lower beta, lower international diversification, lower industrial diversification, and lower insider ownership.

6.4 Limitations of the Research

Though this research provided key insights of the value implication of internal control and ERM for firms in China, there are several limitations which need to be addressed. Firstly, the sample data used for this research were primarily collected from large firms that publicly traded at the Stock Exchange Listings in China. Therefore, the research findings may not be utilized as guidance for private, non-profit, and small or

medium size firms in mainland China or other regions. Secondly, the information noted about ERM was primarily extracted from self-reported data. Although the information of internal control can be found in both the internal reports of Supervisory Committee and the external reports of Audit Firm, the government of China (GOC) does not force the third party to monitor and disclose the status of ERM for publicly traded firms. According to the nature of self-reported data, it is possible for participants to manipulate the information for the purpose of avoiding risks. Thus, the window-dressing data might not accurately reflect the real condition of ERM for the sample firms. Finally, this research investigated the maturity of internal control and ERM based on an index method which tests the achievement of objectives related to COSO's frameworks. It conjectured that the program effectiveness is a good indicator for the implementation maturity. However, the index method had only been examined for ERM effectiveness in prior studies (Gordon et al., 2009). In this regard, it would be the first time for it to be used as a measurement of internal control effectiveness in this research. In addition, there was no clear classification about the maturity level of the participants. Therefore, the research findings may lose the ability to provide more reference for carrying out internal control and ERM activities in different maturity stages.

6.5 Recommendations for Future Research

In order to contribute to the body of knowledge related to internal control and ERM that is specific to China, this research expands on the benefits of risk management programs in China by empirically examining the relationships between internal control, ERM, and firm performance in both profitability and investment perspectives. In addition, this research further explores the firm-specific characteristics that can influence the effectiveness of internal control and ERM within organizations. According to the implications of findings, firms in China were given a reasonable guidance on how

to establish effective internal control and ERM frameworks according to the special features noted from the Chinese market and commercial environment. The results of this research thus, can assist management practitioners in China to clearly comprehend the concepts of internal control and ERM in practical operations. This knowledge will protect firms against shocks from both internal and external markets during economic volatility. Since there are very few studies conducted which can overlap with the current research, it is hereby stated that the limitations of this research can provide some new insights for future research in a number of ways.

Firstly, for the purpose of complementing the empirical evidence which expound on the benefits of internal control and ERM in non-financial organizations, this research had focused on only publicly traded firms in China. In this regard, the CSI 300 Index firms were selected as research sample source because firms listed in the index hold 60%－70% market capitalizations among all publicly listed firms in China. However, even if the industry weight distribution of the Index is consistent with the industry weight distribution of the entire capital market in China, this research was inclined to evaluate the relationships between internal control, ERM, and firm performance across the industry as a whole. Since the risk exposures faced by firms in different industries vary from one to another, it is reasonable to conjecture that the effectiveness of internal control and ERM within organizations is likely to be influenced by industry distribution. In this context, further investigations looking into the effects of industry on the establishment of internal control and ERM may provide valuable insights for firms that engage in multiple industries.

Secondly, the scope of the study was confined to public-listed firms in China. This is because the research data disclosed in public statements were available and consistent

for collection and analysis. However, the value implications of internal control and ERM for non-public firms are also significant for practitioners in China. Compared to publicly traded firms, there are no standard regulations that could force public-listed firms in China to adopt internal control and ERM as compliance exercises. Therefore, the reasons that firms choose to embrace internal control and ERM are mainly due to profit maximization. In this context, an investigations looking into the theoretical benefits of internal control and ERM within organizations for non-public firms should be able to provide more accurate evidence on how to enhance firm performance through adopting sound internal control and effective ERM in China. Since the corporate data for private firms are very difficult to obtain from either database or social media, a qualitative research design and analysis would be more appropriate for future research.

Lastly, as information disclosure at the enterprise level is restricted in China, it is impossible to investigate the maturity stage for internal control and ERM within firms in China. Accordingly, this research was inclined to estimate the effectiveness of internal control and ERM by examining the achievement of objectives in COSO's frameworks. Since both internal control and ERM frameworks possess the same objectives such as operations, reporting, and compliance, it was thus decided that the indicators which were used to quantify the operations efficiency, reporting reliability, and regulation compliance may repetitively appear in the measurement of internal control and ERM effectiveness. This application may cause homogeneity and decrease the accuracy of testing for the association between internal control and ERM. Moreover, although the objectives noted in the two frameworks of COSO are parallel, the components of internal control are very different from the components of ERM. Therefore, if internal control and ERM can be identified through the framework components, then the interaction between internal control and ERM within

organizations would be explored in a more accurate manner. Additionally, the framework components can also become good indicators which can reflect the maturity stage of the establishment for both internal control and ERM.

6.6 Conclusions of the Research

Due to insufficient risk evaluation and poor risk management performance, many firms have been destroyed and gone bankrupt since the global financial crisis of 2008. Risk management programs, especially for internal control and ERM, are thus rapidly developed as the backbone of corporate governance, the foundation of management control, and as the cause of and possible settlements of financial turmoil. Despite the keen interest shown by scholars and practitioners and on-going research on the characteristics of risk management activities, empirical studies, in respect of value implication of internal control and ERM, have been limited to financial institutions in Europe and America only. There has been a woeful lack of evidence depicting the benefits of internal control and ERM for non-financial organizations in Asia and other developing countries. Additionally, although investigations about internal control or ERM are substantial, the real relationship between these two concepts has not been rigorously demonstrated. In this context, this research was designed to explore the relationships between internal control and ERM based on the concepts and relative impacts on firm performance in China. The implication of findings suggests that internal control may mitigate risks for firms which have established the sound framework. However, the effect of internal control on risk management is insufficient and the improvement in firm performance is limited. Due to the inverse relationship noted between ERM and firm performance, it is deduced that embracing ERM cannot add value to Chinese firms in the current situation. Since internal control is significantly associated with ERM, it is concluded that ERM is a mediator that can act on the

association between internal control and firm performance. The results of this research provided key insights for scholars and practitioners who can use this as guidance in establishing efficient internal control and ERM frameworks besides enhancing firm performance by managing enterprise risks effectively.

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