



**UNIVERSITI PUTRA MALAYSIA**

***IMPACT OF BOARD BUSYNESS, DIRECTORS' EDUCATION AND  
EXPERIENCE ON FIRM EFFICIENCY IN SELECTED ASIA-PACIFIC  
COUNTRIES***

**TAN KHAR MANG**

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COUNTRIES**

By

**TAN KHAR MANG**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in  
Fulfillment of the Requirements for the Degree of Doctor of Philosophy**

**March 2018**

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**DEDICATION**

**TO MY BELOVED FAMILY**

*Leow Kwoy Pen*

*Tan Heng Yoong*

*Tan Khar Yin*

*Tan Wing Seong*

*Tan Wing Hang*

**TO MY TREASURED BEST FRIEND**

*Ng Wai Loon*

...Thank you for unconditional love and support...



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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Doctor of Philosophy

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**TAN KHAR MANG**

**March 2018**

**Chairman: Fakarudin Bin Kamarudin, PhD**  
**Faculty: Economics and Management**

The primary objective of firms is to maximize profit in sustaining the market competitiveness, which is based to the microeconomic theory of firms. To attain the goal of profit maximization, technical efficiency (TE) of firms is significantly important. Based on the concept of technical efficiency, the production of outputs from the inputs relates to managerial factors of firms. To date, previous studies on firm efficiency are dominated by the determinants of firm-specific characteristics and macroeconomic factors. Therefore, past studies overlook the impact of firms' managerial factors; especially board busyness on firm efficiency. Board busyness is referred to the busyness level of boards of directors (BOD) among firms. Consequently, the study first aims to extend past studies by examining the relationship between board busyness and firm efficiency in the selected developed and developing countries of the Asia-Pacific (AP) region, a leader of world economic growth. Moreover, the extant literature on board busyness has pointed to a lack of clarification on the long-debated impact of board busyness towards firms. To explain the conflicting impact of board busyness, the study next aims to investigate the moderating impact of directors' education and experience on the relationship between board busyness and firm efficiency in the selected developed and developing AP countries.

The analysis of the study comprises two main stages. In the first stage, Data Envelopment Analysis (DEA) method via production approach is adopted to measure the TE scores of firms. The study discovers that the firms in all selected AP countries are not operating at a relatively optimal scale of efficiency, even though these firms have been managerially efficient to exploit their resources fully during 2009 to 2015. Furthermore, the study discovers that the TE level of the firms in selected developed AP countries is significantly higher compared to the firms in selected developing AP countries, on average.

In the second stage, Generalized Least Square (GLS) panel regression analysis based on fixed effect method (FEM) is performed to examine the proposed relationships in relation to directors' education, directors' experience, board busyness and firm efficiency. Overall, the empirical findings reveal that the board busyness significantly impacts firm efficiency in all selected AP countries. In the case of directors with higher educational level, the board busyness (i.e. based on median number of external directorships) is significantly unfavourable to firm efficiency. However, in the case of directors with greater experience level (i.e. longer board tenure), board busyness (i.e. based on rule of thumb of three external directorships) is significantly favourable to firm efficiency.

The findings are parallel to the firms in selected developed AP countries, where board busyness (i.e. based on median number and rule of thumb three external directorships) significantly impacts firm efficiency. In the matter of directors with higher educational level, board busyness (i.e. based on mean number and rule of thumb of three external directorships) is significantly favourable to firm efficiency. Nevertheless, in the matter of directors with greater experience level (i.e. longer board tenure and greater number of past directorships), board busyness (i.e. based on median number and rule of thumb of three external directorships) is significantly unfavourable to firm efficiency. Likewise in selected developing AP countries, the board busyness (i.e. based on mean number of external directorships) significantly impacts; reduces firm efficiency. Yet, the empirical findings fail to show any significant moderating impact of directors' education and experience towards the board busyness-firm efficiency relationship.

Overall, the study contributes to the firm management for the formulation and implementation of new strategies in improving usage of firms' resources and to become technically efficient in achieving the goal of profit maximization. Moreover, the study contributes to the policy-makers as the inputs to improve current corporate governance policies. Next, the study contributes to potential investors in making informed investment decision. The study also contributes to the academicians and practitioners in providing informative knowledge and gaps filling on existing finance and efficiency literature.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Doktor Falsafah

**KESAN KESIBUKAN LEMBAGA PENGARAH, PENDIDIKAN DAN  
PENGALAMAN PENGARAH TERHADAP KECEKAPAN FIRMA DALAM  
NEGARA ASIA-PASIFIK YANG TERPILIH**

Oleh

**TAN KHAR MANG**

**Mac 2018**

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**Fakulti: Ekonomi dan Pengurusan**

Objektif utama firma adalah memaksimumkan keuntungan untuk mengekalkan persaingan pasaran berdasarkan teori mikroekonomiks firma. Untuk mencapai maklumat maksimum keuntungan, kecekapan teknikal firma adalah sangat penting. Berdasarkan konsep kecekapan firma, pengeluaran output daripada input berkaitan dengan faktor pengurusan firma. Sehingga kini, kajian yang dijalankan sebelum ini menekankan kesan karakteristik khusus firma dan faktor makroekonomiks. Oleh itu, kajian yang dijalankan sebelum ini terlepas perhatian atas kesan faktor pengurusan firma, terutamanya kesibukan lembaga pengarah atas kecekapan. Kesibukan lembaga pengarah bermaksud tahap kesibukan lembaga pengarah antara firma. Oleh itu, kajian ini pertamanya bermatlamat untuk melanjutkan kajian lepas dengan menguji hubungan antara kesibukan lembaga pengarah dan kecekapan firma dalam negara maju dan sedang membangun yang terpilih dari rantau Asia-Pasifik, sebagai ketua perkembangan ekonomi dunia. Tambahan pula, kajian berkaitan dengan kesibukan lembaga pengarah yang telah dijalankan menekankan bahawa kesan kesibukan lembaga pengarah telah lama dibahaskan dan tidak jelas. Untuk menerangkan kesan kesibukan lembaga pengarah yang konflik, kajian ini berikutnya bermatlamat untuk menguji kesan sederhana pendidikan dan pengalaman pengarah atas hubungan antara kesibukan lembaga pengarah dan kecekapan firma dalam negara maju dan sedang membangun Asia-Pasifik yang terpilih.

Analisis kajian ini terdiri daripada dua peringkat utama. Dalam peringkat pertama, kaedah Analisis Pengumpulan Data (DEA) melalui pendekatan pengeluaran digunakan untuk mengukar skor kecekapan teknikal firma. Kajian ini mendapati bahawa firma dalam semua negara Asia-Pasifik yang terpilih tidak beroperasi atas skala kecekapan yang optimal, walaupun mereka beroperasi atas pengurusan kecekapan yang optimal dalam penggunaan sumber mereka dengan sepenuhnya dalam tempoh tahun 2009 hingga 2015. Di samping itu, kajian ini menjumpai bahawa kecekapan teknikal firma dalam negara maju Asia-Pasifik yang terpilih adalah lebih tinggi berbanding dengan negara sedang membangun Asia-Pasifik yang terpilih, secara purata.

Dalam peringkat kedua, “Generalized Least Square” Analisis Regresi Panel melalui Model Kesan Tetap (FEM) digunakan untuk menguji hubungan-hubungan dicadangkan oleh kajian ini yang berkaitan dengan pendidikan pengarah, pengalaman pengarah, kesibukan lembaga pengarah dan kecekapan firma. Secara keseluruhannya, penemuan kajian menunjukkan bahawa kesibukan lembaga pengarah (i.e. berdasarkan median nombor pengarah luaran) mengimpakkan kecekapan firma dengan ketara dalam semua negara Asia-Pasifik yang terpilih. Seandainya pengarah memiliki pendidikan yang tinggi, kesibukan lembaga pengarah adalah berbahaya atas kecekapan firma dengan ketara. Akan tetapi, seandainya pengarah memiliki pengalaman yang tinggi (i.e. tempoh pengarah yang lebih lama), kesibukan lembaga pengarah (i.e. berdasarkan peraturan tiga pengarah luaran) adalah bermanfaat atas kecekapan firma dengan ketara.

Penemuan kajian ini adalah sama dengan firma dalam negara maju Asia-Pasifik yang terpilih, di mana kesibukan lembaga pengarah (i.e. berdasarkan median nombor dan peraturan tiga pengarah luaran) mengimpakkan kecekapan firma dengan ketara. Sekiranya pengarah memiliki pendidikan yang tinggi, kesibukan lembaga pengarah (i.e. berdasarkan purata nombor dan peraturan tiga pengarah luaran) adalah bermanfaat atas kecekapan firma dengan ketara. Akan tetapi, sekiranya pengarah memiliki pengalaman yang tinggi (i.e. tempoh pengarah yang lebih lama dan nombor pengarah luar lepas yang lebih banyak), kesibukan lembaga pengarah (i.e. berdasarkan peraturan tiga pengarah luaran) adalah berbahaya atas kecekapan firma dengan ketara. Begitu juga dalam negara sedang membangun Asia-Pasifik yang terpilih, kesibukan lembaga pengarah (i.e. berdasarkan nombor purata dan peraturan tiga pengarah luaran) juga mengimpakkan; mengurangkan kecekapan firma dengan ketara. Namun, penemuan kajian tidak menunjukkan kesan serdehana pendidikan pengarah yang penting atas hubungan kesibukan lembaga pengarah-kecekapan firma.

Secara keseluruhannya, kajian ini menyumbang kepada pengurusan firma atas formulasi dan pelaksanaan strategi baru dalam meningkatkan penggunaan sumber firma dan menjadi cekap secara teknikal untuk mencapai matlamat keuntungan maximum. Tambahan pula, kajian ini menyumbang kepada pembuat polisi sebagai input untuk memajukan polisi tadbir urus korporat semasa. Seterusnya, kajian ini menyumbang kepada pelabur potensi dalam membuat keputusan pelaburan yang bijak. Kajian ini juga menyumbang kepada pihak akademik dan pelatih dalam menyediakan pengetahuan yang bermaklumat and pengisian jurang atas kesusasteraan kewangan and kecekapan yang telah wujud.



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I certify that a Thesis Examination Committee has met on 30 March 2018 to conduct the final examination of Tan Khar Mang on her thesis entitled "Impact of Board Busyness, Directors' Education and Experience on Firm Efficiency in Selected Asia-Pacific Countries" in accordance with the Universities and University Colleges Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Doctor of Philosophy.

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## LIST OF ABBREVIATIONS

AMEX	American Exchange
AP	Asia-Pacific
ASA	Australian Shareholders' Association
ASX	Australian Securities Exchange
BBDUM	Board Busyness in Dummy
BBDUM1	Board Busyness in Dummy based on the Mean Number of External Directorships
BBDUM1LNEDU	Moderation between Board Busyness Based on Mean Directorships and Mean Directors' Educational Level
BBDUM1LNEXP1	Moderation between Board Busyness Based on Mean Directorships and Directors' Experience Based on Average Board Tenure
BBDUM1LNEXP2	Moderation between Board Busyness Based on Mean Directorships and Directors' Experience Based on Mean Number of Former Listed Directorships
BBDUM2	Board Busyness in Dummy based on the Median Number of External Directorships
BBDUM2LNEDU	Moderation between Board Busyness Based on Median Directorships and Mean Directors' Educational Level
BBDUM2LNEXP1	Moderation between Board Busyness Based on Median Directorships and Directors' Experience Based on Average Board Tenure
BBDUM2LNEXP2	Moderation between Board Busyness Based on Median Directorships and Directors' Experience Based on Mean Number of Former Listed Directorships
BBDUM3	Board Busyness in Dummy based Rule of Thumb of Three External Directorships.
BBDUM3LNEDU	Moderation between Board Busyness Based on Rule of Thumb Three Directorships and Mean Directors' Educational Level
BBDUM3LNEXP1	Moderation between Board Busyness Based on Rule of Thumb Three Directorships and Directors' Experience Based on Average Board Tenure
BBDUM3LNEXP2	Moderation between Board Busyness Based on Rule of Thumb Three Directorships and Directors' Experience Based on Mean Number of Former Listed Directorships
BHC	Bank Holding Company
BOD	Board of Directors
BP	Breusch-Pagan
CEOs	Chief Executive Officers
CPI	Consumer Price Index
CRS	Constant Returns to Scale
DEA	Data Envelopment Analysis
DFA	Distribution Free Approach
DMU	Decision-Making Unit

DRS	Decreasing Return to Scale
ERP	Enterprise Resource Planning
FDH	Free Disposal Hull
FEM	Fixed Effect Model
GDP	Gross Domestic Product
GLS	Generalized Least Square
HKEX	Hong Kong Exchange
HSI	Hang Seng Indices
IC	Intellectual Capital
ICTs	Information and Communications Technologies
IMF	International Monetary Fund
IPO	Initial Public Offering
IRS	Increasing Return to Scale
LM	Lagrangian-Multiplier
LNΒETA	Natural Logarithm of Beta
LNDEBTS	Natural Logarithm of Total Debts
LNEDU	Natural Logarithm of Mean Directors' Educational Level
LNEXP	Natural Logarithm of Mean Directors' Experience
LNEXP1	Natural Logarithm of Directors' Experience based on Average Board Tenure (in years)
LNEXP2	Natural Logarithm of Directors' Experience based on Mean Number of Former Listed Directorships on Board
LNGDP	Natural Logarithm of Real Gross Domestic Products Growth
LNINFL	Natural Logarithm of Inflation Rate
LNROA	Natural Logarithm of Return on Assets
LNSALES	Natural Logarithm of One Year Sales Growth
LNTA	Natural Logarithm of Total Assets
LNTE	Natural Logarithm of Technical Efficiency
M&A	Merger and Acquisition
MBA	Master of Business Administration
NRIS	Non-Increasing to Scale
NYSE	New York Stock Exchange
OLS	Ordinary Least Square
OTE	Overall Technical Efficiency
OTIE	Overall Technical Inefficiency
PhD	Doctor of Philosophy
PRF	Population Regression Function
PTE	Pure Technical Efficiency
PTIE	Pure Technical Inefficiency
R&D	Research and Development
REM	Random Effect Model
ROA	Return on Assets
ROE	Return on Equity
ROS	Return on Sales
S&P	Standard & Poor
SE	Scale Efficiency
SFA	Stochastic Frontier Analysis
SGX	Singapore Exchange

SIE	Scale Inefficiency
SMES	Small and Medium-Sized Enterprises
SOX	Sarbanes-Oxley
SPH	Singapore Press Holdings
SRF	Sample Regression Function
STI	Straits Times Index
TE	Technical Efficiency
TFA	Thick Frontier Approach
UK	United Kingdom
US	United States
USD	US Dollar
USD (mil)	US Dollar in Million
VIFs	Variance Inflation Factors
VRS	Variable Returns to Scale
WDI	World Development Indicators
WEO	World Economic Outlook

## CHAPTER 1

### INTRODUCTION

#### 1.1 Introduction

This chapter incorporates the background of the study, problem statement, research objectives, research questions and significance of the study. The background of the study firstly introduces the concept and importance of the (1) board of directors (BOD); (2) multiple directorships and board busyness, i.e. as the social capital; and (3) directors' education and experience, i.e. as the human capital. Secondly, restrictions on multiple directorships, education and experience of directors in Asia-Pacific (AP) countries are discussed. Thirdly, the concept and importance of the firm efficiency are also discussed. The background of the study then leads to the problem statement, research objectives, research questions and contributions of the study.

#### 1.2 Background of the Study

BOD as the elected representative of shareholders is the primary steward and guardian of a publicly traded or listed firm. Therefore, the establishment of BOD is the basic requirement for the listed firms in all Asia countries (OECD, 2003). The two main functions of the boards are first, advising the firm management teams; and second, monitoring on behalf of shareholders, especially on the implementation of corporate governance system such as risk management and internal control system that incorporates approving appropriate management decisions and setting the guidelines of company strategic (Mace, 1971). Therefore, an effective, well-functioned and informed BOD often serve as an important internal corporate governance mechanism of firms in reducing agency costs between controlling insiders and external investors, in order to improve firm performance, as addressed by Fama and Jensen (1983a).

In addition, BOD serves as a source of intellectual capital (IC) of a company for effective monitoring and advising role of directors. IC is defined as an intangible source for creating a company value (Berezinets, Garanina and Ilina, 2016). Particularly, IC of BOD consists of two major components: first, social capital (external) that incorporates social relationships, networking opportunities, multiple directorships or board interlocks of directors. The second component is human capital (internal) that comprises directors' knowledge, education and experience (Hillman and Dalziel, 2003; Cashman, Gillan and Whitby, 2013; Berezinets et al., 2016). Both social and human capital of boards are the significant elements for effective boards' monitoring, great firm performance as well as high corporate disclosure quality (Reeb and Zhao, 2013; Chen, Hsu and Chang, 2016).

Corporate scandals during global financial crisis in 2007/2008 such as Lehman Brothers' bankruptcy have again shed light on the importance of BOD as internal corporate governance mechanism. This is because company bankruptcy during the 2007/2008

financial crisis occurred mostly due to the weak corporate governance systems by the BOD. As noted by OECD (2009), the BOD of those collapsed companies during the crisis were blamed and criticized due to the weaknesses and failures of corporate governance arrangements.

As BOD plays crucial role on firm governance practice, the corporate governance of best practices worldwide advocates the characteristics of the board and director. This is because the effectiveness of a board's monitoring depends on the board and director characteristics. For example in Malaysia, directors' age limitation for the firms directors is being specified under the Malaysia corporate law (i.e. Section 129 of Company Act, 1965) to ensure the board effectiveness (Law of Malaysia, 2006). Moreover, the directors' independence is highlighted by the Malaysian corporate governance policy to safeguard the functioning of the board (Council of Institutional Investors, 2004).

In the past empirical studies, board composition in term of board independence and board size are among the relatively traditional well-known attributes of board characteristics (Cashman et al., 2013). For example, Conyon and Peck (1998) discovered that the board size leads to significant impact on firm performance, where larger board size is detrimental to firm performance. Moreover, Hossain, Prevost and Rao (2001) revealed that board composition particularly with higher percentage of outside directors on the board is significantly beneficial to firm performance.

Nevertheless, for the past decade, there has been growing attention on multiple directorships as an essential board characteristics. This is because multiple directorships are apparently unfavorable due to the issue of busyness (Ahn, Jiraporn and Kim, 2010). Based on busyness hypotheses, individuals such as directors would be busy to execute their duties by holding directorships concurrently, owing to the fact that each individual has limited time and energy (Fich and Shivdasani, 2006).

In general, multiple directorship is defined as more than one additional or external directorships (or external board appointments). A director with multiple directorships is therefore defined as the director of an organization who holds more than one additional directorships or board appointments in other organization concurrently (Mizruchi, 1996). Owing to the fact that directors with multiple directorships would be too busy to execute their duty accurately and effectively, the terms "busy director" and "directors with multiple directorships" are often used interchangeably, as in the study of Ferris, Jagannathan and Pritchard (2003), Cashman, Gillan and Jun (2012) and Benson, Davidson, Davidson and Wang (2015).

As the boards' decisions are not carried out by individual directors; yet overall boards, the examination on directors' busyness (or multiple directorships) is not sufficient. Therefore, recent attention has been called on board busyness. Board busyness is referred to the busyness level of BOD among firms, which is determined based on the number of busy directors in the board (Ferris et al., 2003). Following Berezinets et al. (2016), the multiple directorships and board busyness are incorporated as the significant social capital of BOD,.



On the other hand, the education and experience of directors are considered as the essential human capital of BOD (Berezinets et al., 2016). The directors' education and experience influence the cognitive ability level of a director as drawn on upper-echelons theory (Hambrick and Mason, 1984; Hambrick, 2007). In particular, the directors with higher education commonly have higher knowledge, personal skills, inter-organizational relationships and self-confidence that could enrich the accessibility to outside information, ideas generation, as well as the creativity and innovation. While the directors with higher experience generally own in-depth industry knowledge, familiarity and team working relationships that could enhance the ability to solve problems, face challenges, develop firm strategies, advice and monitor the boards (Hambrick and Mason, 1984; Hambrick, 2007; Collins, 1971; Ancona and Caldwell, 1992; Shropshire, 2010; Kaczmarek, Kimino and Pye, 2014; Redor, 2015).

As a result, the directors' education and experience could assist boards in evaluating the information accuracy that leads to greater board effectiveness in monitoring and advising (Shiah-Hou and Cheng, 2012). Therefore, the directors' education and experience are generally significant and beneficial to the corporate financial performance, especially in today's global market place (Council of Institutional Investors, 2004).

### **1.2.1 Restrictions on Multiple Directorships, Education and Experience of Directors in Asia-Pacific Countries**

To enhance the corporate governance, the ever-increasing regulations relating to the multiple directorships have been imposed on the directors of firms worldwide. For instance, The National Association of Corporate Directors (1996) highlights that those full-time directors such as Chief Executive Officers (CEOs) should not hold more than three directorships in United States (US). Full time directors are directors who are required to hold full-time managerial positions in a firm (Kiel and Nicholson, 2006). The Council of Institutional Investors (2004) is firmer, suggesting that the CEOs should serve only one board of other organization, while full-time directors should not serve more than two board of other organizations. In United Kingdom (UK), a full time director should not hold more than one non-executive directorship to ensure the directors have enough time to fulfil their responsibilities in accordance to UK Corporate Governance Code (Financial Reporting Council, 2016).

Likewise, the restrictions on directorships limitation have also been undertaken in the AP countries. In Australia context, the directors should not hold more than five external directorships. As highlighted by the Australian Shareholders' Association (ASA), the directors with more than five external directorships are detrimental to the companies' shareholders (Kiel and Nicholson, 2006). Moreover, in the context of Singapore, the Singapore Corporate Governance Code (2012) provides own directorships guidelines to the nominating committee, in order to ensure the duties of directors with multiple directorships are adequately executed (Monetary Authority of Singapore, 2010). Similarly, Code on Corporate Governance in Hong Kong stresses on the multiple directorships by directors in ensuring sufficient time and attention on their responsibilities in Hong Kong (Hong Kong Exchanges & Clearing, 2016).

As compared to most of the developed countries such as United States of America., the recommendations on external directorships' limitation in developing countries such as Malaysia and India are much lenient. The reasons could be first, the constraints on the supply of managerial labor (i.e. qualified directors) and therefore, allow the directors to hold the directorships with loose limitation. Second, the institutional differences in the developing countries such as weak legal protection with high information asymmetry environment, underdeveloped capital market coupled with more concentrated and significant stock ownership either by family or government permit the directors to hold higher limits on multiple directorships (Sarkar and Sarkar, 2009; Lei and Deng, 2014; Yatim, Iskandar and Nga, 2014). In Indian context, the directors are permitted to hold a relatively high with maximum of twenty additional directorship in listed companies for other directors; for managing directors, they are allowed to hold a maximum of ten directorships under Section 275 Companies Act of 1956 (CII, 1998). Yet, in year 2009, the maximum number of directorships by managing directors is slightly reduced up to only seven by the India Corporate Governance Voluntary Guidelines (Ministry of Corporate Affairs Government of India, 2009).

In China, the maximum concurrent post of an independent director is recommended to be up to five, to ensure effective performance with sufficient time and energy by referring to China's Securities Regulatory Commission (China Securities Regulatory Commission (CSRC), 2001). In Malaysian context, the number of directorships allowed to be hold by each director is restricted only up to five in listed firms starting year 2015 (Bursa Malaysia, 2015). However, prior to that, the number of directorships for each director was restricted to maximum ten in public listed companies and fifteen in unlisted companies, based on the Listing Requirements of Bursa Malaysia Securities Berhad (OECD, 2003). In regards to Indonesia, Philippines and Thailand, corporate governance codes of these countries do not specifically impose restriction on the maximum number of external directorships; and merely emphasize that the directors are required to ensure their time and attention are sufficient, in order to safeguard their effectiveness when comes to multiple directorships issue (Lee and Lee, 2014).

Unlike multiple directorships, no specific requirement is being stated on the education and experience level of the directors on board under the corporate laws and corporate governance policies worldwide. Following Singapore Corporate Governance Code (2012), Bursa Malaysia (2015) as well as Hong Kong Exchanges and Clearing (2016), the boards are merely encouraged to have the directors with a balance of skills and experience; without explicitly stipulating the education and experience level of directors.

### **1.2.2 Firm Efficiency**

In addition to the corporate governance, a great deal of attention regarding firm performance has been emphasized on firm efficiency. Solow (1957) states the importance of efficiency, where the efficiency growth mostly lead to high improvement in the standard of living (i.e. proxy by the increase in real per capital output). For firms, the efficiency is essential in attaining the goal of profit maximization. In line with the microeconomic theory of the firms, the firm's primary objective is to maximize profit

(Cummins and Weiss, 2013, p. 795-861). As addressed by Primeaux and Stieber (1994), profit maximization is achieved when the firm operates whereby the maximum amount of outputs could be produced from a given set of inputs. In simple words, the firm must be efficient to maximize the firm's profit.

For firms, the efficiency is commonly indicated by the concept of TE or managerial efficiency. While the efficiency of a bank is primarily emphasized on the concept of price in terms of allocative, i.e. cost and profit efficiency. Additionally, the inputs and outputs employed in measuring efficiency differ between firms and banks (financial institutions).

In general, TE of a firm refers to the ability of a firm in generating the maximum outputs from a given combination of inputs (i.e. factors of production) as on the efficient frontier, conditional on existing technology (Cummins and Weiss, 2013, p. 795-861). Thus, a technically efficient firm raises firms' output without engaging further inputs. Furthermore, TE also reveals that firms have the ability of reducing the inputs to produce the same amount of outputs as on the efficient frontier, conditional on existing technology (Cummins and Weiss, 2013, p. 795-861). Hence, a technically efficient firm also reduces the firms' input without decreasing the outputs. Moreover, the production of outputs from the inputs is much related to managerial factors of firms (Isik and Hassan, 2002). TE is therefore also known as managerial efficiency.

TE of a firm [i.e. decision-making unit (DMU)] is decomposed into two components, which are pure technical efficiency (PTE) and scale efficiency (SE), whereby DMUs could incorporate firms, institutions or banks. PTE is the TE measurement that is generally free from the effect of scale (or namely size of operation) efficiency. PTE merely reveals the managerial efficiency; while SE represents the scale or size of the operation efficiency (Sufian, 2004; Mitra Debnath and Sebastian, 2014; Kabir Hassan, Sanchez and Ngene, 2012; Kundi and Sharma, 2016).

The decomposition of TE into PTE and SE allows one to determine the sources of efficiency. The sources of efficiency or inefficiency could be identified by comparing the TE score (also known as Constant Returns to Scale, CRS TE) and PTE score (also known as Variable Returns to Scale Technical Efficiency, VRS TE) of a firm (i.e. DMU). If the TE score of a firm is equivalent to PTE score, the source of efficiency is the SE; and the factor of inefficiency is therefore pure technical inefficiency (PTIE) or managerial inefficiency. On the other hand, if the TE score of a firm is different from the PTE score, the source of efficiency is PTE; and the factor of inefficiency is thus scale inefficiency (SIE). In simple words, the SIE could be indicated by the difference between TE and PTE score (Coelli, Rao, and Battese, 1998).

To date, empirical studies on efficiency have emphasized on the performance of banks and financial institutions (Isik and Hassan, 2002; Sufian, 2004; Sufian, 2009; Sufian and Shah Habibullah, 2010; Sufian, 2011). More specifically, bank efficiency is mainly related to allocative efficiency (i.e. cost and profit efficiency) as in the previous literature (Kamarudin, Nassir, Yahya, Said and Nordin, 2014; Alhassan, 2015). Some studies have looked into bank efficiency of conventional and Islamic banks (Hisham Yahya,

Muhammad and Razak Abdul Hadi, 2012; Ahmad and Rahim Abdul Rahman, 2012; Ahmad and Luo, 2010; Ismail, Shabri Abd. Majid and Rahim, 2013).

However, in comparison to bank efficiency, studies regarding the TE of firms (i.e. non-banks) with the impact of board busyness are still under-explored. In recent years, previous studies on firm efficiency of certain industries (e.g. textile, manufacturing, insurance, technology, etc.) have been conducted mostly in single developed or developing country such as UK, Spanish, Korea, Singapore, India, Thailand and Malaysia (Bhandari and Ray, 2012; Charoenrat, Harvie and Amornkitvikai, 2013; Wong, Soh, Chong and Karia, 2015; Manzur Quader and Dietrich, 2014; De Jorge-Moreno and Rojas Carrasco, 2015; Park and Park, 2015; See, 2015). Furthermore, limited studies have examined on firm efficiency with the impact of board busyness, specifically by employing the sample of cross-country (Jarboui, Pascal and Younes, 2013; Kinda, Plane and Veganzones-Varoudakis, 2014).

### 1.3 Problem Statement

Based on the microeconomic theory of firms, profit maximization is the primary goal of firms. Generally, the firms' objective of profit maximization is attained only when firms are efficient (Primeaux and Stieber, 1994). In other words, without firm efficiency, the firms could not achieve the main goal of maximizing profit and sustaining the market competitiveness, which in turn essential to firms' well-being. Therefore, there is a need to focus on firm efficiency as the role of firm performance.

It is significant on firms for being technically efficient to fully utilize the inputs without any wastage and produce maximum outputs from time to time. However, the issue on underperformance of firm efficiency is prevalent over the years; for example, in the few region of AP including Southeast Asia and Northeast Asia (Kinda et al., 2014; See, 2015). Furthermore, the efficiency level of firms in developed and developing countries might be vary due to the institutional differences (Jarboui et al., 2013). The institutional differences are in term of investment level on infrastructure and facilities, market for corporate control, information asymmetry environment, capital market as well as economic development. Motivated by the few reasons, including (1) the importance of AP to whole economy as a leader of world economy growth (Lee and Heshmati (Eds.), 2009), (2) the composition of developed and developing countries in AP provides appropriate laboratory in examining level of firm efficiency, and (3) essentially, the potential issue on underperformance of firm efficiency, the study therefore emphasize the accessment of firm efficiency in developed and developing AP countries.

The board busyness that represents the social capital (external) has become the most important source of IC for effective board monitoring and advising (Cashman et al., 2013; Berezinets et al., 2016). Additionally, the restrictions on multiple directorships imposed to improve corporate governance (e.g. Financial Reporting Council, 2016; Council of Institutional Investors, 2004; Ministry of Corporate Affairs Government of India, 2009) have successfully called for the attention on board busyness, owing to the fact that directors would be too busy to monitor effectively if they hold multiple directorships.

Nevertheless, the restrictions on multiple directorships in most developing countries are much lenient compared to developed countries that commonly serve three multiple directorships as the rule of thumb. This is because institutionally different from developed countries, the developing countries are characterized by constraints on the supply of managerial labor (i.e. experts and talents), weak legal protection, underdeveloped capital markets, more concentrated stock ownership and high information asymmetry environment. Consequently, the overcommitted issue of board busyness for firms in developing countries could be potentially more severe from those in developed countries. The inconsistent recommended restrictions on multiple directorships therefore serves as another reason to motivate the study to emphasize on board busyness impact in developed and developing AP countries.

Given that the production of outputs from the inputs are related to a firm's managerial factors based on technical efficiency concept (Isik and Hassan, 2002), the board busyness could potentially likewise yield impact on firm efficiency significantly. Further, the impact of board busyness on firm efficiency could be vary between developed and developing countries due to the different institutional features. Considering the fact that the past scholars have overlooked the investigation on board busyness impact within the firm efficiency framework, the study therefore is an extension of past study by first to relate board busyness and the firm efficiency in the selected developed and developing AP countries.

Taken collectively, is board busyness significantly related to the firm efficiency in the selected developed and developing Asia-Pacific countries? This is the first issue that is examined in the study. Therefore, first objective of the study is to examine the relationship between board busyness and firm efficiency in the selected developed and developing Asia-Pacific countries.

Apart from board busyness as the social capital (external), knowledge, experience and skills as human capital (internal) is another significant IC element of the BOD for effective monitoring and advising (Berezinets et al., 2016). Nevertheless, in the corporate world, coherent and specific requirement is not stated on the education and experience level of the firm's directors under any corporate laws and corporate governance policies, even though the corporate governance policies recommends to have well-balanced BOD. In this sense, directors' education and experience are not clearly defined. Consequently, much attention has been drawn in the study due to lack of corporate governance code and policies on the directors' education and experience in boosting the directors' effectiveness. Furthermore, the long-debated impact of board busyness therefore provides a contemporary research path for the study to incorporate the moderating impact of directors' education and experience to explain the relationship between board busyness and firm efficiency. Similar to Kaczmarek et al. (2014), board diversity including directors' education and experience has become a significant pre-condition to establish a well-functioning board, particularly on busy boards. Consistently, the study therefore considers directors' education and experience factors as moderators. The study thus attempts to incorporate the moderating impact of directors' education and experience towards the board busyness-firm efficiency relationship in the selected developed and developing AP countries.

Therefore, is directors' education significantly moderated the board busyness-firm efficiency relationship in the selected developed and developing Asia-Pacific countries respectively? This is the second issue that is investigated in the study. The second objective of the study is to investigate the moderating impact of directors' education on the relationship between board busyness and firm efficiency in the selected developed and developing Asia-Pacific countries. Furthermore, is directors' experience significantly moderated the board busyness-firm efficiency relationship in the selected developed and developing Asia-Pacific countries respectively? This is the third issue that is investigated in the study. The third objective of the study is to investigate the moderating impact of directors' experience on the relationship between board busyness and firm efficiency in the selected developed and developing Asia-Pacific countries.

#### **1.4 Research Objectives of the Study**

There are three main objectives of the study. The research objectives are,

- i. To examine the relationship between board busyness and firm efficiency in the selected developed and developing Asia-Pacific countries.
- ii. To investigate the moderating impact of directors' education on the relationship between board busyness and firm efficiency in the selected developed and developing Asia-Pacific countries.
- iii. To investigate the moderating impact of directors' experience on the relationship between board busyness and firm efficiency in the selected developed and developing Asia-Pacific countries.

#### **1.5 Research Questions of the Study**

- i. Is board busyness significantly related to the firm efficiency in the selected developed and developing Asia-Pacific countries?
- ii. Is directors' education significantly moderated the relationship between board busyness and firm efficiency in the selected developed and developing Asia-Pacific countries?
- iii. Is directors' experience significantly moderated the relationship between board busyness and firm efficiency in the selected developed and developing Asia-Pacific countries?

#### **1.6 Contributions of the Study**

Overall, the study expectantly contributes to firm management, policy-makers, potential investors, academicians and practitioners, through the understanding regarding the impact of board busyness along with moderation of directors' education and experience on firm efficiency. First, the study could contribute to firm management as guidance on the formulation and implementation of new strategies in improving usage of firms' resources. Further, the study could assist the firm management to become technically efficient in attaining the primary firm goal of profit maximization. For instance, in the

case where the board busyness significantly reduces (or improves) firm efficiency, the firm management should avoid (or encourage) to have busy boards in sustaining and improving firm efficiency. Additionally, in the case where directors' education and experience provide significant positive (or negative) moderating impact, the firm management especially in the busy boards should encourage (or prevent) the directors on board from having high (or low) education and experience to be technically efficient. Taken collectively, board busyness, directors' education and experience could serve as essential criteria of establishing well-functioning boards; thereby could deal with the potential underperformance of firm efficiency issue in AP countries.

Essentially, the study could contribute to policymakers as the inputs to improve current corporate governance policies. For instance, on the belief that the board busyness reduces firm efficiency especially in developing countries, the policymakers should review and enhance current less lenient restrictions on multiple directorships in ensuring the well-functioning boards; which in turn improving the relatively low level of firm efficiency in developing AP countries. In addition, on the belief that directors' education and experience provide significant moderation impact, the policymakers should strengthen the current requirement by imposing coherent and specific criteria on the education and experience level of the directors especially on those firms with the busy boards in ensuring well-functioning boards; thereby could solve the potential underperformance of firm efficiency issue in AP countries.

Next, the study could contribute to potential investors in making informed investment decision. The investors could serve the findings of the study as credible signal and guidance on their investment decision whether or not to obtain more equity of particular firms. For example, in the case where board busyness significantly reduce (or enhance) firm efficiency, the investors could serve board busyness as unfavorable (or favorable) signal on quality of firms; thereby lead (or stop) investors to get more equity of firms. Furthermore, on the belief that directors' education and experience provide significant positive (or negative) moderating impact, the investors could refer directors' education and experience as favorable (or unfavorable) signal on quality of firms; thereby lead (or stop) investors to get more equity of firms.

In the following, the study could contribute to academicians and practitioners in providing informative knowledge and gaps filling on existing finance and efficiency literature in general or for AP. Concerning efficiency literature, a stream of studies on firm efficiency has been conducted only in the context of a single nation. Yet, study on firm efficiency of cross-country context is still underexplored. The study would be therefore significant to fill the gap by examining firm efficiency using a sample of selected developed and developing countries of the AP region; which is an essential leader of world economy growth.

On the other hand, concerning on the finance literature, board busyness is a relatively fresh and new stream of knowledge in finance as compared to other traditional board attributes, such as board independence and board size. Based on Ahn et al. (2010), recent attention has been raised on multiple directorships issue. Besides that, the findings and evidences regarding the impact of board busyness from past empirical studies are

somehow mixed, twofold and inconsistent (Cashman et al., 2013). As mentioned by Adams, Hermalin and Weisbach (2010), the studies on board busyness in the context of comparison across countries are still underexplored. The study would therefore be significant to fill the gap by examining the impact of board busyness using a sample of selected developed and developing AP countries.

Moreover, the study extends prior studies on firm efficiency by incorporating managerial variables, which is board busyness (social capital of boards), since past studies merely examined the firm-specific characteristics and macroeconomic factors as determinants of firm efficiency. Moreover, managerial variable such as board busyness could yield significant effect on TE or managerial efficiency of firms. Meanwhile, the study also extends past studies on board busyness, since the studies merely examined the impact of board busyness generally on firm performance (i.e. from the perspectives of profitability and productivity). Yet, in the framework on the impact of board busyness, few studies have looked specifically into the firm efficiency. Hence, the study would initially include finance and efficiency literature, by investigating the relationship between board busyness and firm efficiency in the selected developed and developing AP countries. In general, the findings would draw clear pictures on the impact of board busyness on firm efficiency in the context of both developed and developing countries with different institutional characteristics. On this basis, the practitioners seeking to improve firm efficiency may consider introducing strategies that encourage (or discourage) directors on boards to hold more multiple directorships; on the belief that board busyness significantly improves (or destroys) firm efficiency.

In addition, the study seeks to examine the moderating impact of directors' education and experience (as human capital of boards) on the long-debated board busyness-firm efficiency relationships. In empirical past studies, the direct impact of directors' education and experience (as the vital feature of board diversity) has been extensively studied. Yet, the moderating impact of directors' education and experience is underexplored by past scholars. The study would therefore rectify the literature gap by treating directors' education and experience as a moderating variable on the board busyness-firm efficiency relationship as stated by Kaczmarek et al. (2014). However, the study is different from Kaczmarek et al. (2014) since the focus of the study is firm efficiency. Therefore, the findings of the study would be significant to enhance the knowledge on the twofold impact of board busyness by emphasizing on directors' education and experience that have been neglected by the corporate law and corporate governance policies. Moreover, the study is significant to enhance past boards' capital literature by considering impact of both social and human capital. Hence, the findings could also contribute the practitioners pursuing to improve firm efficiency may consider proposing initiatives that encourage (or discourage) directors to horn education and experience especially in busy boards; on the belief that directors' education and experience positively (or negatively) moderates the impact of board busyness on firm efficiency.



## 1.7 Scope of the Study

The study examines the impact of board busyness on firm efficiency in the selected developed and developing countries of the AP region. The selected developed AP countries include Australia, Hong Kong and Singapore; while the selected developing AP countries incorporate Malaysia, Indonesia, Thailand and Philippines. The selection of these sample countries is because these countries are major countries of the Pacific region, Northeast Asia region and Southeast Asia region of AP, respectively [The State of Asian and Pacific Cities, 2015; International Monetary Fund (IMF), 2015]. Additionally, the selection of the sample countries from this particular region is because (1) AP region is leading the growth of world economy, (2) AP region comprises a diverse group of countries with varying cultural and social factors, legal system and economic development and (3) AP region comprises both developed and developing countries. This context could be beneficial and relevant to the study as the impact of board busyness could be examined in the heterogeneous national contexts of the same region (Kimber and Lipton, 2005; Cabbage and Brooks, 2012).

The sample data of the study incorporates 700 listed firms from the seven selected countries of the AP region where 100 top listed firms are selected from each country. The selection of sample firms for each country is made from each country's stock market indices. This is because the country stock market indices represent the equity or stock market of the countries, as the indices generally comprise almost three quarter of the market capitalization of the companies with sufficient liquidity and invest ability in the specific countries. For example, S&P/ASX 300 as the Australia stock market index covers approximately 81 per cent of Australian equity market capitalization (S&P Dow Jones Indices, 2016).

Moreover, the sample size of 100 top listed firms from each country is selected due to the following reasons. First, the 100 top firms are those companies with largest equity market capitalization. Therefore, the selection of the 100 top firms is sufficient and relevant to well represent the whole population; thereby, could ensure generalization of findings. Second, given that the data on board busyness must be hand compiled (Sarkar and Sarkar, 2009) and is a time-consuming process, the selection of only 100 top firms is to attain a balance between representation of the data and data collection effort in a given time frame. Third, the selection of the 100 top firms from each country ensures the data set is homogeneous; thereby enhances the accuracy and reliability of data from the perspective of econometric. Forth, the adverse monitoring effect by busy directors is generally severe on top and largest firms, due to greater overcommitted issue and complexity of firm operation (Méndez, Pathan and García, 2015).

Furthermore, only listed firms are selected, as the study mainly concerns on the busyness of BOD. It is notable that the establishment of BOD is the basic requirement for listed firms in all Asia countries (OECD, 2003). In other words, BOD might not be important to exist in non-listed firms. Therefore, to achieve the study objectives, it would be more appropriate to base on the sample of only listed companies. As in most studies on firm efficiency (e.g. Al-Amri, Gattoufi and Al-Muharrami, 2012; Sahoo, 2016), the study is a panel study whereby the data on inputs and outputs, firm-specific and macroeconomic

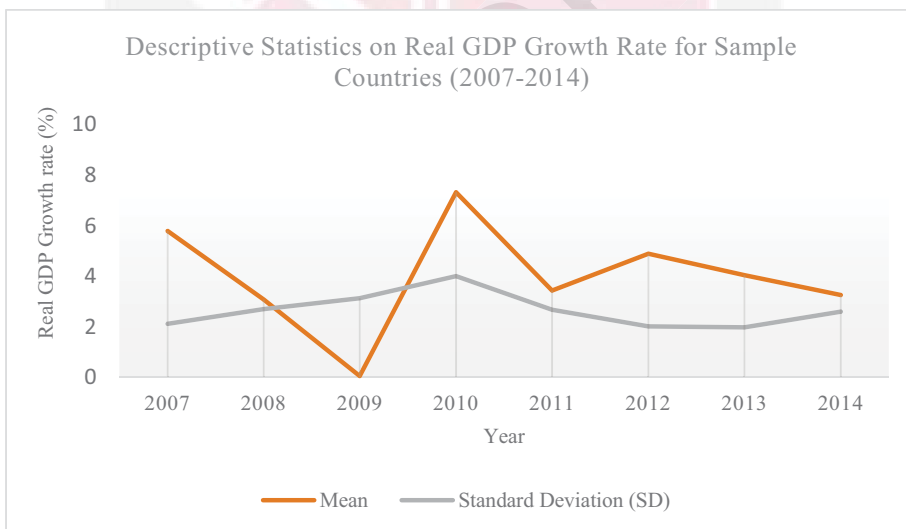
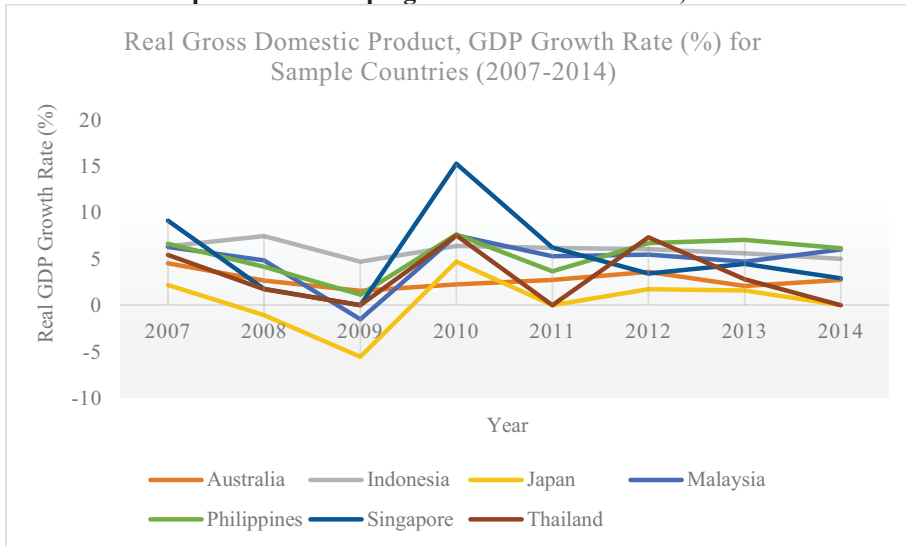
variables are collected from a sample of firms in the selected AP countries throughout the year 2009-2015, which is the post-crisis period.

For board busyness and director-specific data, special practice has been conducted. This is because the information related to boards and directors is constant or stable across years (Cashman et al., 2012). Therefore, in line with past studies such as Fich and Shivdasani (2006), year 2012 is being treated as the proxy season. In simple words, the directorships and board data in year 2012 as benchmark is generalized to the directorships and board data for the remaining sample years 2009-2015. Year 2012 is being chosen because year 2012 is the year with stable economic condition (Figure 1.1 and 1.2), in order to ensure data stability and consistency. Gross Domestic Product (GDP) growth rate and inflation rate are among the well-known indicators for economic growth (i.e. stability) (Grier and Tullock, 1989; Stourmaras, Bakinezou, Pantazidis, Papadogonas and Papazoglou, 2005; Sufian and Chong, 2008). The data on real GDP growth rate and inflation rate are therefore retrieved from World Economic Outlook (WEO) Database available on IMF website in order to lend support on the sample year 2012 selection.

Figure 1.1 and 1.2 indicate the respective trend of real GDP growth rate and inflation rate for the selected developed and developing countries of the AP region throughout the year 2007-2014. Based on the Descriptive Statistics for Sample Countries on Real GDP Growth in Figure 1.1, it is notable that year 2012 is deemed as a safe period due to stable economic condition, which was indicated by the second highest mean of real GDP growth rate (i.e. high economic growth) as well as the lowest standard deviation of real GDP growth rate (i.e. data are reliable). Despite the mean of real GDP growth in year 2010 recorded as the highest rate as compared to year 2012, the standard deviation of real GDP growth in year 2010 indicates the highest as well. Furthermore, the mean of real GDP growth rate shows more stable (i.e. slight decreasing trend) since year 2012.

Consistently, from the Descriptive Statistics for Sample Countries on Inflation Rate in Figure 1.2, year 2012 records the second lowest mean of inflation with lowest standard deviation of inflation rate. Similar situation occurs whereby the highest standard deviation of inflation rate is shown with the lowest mean of inflation rate in year 2010. The year 2012 experienced stable economic condition that was free from major economic crisis and recession, indicated by the high GDP or economic growth and low inflation rate.

**Figure 1.1: Real Gross Domestic Product (GDP) Growth Rate for Selected Developed and Developing Asia-Pacific Countries, 2007 to 2014**

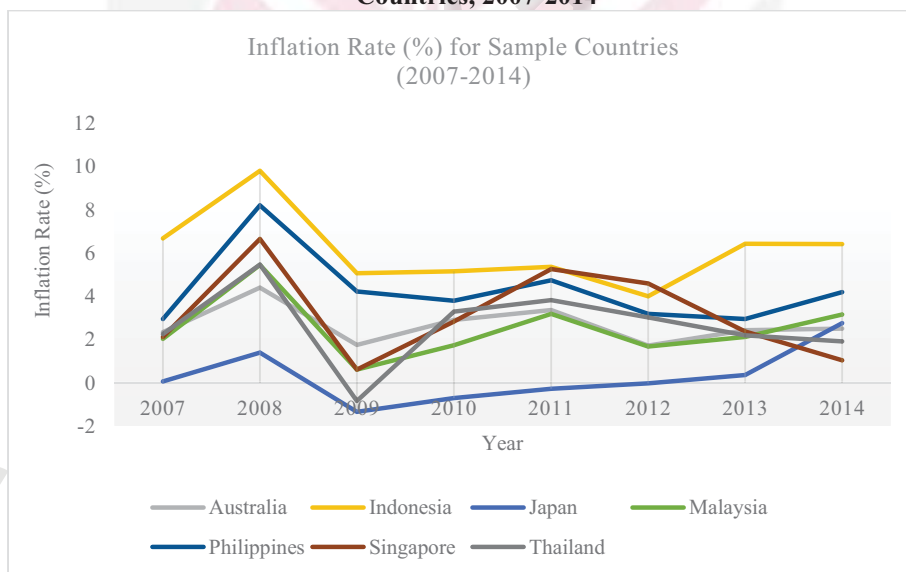


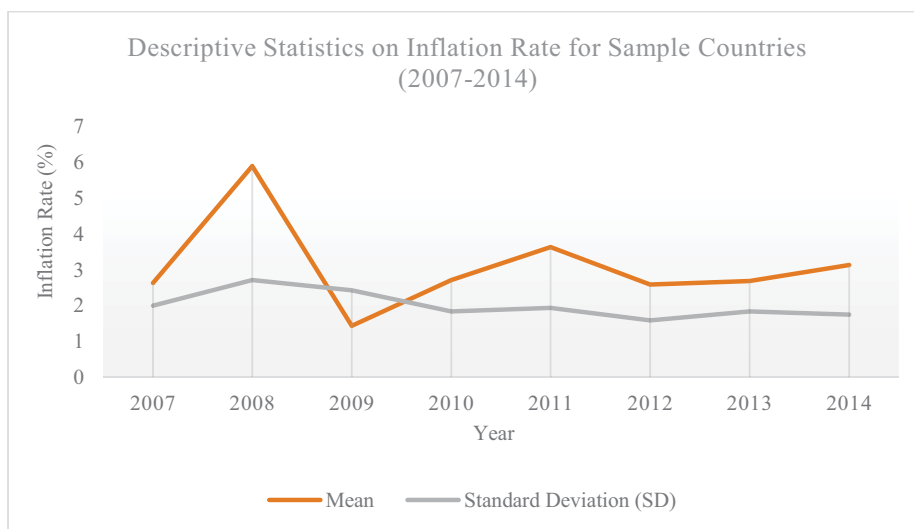
Real Gross Domestic Product, GDP Growth Rate (%)								
Year	2007	2008	2009	2010	2011	2012	2013	2014
Australia	4.5200	2.6710	1.5750	2.2500	2.7220	3.6000	2.0670	2.7310
Indonesia	6.3450	7.4420	4.7020	6.3780	6.1700	6.0300	5.5790	5.0250
Japan	2.1920	-1.0420	-5.5270	4.7110	-0.0005	1.7420	1.5880	-0.0001
Malaysia	6.2990	4.8320	-1.5140	7.5280	5.2940	5.4730	4.7130	5.9930
Philippines	6.6170	4.1530	1.1480	7.6320	3.6600	6.6840	7.0550	6.1320
Singapore	9.1120	1.7880	-0.0006	15.2400	6.2070	3.4140	4.4430	2.9180
Thailand	5.4350	1.7260	-0.0007	7.5070	0.0008	7.3230	2.8090	0.0009

Source: International Monetary Fund, World Economic Outlook Database, October 2015

Real Gross Domestic Product, GDP Growth Rate (%)								
Year	2007	2008	2009	2010	2011	2012	2013	2014
Mean	5.7886	3.0814	0.0547	7.3209	3.4362	4.8951	4.0363	3.2571
Standard Deviation (SD)	2.1202	2.7052	3.1285	4.0063	2.6700	2.0220	1.9788	2.5974

**Figure 1.2: Inflation Rate for Selected Developed and Developing Asia-Pacific Countries, 2007-2014**





Real Inflation Rate (%)								
Year	2007	2008	2009	2010	2011	2012	2013	2014
Australia	2.3270	4.3770	1.7430	2.8910	3.3560	1.7120	2.4250	2.489
Indonesia	6.6620	9.7770	5.0470	5.1400	5.3440	3.9810	6.4130	6.395
Japan	0.0610	1.3780	-1.3430	-0.7210	-0.2880	-0.0370	0.3570	2.748
Malaysia	2.0270	5.4290	0.5970	1.7200	3.1740	1.6640	2.1050	3.143
Philippines	2.9420	8.1840	4.2130	3.7840	4.7180	3.1710	2.9330	4.174
Singapore	2.1050	6.6280	0.5970	2.8230	5.2480	4.5760	2.3590	1.025
Thailand	2.2340	5.4550	-0.8500	3.2800	3.8090	3.0150	2.1850	1.895

Source: International Monetary Fund, World Economic Outlook Database, October 2015

Real Inflation Rate (%)								
Year	2007	2008	2009	2010	2011	2012	2013	2014
Mean	2.6226	5.8897	1.4291	2.7024	3.6230	2.5831	2.6824	3.1241
Standard Deviation (SD)	1.9934	2.7069	2.4222	1.8340	1.9324	1.5773	1.8321	1.7447

The BOD data of the firms such as directorships, education and experience of directors are retrieved from published annual reports of firms downloaded from each company official website and the OSIRIS database that provides the directors bibliography section. While the inputs, outputs and financial data of the firm-specific namely firm size, profitability, risk and leverage are accessed from Thomson Reuters DATASTREAM database that provides firms' balance sheet and income statement data. Moreover, the data on macroeconomic variables such as real GDP (GDP) growth rate and changes of inflation rates are obtained from WEO Database available on IMF website.

In the first stage analysis, the TE scores of firm as the indicators for firm efficiency over time are obtained by using non-parametric Data Envelopment Analysis (DEA) frontier analysis method. By DEA method, a “best practice” efficient frontier of observed output-input ratios is formed on an annual basis via mathematical programming techniques (Sufian, 2007). With the multiple inputs and outputs of firms in the study, TE score of each firm is therefore measured as the ratio of weighted sum of outputs-weighted sum of inputs by adopting DEA. TE score is basically ranged from zero to one. The TE maximum score of 1 indicates the firm is fully efficient; while the TE minimum score of 0 indicates the firm is fully inefficient. For firms, the selection of inputs and output is based on the production approach, as firms produce products and services for users.

Additionally, in the second stage of analysis, panel regression analysis is adopted to identify (1) the effect of board busyness on firm efficiency, and (2) the moderating impact of the director-specific characteristic including directors’ education and director’s experience towards board busyness–firm efficiency relationship. The estimation methods under Panel Regression Analysis are based on Ordinary least Square (OLS) and Generalized Least Square (GLS) estimation methods, comprising Fixed Effect Model (FEM) and Random Effect Model (REM). The Lagrangian-Multiplier (LM) test by Breusch Pagan (BP) is adopted to determine either the data is appropriate to be pooled or panel. For the selection between FEM and SEM, Hausman test is employed. Then, Durbin-Watson d-test is used for detection of autocorrelation issue; while White test is adopted to detect the heteroscedasticity issue. Moreover, to detect multicollinearity issue, Pearson correlation coefficients and variance inflation factors (VIFs) are employed. The detection of normality or symmetry is analyzed by Q1 statistics and Jarque-Bera test. The other influencing determinants of firm efficiency such as firm-specific characteristics (i.e. internal) and macroeconomic factors (i.e. external), are being controlled (or treated as the control variables) in the regression analysis. The firm-specific characteristics are (1) firm size in terms of total assets, (2) firm leverage in terms of total debts, (3) firm profitability in terms of return on asset (ROA) and sales growth, (4) firm risk in terms of beta. The macroeconomic factors include (1) GDP growth (real GDP growth) and (2) inflation (changes of consumer price index, CPI).

## 1.8 Summary of the Chapter

Table 1.1 summarizes the highlights of chapter one (i.e. introduction chapter).

<b>Table 1.1: Summary of Chapter One</b>		
Research Objectives	Current Literature	Research Contribution
<p>i. To examine the relationship between board busyness and firm efficiency in the selected developed and developing Asia-Pacific countries.</p>	<p>Farrell, 1957; Isik and Hassan, 2002; Fich and Shivdasani, 2006; Lee and Heshmati (Eds.), 2009; Ahn et al. 2010; Cashman et al., 2013; Jarboui et al., 2013; Cummins and Weiss, 2013, p. 795-861</p>	<p>The study expectantly could contribute to identify the impact of board busyness, specifically on firm efficiency in the selected developed and developing countries of the AP region, given that AP region is leading the growth of world economy. The focus of the firm efficiency is vital as the role of firm performance, since firm efficiency is significant to achieve the goal of firm profit maximization. The investigation on technical efficiency of firm along with the influence of board busyness (as the important social capital of boards) is also crucial since managerial factors are much related to firm efficiency. The examination of board busyness-firm efficiency relationship in developed and developing countries is important since the efficiency level as well as the multiple directorships restriction are vary, due to the different institutional background between developed and developing countries.</p>

**Table 1.1: Continued**

Research Objectives	Current Literature	Research Contribution
<p>ii. To investigate the moderating impact of directors' education on the relationship between board busyness and firm efficiency in the selected developed and developing Asia-Pacific countries.</p>	<p>Hambrick and Mason, 1984; Hambrick, 2007; Collins, 1971; Ancona and Caldwell, 1992; Shropshire, 2010; Kaczmarek et al., 2014; Berezinets et al., 2016</p>	<p>The study expectantly could contribute to identify the moderating impact of directors' education as the human capital of boards on the long-debated board busyness-firm efficiency relationship. So far, directors' education is not clearly defined under any corporate laws and corporate governance policies. Additionally, the moderating impact of directors' education is still underexplored since the prior studies have only focussed on direct impact of directors' education. Therefore, the study hopefully could fill this literature gap by examining the moderating impact of directors' education towards board busyness-firm efficiency relationship in the selected developed and developing countries of the AP region.</p>
<p>iii. To investigate the moderating impact of directors' experience on the relationship between board busyness and firm efficiency in the selected developed and developing Asia-Pacific countries.</p>	<p>Hambrick and Mason, 1984; Hambrick, 2007; Collins, 1971; Ancona and Caldwell, 1992; Shropshire, 2010; Kaczmarek et al., 2014; Berezinets et al., 1984; Hambrick and Mason, 1984; Hambrick, 2007; Collins, 1971; Ancona and Caldwell, 1992; Shropshire, 2010; Kaczmarek et al., 2014; Berezinets et al., 2016</p>	<p>The study expectantly could contribute to identify the moderating impact of directors' experience as the human capital of boards on the long-debated board busyness-firm efficiency relationship. Similar to directors' education, directors' experience is also not clearly defined under any corporate laws and corporate governance policies. Moreover, the moderating impact of directors' experience is still underexplored since the prior studies have only emphasized on direct impact of directors' experience. Therefore, the study hopefully could fill this literature gap by examining the moderating impact of directors' experience towards board busyness-firm efficiency relationship in the selected developed and developing countries of the AP region.</p>



## 1.9 Outline of the Study

The study is organized into five chapters. Chapter 1 introduces the study by providing the background that leads to problem statement, research objectives, research questions and significance of the study. Chapter 2 presents the literature review, particularly on the empirical studies related to firm efficiency, multiple directorships and board busyness, directors' education and experience, applied theories, theoretical framework, followed by the hypotheses development and research framework. Chapter 3 discusses the methodology, specifically on data, research methods and variables measurement. Chapter 4 presents the results and findings. Chapter 5 provides the conclusion of the study.



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