

**UNIVERSITI PUTRA MALAYSIA**

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

**TAN KHAR MANG**

**FEP 2018 33**



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

**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**

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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 mengukur 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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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the Degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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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                |
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| 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

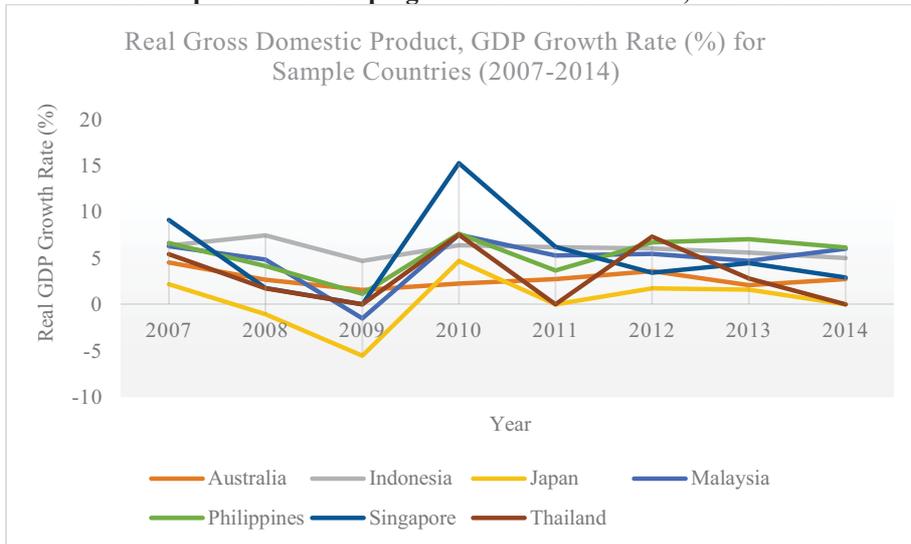
variables are collected from a sample of firms in the selected AP countries throughout the year 2009-2015, which is the post-crisis period.

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**

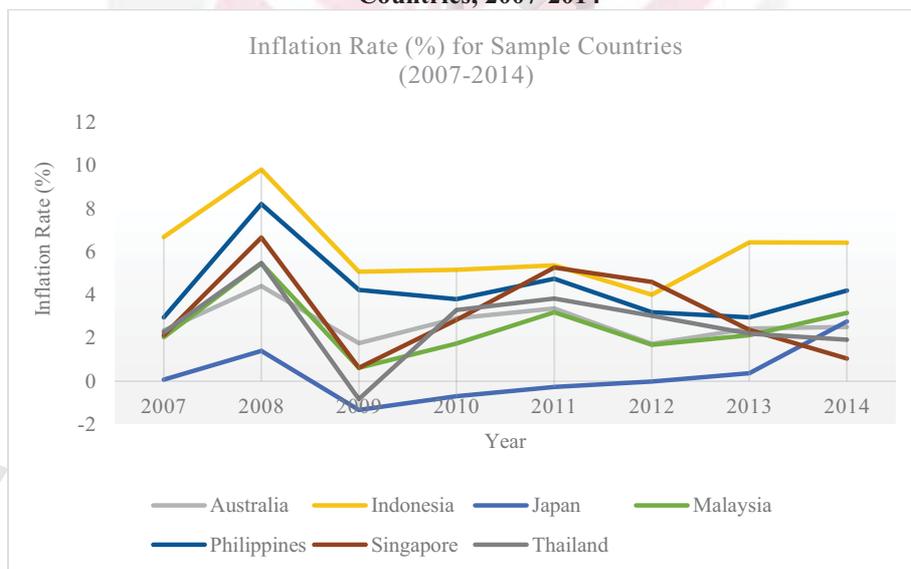


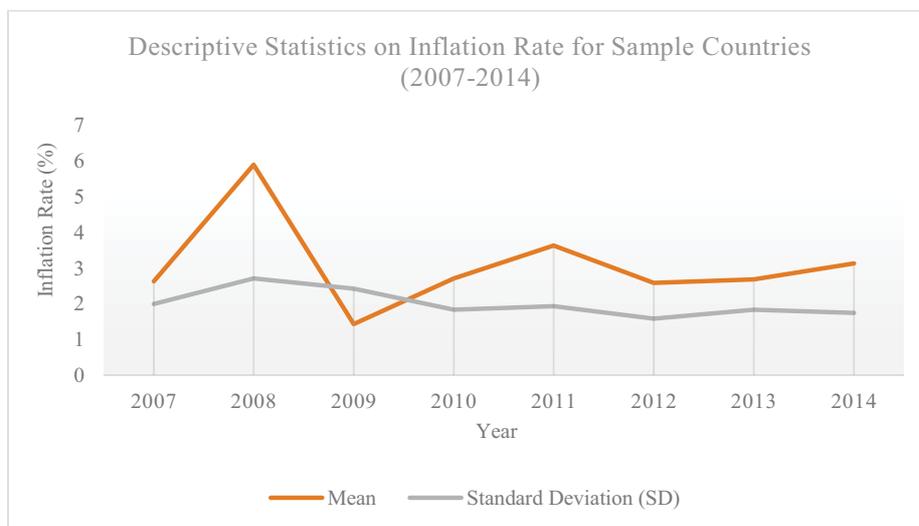
| Real Gross Domestic Product, GDP Growth Rate (%) |        |         |         |         |         |        |        |         |
|--|--------|---------|---------|---------|---------|--------|--------|---------|
| Year   | 2007   | 2008    | 2009    | 2010    | 2011    | 2012   | 2013   | 2014    |
| 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;<br/>Isik and Hassan, 2002;<br/>Fich and Shivdasani, 2006;<br/>Lee and Heshmati (Eds.), 2009;<br/>Ahn et al. 2010;<br/>Cashman et al., 2013;<br/>Jarboui et al., 2013;<br/>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., 2016; 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.



## REFERENCES

- Adams, R. B., & Ferreira, D. (2007). A theory of friendly boards. *Journal of Finance*, 62(1), 217–250.
- Adams, R., Hermalin, B., & Weisbach, M. (2010). The role of boards of directors in corporate governance: A conceptual framework and survey. *Journal of Economic Literature*, 5, 8–107.
- Aghimien, P. A., Kamarudin, F., Hamid, M., & Bany-Ariffin, A. N. (2016). Efficiency of Gulf Cooperation Council banks: Empirical evidence using data envelopment analysis. *Review of International Business and Strategy*, 26(1), 118-136.
- Ahamed, N. (2014). Multiple directorship & interlock: An empirical study of its impact on firms' financial performance. *Indian Journal of Finance*, 8(10), 48-61.
- Ahmad, S., & Rahim Abdul Rahman, A. (2012). The efficiency of Islamic and conventional commercial banks in Malaysia. *International Journal of Islamic and Middle Eastern Finance and Management*, 5(3), 241-263.
- Ahmad, W., & Luo, R. H. (2010). Comparison of banking efficiency in Europe: Islamic versus conventional banks. *International Finance Review*, 11, 361-389.
- Ahn, S., Jiraporn, P., & Kim, Y. S. (2010). Multiple directorships and acquirer returns. *Journal of Banking and Finance*, 34(9), 2011-2026.
- Alam, I. M. S., & Sickles, R. C. (1998). The relationship between stock market returns and technical efficiency innovations: Evidence from the US airline industry. *Journal of Productivity Analysis*, 9(1), 35-51.
- Al-Amri, K., Gattoufi, S., & Al-Muharrami, S. (2012). Analyzing the technical efficiency of insurance companies in GCC. *The Journal of Risk Finance*, 13(4), 362-380.
- Alexopoulos, I., Kounetas, K., & Tzelepis, D. (2011). Environmental performance and technical efficiency, is there a link? The case of Greek listed firms. *International Journal of Productivity and Performance Management*, 61(1), 6-23.
- Alfraih, M. M. (2016). The effectiveness of board of directors' characteristics in mandatory disclosure compliance. *Journal of Financial Regulation and Compliance*, 24(2).
- Alhassan, A. L. (2015). Income diversification and bank efficiency in an emerging market. *Managerial Finance*, 41(12), 1318-1335.
- Ancona, D., & Caldwell, D. (1992). Demography and design: Predictors of new product team performance. *Organization Science*, 3, 321–341.
- Andres, C., Bongard, I., & Lehmann, M. (2013). Is busy really busy? Board governance revisited. *Journal of Business Finance and Accounting*, 40(9-10), 1221-1246.

- Ariff, M., & Can, L. (2008). Cost and profit efficiency of Chinese banks: A non-parametric analysis. *China Economic Review*, 19(2), 260-273.
- Arioğlu, E., & Kaya, P. A. (2015). Busyness and advising at Borsa Istanbul firms. *Borsa Istanbul Review*, 15(2), 126-136.
- Asimakopoulos, I., Samitas, A., & Papadogonas, T. (2009). Firm-specific and economy wide determinants of firm profitability: Greek evidence using panel data. *Managerial Finance*, 35(11), 930-939.
- Babu, G. J., Padmanabhan, A. R., & Puri, M. L. (1999). Robust one-way ANOVA under possibly non-regular conditions. *Biometrical Journal*, 41(3), 321-339.
- Baccouche, S., Hadriche, M., & Omri, A. (2014). Multiple directorships and board meeting frequency: Evidence from France. *Applied Financial Economics*, 24(14), 983-992.
- Bader, M. K. I., Mohamad, S., Ariff, M., & Hassan, T. (2008). Cost, revenue and profit efficiency of Islamic versus conventional banks: International evidence using data envelopment analysis. *Islamic Economic Studies*, 15(2), 23-76.
- Baltagi, B. (2008). *Econometric analysis of panel data (4<sup>th</sup> edition)*. Chichester: John Wiley and Sons.
- Baltagi, B. H. (1998). *Panel data methods. Statistics textbooks and monographs*. New York: Marcel Dekker, Inc.
- Banker, R. D., Charnes, A., & Cooper, W. W. (1984). Some models for estimating technical and scale inefficiencies in data envelopment analysis. *Management Science*, 30(9), 1078-1092.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173.
- Bauer, P. W., Berger, A. N., Ferrier, G. D., & Humphrey, D. B. (1998). Consistency conditions for regulatory analysis of financial institutions: A comparison of frontier efficiency methods. *Journal of Economics and Business*, 50(2), 85-114.
- Becker, G. S. (1994). Human capital revisited. In *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education (3rd edition)*. United States of America: The University of Chicago Press.
- Benson, B. W., Davidson, W. N., Davidson, T. R., & Wang, H. (2015). Do busy directors and CEOs shirk their responsibilities? Evidence from mergers and acquisitions. *The Quarterly Review of Economics and Finance*, 55, 1-19.
- Berezinets, I., Garanina, T., & Ilina, Y. (2016). Intellectual capital of a board of directors and its elements: Introduction to the concepts. *Journal of Intellectual Capital*, 17(4).

- Berger, A. N., & DeYoung, R. (1997). Problem loans and cost efficiency in commercial banks. *Journal of Banking and Finance*, 21(6), 849-870.
- Berger, A. N., & Di Patti, E. B. (2006). Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry. *Journal of Banking and Finance*, 30(4), 1065-1102.
- Berger, A. N., Hancock, D., & Humphrey, D. B. (1993). Bank efficiency derived from the profit function. *Journal of Banking and Finance*, 17(2), 317-347.
- Berle, A. A., & Means, G. G. C. (1991). *The Modern Corporation and Private Property*. New Brunswick (U.S.A) and London (U.K): Transaction Publishers.
- Besanko, D., Dranove, D., Shanley, M., & Schaefer, S. (2010). *Economics of Strategy (5<sup>th</sup> edition)*. United States: John Wiley & Sons.
- Bhandari, A. K., & Ray, S. C. (2012). Technical Efficiency in the Indian Textiles Industry: A Non-Parametric Analysis of Firm-Level Data. *Bulletin of Economic Research*, 64(1), 109-124.
- Bhatt, R. R., & Bhattacharya, S. (2015). Board structure and firm performance in Indian IT firms. *Journal of Advances in Management Research*, 12(3), 232-248.
- Breusch, T.S. & A.R. Pagan. (1980). The Lagrange Multiplier test and its applications to model specification in econometrics. *Review of Economic Studies*, 47, 239-253.
- Bursa Malaysia. (2015). Chapter 15 corporate governance. Retrieved from <http://customer.bursamalaysia.com:8080/MainLR/Pages/MainChapter15.aspx>
- Bursa Malaysia. (2016). Listed companies. Retrieved from <http://www.bursamalaysia.com/market/listed-companies/>
- Carpenter, M. A., & Fredrickson, J. W. (2001). Top management teams, global strategic posture, and the moderating role of uncertainty. *Academy of Management Journal*, 44(3), 533-545.
- Cashman, G. D., Gillan, S. L., & Jun, C. (2012). Going overboard? On busy directors and firm value. *Journal of Banking and Finance*, 36(12), 3248-3259.
- Cashman, G. D., Gillan, S. L., & Whitby, R. J. (2013). Human and social capital in the labor market for directors. *Advances in Financial Economics*, 137-166.
- Casson, M. (1982). *The entrepreneur: An economic theory*. UK: Rowman and Littlefield.
- Castiglione, C., & Infante, D. (2014). ICTs and time-span in technical efficiency gains. A stochastic frontier approach over a panel of Italian manufacturing firms. *Economic Modelling*, 41, 55-65.

- Charnes, A., Cooper, W. W., & Rhodes, E. (1978). Measuring the efficiency of decision making units. *European Journal of Operational Research*, 2(6), 429-444.
- Charoenrat, T., Harvie, C., & Amornkitvikai, Y. (2013). Thai manufacturing small and medium sized enterprise technical efficiency: Evidence from firm-level industrial census data. *Journal of Asian Economics*, 27, 42-56.
- Chen, H. L., Hsu, W. T., & Chang, C. Y. (2016). Independent directors' human and social capital, firm internationalization and performance implications: An integrated agency-resource dependence view. *International Business Review*, 25(4), 859-871.
- Chen, L. Y., Lai, J. H., & Chen, C. R. (2015). Multiple directorships and the performance of mergers & acquisitions. *The North American Journal of Economics and Finance*, 33, 178-198.
- Chen, W. C., & McGinnis, L. F. (2007). Reconciling ratio analysis and DEA as performance assessment tools. *European Journal of Operational Research*, 178(1), 277-291.
- China Securities Regulatory Commission (CSRC). (2001). Guidelines for introducing independent directors to the board of directors of listed companies. Retrieved from [http://www.csrc.gov.cn/pub/csrc\\_en/newsfacts/release/200708/t20070810\\_69191.html](http://www.csrc.gov.cn/pub/csrc_en/newsfacts/release/200708/t20070810_69191.html)
- CII. (1998). Desirable corporate governance: A code confederation of Indian industry. Retrieved from [http://www.nfcgindia.org/desirable\\_corporate\\_governance\\_cii.pdf](http://www.nfcgindia.org/desirable_corporate_governance_cii.pdf)
- Clements, C., Neill, J. D., & Wertheim, P. (2015). Multiple directorships, industry relatedness, and corporate governance effectiveness. *Corporate Governance*, 15(5), 590-606.
- Cobb, C. W., & Douglas, P. H. (1928). A theory of production. *The American Economic Review*, 18(1), 139-165.
- Coelli, T. J., Rao, D. S. P., O'Donnell, C. J., & Battese, G. E. (2005). An introduction to efficiency and productivity analysis. *Springer Science and Business Media*.
- Coelli, T., Rao, D. P., & Battese, G. E. (1998). *An introduction to efficiency and productivity analysis*. Boston/Dordrecht: Kluwer Academic Publishers.
- Coles, J. L., Daniel, N. D., & Naveen, L. (2012). Board advising. Retrieved from [https://www.researchgate.net/profile/Jeffrey\\_Coles/publication/251318583\\_Board\\_Advising/links/55e8491508ae21d099c16fef.pdf](https://www.researchgate.net/profile/Jeffrey_Coles/publication/251318583_Board_Advising/links/55e8491508ae21d099c16fef.pdf)
- Collins, R. (1971). Functional and conflict theories of educational stratification. *American Sociological Review*, 1002-1019.

- Conyon, M. J., & Peck, S. I. (1998). Board size and corporate performance: Evidence from European countries. *The European Journal of Finance*, 4(3), 291-304.
- Cooper, A. C., Gimeno-Gascon, F. J., & Woo, C. Y. (1994). Initial human and financial capital as predictors of new venture performance. *Journal of Business Venturing*, 9(5), 371-395.
- Cooper, E., & Uzun, H. (2012). Directors with a full plate: The impact of busy directors on bank risk. *Managerial Finance*, 38(6), 571-586.
- Cooper, W.W., Seiford, L.M., and Tone, K. (2000). *Data envelopment analysis: A comprehensive text with models, applications, references and DEA-solver software*. Boston: Kluwer Academic Publishers.
- Council of Institutional Investors. (2004). Corporate governance policies. Retrieved from [http://www.ecgi.org/codes/documents/cii\\_corp\\_gov\\_pol.pdf](http://www.ecgi.org/codes/documents/cii_corp_gov_pol.pdf)
- Cubbage, C. J., & Brooks, D. J. (2012). Corporate security in the Asia-Pacific region: Crisis, crime, fraud, and misconduct. *CRC Press*.
- Cummins, J. D., & Weiss, M. A. (2013). *Analyzing firm performance in the insurance industry using frontier efficiency and productivity methods*. In *handbook of insurance*. New York: Springer.
- Cummins, J. D., & Xie, X. (2008). Mergers and acquisitions in the US property-liability insurance industry: Productivity and efficiency effects. *Journal of Banking and Finance*, 32(1), 30-55.
- Darmadi, S. (2013). Board members' education and firm performance: Evidence from a developing economy. *International Journal of Commerce and Management*, 23(2), 113-135.
- De Jorge Moreno, J., & Sanz-Triguero, M. (2011). Estimating technical efficiency and bootstrapping Malmquist indices: Analysis of Spanish retail sector. *International Journal of Retail and Distribution Management*, 39(4), 272-288.
- De Jorge-Moreno, J., & Rojas Carrasco, O. (2015). Technical efficiency and its determinants factors in Spanish textiles industry (2002-2009). *Journal of Economic Studies*, 42(3), 346-357.
- Demirbag, M., McGuinness, M., Akin, A., Bayyurt, N., & Basti, E. (2016). The professional service firm (PSF) in a globalised economy: A study of the efficiency of securities firms in an emerging market. *International Business Review*, 25, 1089-1102.
- Di Pietra, R., Grambovas, C. A., Raonic, I., & Riccaboni, A. (2008). The effects of board size and 'busy' directors on the market value of Italian companies. *Journal of Management and Governance*, 12(1), 73-91.

- Doms, M., Lewis, E., & Robb, A. (2010). Local labor force education, new business characteristics, and firm performance. *Journal of Urban Economics*, 67(1), 61-77.
- Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review*, 14, 57-73.
- Elyasiani, E., & Zhang, L. (2015). Bank holding company performance, risk, and “busy” board of directors. *Journal of Banking and Finance*, 60, 239-251.
- Escriba - Esteve, A., Sanchez - Peinado, L., & Sanchez - Peinado, E. (2009). The influence of top management teams in the strategic orientation and performance of small and Medium-sized enterprises. *British Journal of Management*, 20(4), 581-597.
- Eulaiwi, B., Al-Hadi, A., Taylor, G., Al-Yahyaee, K. H., & Evans, J. (2016). Multiple directorships, family ownership and the board nomination committee: International evidence from the GCC. *Emerging Markets Review*.
- Falato, A., Kadyrzhanova, D., & Lel, U. (2014). Distracted directors: Does board busyness hurt shareholder value?. *Journal of Financial Economics*, 113, 404-426.
- Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *Journal of Law and Economics*, 301-325.
- Fama, E. F., & Jensen, M. C. (1983a) Agency problems and residual claims. *Journal of Law and Economics*, 26, 301-326.
- Farrell, M. J. (1957). The measurement of productive efficiency. *Journal of the Royal Statistical Society. Series A (General)*, 120(3), 253-290.
- Ferris, S. P., & Jagannathan, M. (2001). The incidence and determinants of multiple corporate directorships. *Applied Economics Letters*, 8(1), 31-35.
- Ferris, S. P., Jagannathan, M., & Pritchard, A. C. (2003). Too busy to mind the business? Monitoring by directors with multiple board appointment. *The Journal of Finance*, 58(3), 1087-1112.
- Fich, E. M., & Shivdasani, A. (2006). Are busy boards effective monitors?. *The Journal of Finance*, 61(2), 689-724.
- Field, L., Lowry, M., & Mkrtchyan, A. (2013). Are busy boards detrimental? *Journal of Financial Economics*, 109(1), 63-82.
- Financial Reporting Council. (2016). UK corporate governance code. Retrieved from <https://www.frc.org.uk/getattachment/ca7e94c4-b9a9-49e2-a824-ad76a322873c/UK-Corporate-Governance-Code-April-2016.pdf>
- FTSE Russell. (2016). FTSE ST Index series. Retrieved from

<http://www.ftse.com/products/indices/SGX-ST>

- Ganotakis, P. (2012). Founders' human capital and the performance of UK new technology based firms. *Small Business Economics*, 39(2), 495-515.
- Gaur, A.S. and Gaur, S.S. (2006). *Statistical methods for practice and research: A guide to data analysis using SPSS*. New Delhi: Response Books/Sage Publications.
- Ghosh, S. (2007). Board diligence, director busyness and corporate governance: An empirical analysis for India. *Review of Applied Economics*, 3(1-2), 91-104.
- Gibson, M. S. (2003). Is corporate governance ineffective in emerging markets?, *Journal of Financial and Quantitative Analysis*, 38, 231-250.
- Goll, I., Brown Johnson, N., & Rasheed, A. A. (2007). Knowledge capability, strategic change, and firm performance: The moderating role of the environment. *Management Decision*, 45(2), 161-179.
- Goll, I., Brown Johnson, N., & Rasheed, A. A. (2008). Top management team demographic characteristics, business strategy, and firm performance in the US airline industry: The role of managerial discretion. *Management Decision*, 46(2), 201-222.
- Gray, S., & Nowland, J. (2013). Is prior director experience valuable? *Accounting and Finance*, 53(3), 643-666.
- Grier, K. B., & Tullock, G. (1989). An empirical analysis of cross-national economic growth, 1951-1980. *Journal of Monetary Economics*, 24(2), 259-276.
- Gujarati, D. N. (1995). *Basic econometrics (3<sup>rd</sup> edition)*. New York: Mc Graw-Hill International Edition.
- Gujarati, D. N., & Porter, D. (2009). *Basic econometrics (5<sup>th</sup> edition)*. New York: Mc Graw-Hill International Edition.
- Gylfason, T., & Herbertsson, T. T. (2001). Does inflation matter for growth?. *Japan and the World Economy*, 13(4), 405-428.
- Hailu, K. B., & Tanaka, M. (2015). A "true" random effects stochastic frontier analysis for technical efficiency and heterogeneity: Evidence from manufacturing firms in Ethiopia. *Economic Modelling*, 50, 179-192.
- Hambrick, D. C. (2007). Upper echelons theory: An update. *Academy of Management Review*, 32(2), 334-343.
- Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9(2), 193-206.
- Hang Seng Indexes. (2016). Hang Seng Index. Retrieved from <https://www.hsi.com.hk/HSI-Net/>

- Hanif Akhtar, M. (2013). After the financial crisis: A cost efficiency analysis of banks from Saudi Arabia. *International Journal of Islamic and Middle Eastern Finance and Management*, 6(4), 322-332.
- Harford, J. (2003). Takeover bids and target directors' incentives: The impact of a bid on directors' wealth and board seats. *Journal of Financial Economics*, 69(1), 51-83.
- Hashim, H. A., & Rahman, M. S. A. (2011). Multiple board appointments: Are directors effective?. *International Journal of Business and Social Science*, 2(16).
- Hausman, J.A. (1978). Specification tests in econometrics, *Econometrica*, 46, 1251-1271.
- Hillman, A. J., & Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Academy of Management review*, 28(3), 383-396.
- Hisham Yahya, M., Muhammad, J., & Razak Abdul Hadi, A. (2012). A comparative study on the level of efficiency between Islamic and conventional banking systems in Malaysia. *International Journal of Islamic and Middle Eastern Finance and Management*, 5(1), 48-62.
- Hoffman, L. R., & Maier, N. R. (1961). Quality and acceptance of problem solutions by members of homogeneous and heterogeneous groups. *Journal of Abnormal and Social Psychology*, 62(2), 401-407.
- Hogg, R. V., Fisher, D. M., & Randles, R. H. (1975). A two-sample adaptive distribution-free test. *Journal of the American Statistical Association*, 70(351a), 656-661.
- Hong Kong Exchange. (2016). Listed company. Retrieved from <http://www.hkex.com.hk/eng/csm/result.asp?LangCode=en&location=companyResult&mkt=hk&StockType=ALL&Ranking=ByMC&SearchMethod=2&PageNo=2>
- Hong Kong Exchanges and Clearing. (2016). Corporate governance. Retrieved from [http://www.hkexgroup.com/Corporate-Governance?sc\\_lang=en](http://www.hkexgroup.com/Corporate-Governance?sc_lang=en)
- Hossain, M., Prevost, A. K., & Rao, R. P. (2001). Corporate governance in New Zealand: The effect of the 1993 Companies Act on the relation between board composition and firm performance. *Pacific-Basin Finance Journal*, 9(2), 119-145.
- Inmyxai, S., & Takahashi, Y. (2009). Firm resources and business performance in the Lao PDR: Implications for SMEs in the LDC context. *Journal of Indian Business Research*, 1(2/3), 163-187.
- International Monetary Fund (IMF). (2015). World Economic Outlook database October 2015. Retrieved from <http://www.imf.org/external/pubs/ft/weo/2015/02/weodata/index.aspx>

- Iqbal, M., & Molyneux, P. (2016). *Thirty years of Islamic banking: History, performance and prospects*. New York: Springer.
- Isik, I., & Hassan, M. K. (2002). Technical, scale and allocative efficiencies of Turkish banking industry. *Journal of Banking and Finance*, 26(4), 719-766.
- Ismail, F., Shabri Abd. Majid, M., & Rahim, R. A. (2013). Efficiency of Islamic and conventional banks in Malaysia. *Journal of Financial Reporting and Accounting*, 11(1), 92-107.
- Jackling, B., & Johl, S. (2009). Board structure and firm performance: Evidence from India's top companies. *Corporate Governance: An International Review*, 17(4), 492-509.
- Jarboui, S. A. M. I., Pascal, F., & Younes, B. (2013). Public road transport efficiency: A stochastic frontier analysis. *Journal of Transportation Systems Engineering and Information Technology*, 13(5), 64-71.
- Jarboui, S., Forget, P., & Boujelbene, Y. (2014). Transport firms' inefficiency and managerial optimism: A stochastic frontier analysis. *Journal of Behavioral and Experimental Finance*, 3, 41-51.
- Jensen, M., & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, 305-360.
- Jiraporn, P., Davidson, W. N., DaDalt, P., & Ning, Y. (2009). Too busy to show up? An analysis of directors' absences. *The Quarterly Review of Economics and Finance*, 49(3), 1159-1171.
- Jiraporn, P., Kim, Y. S., & Davidson, W. N. (2008). Multiple directorships and corporate diversification. *Journal of Empirical Finance*, 15(3), 418-435.
- Jiraporn, P., Singh, M., & Lee, C. I. (2009). Ineffective corporate governance: Director busyness and board committee memberships. *Journal of Banking and Finance*, 33(5), 819-828.
- Kabir Hassan, M., Sanchez, B., & Ngene, G. (2012). Scales and technical efficiencies in Middle East and North African (MENA) micro financial institutions. *International Journal of Islamic and Middle Eastern Finance and Management*, 5(2), 157-170.
- Kaczmarek, S., Kimino, S., & Pye, A. (2014). Interlocking directorships and firm performance in highly regulated sectors: The moderating impact of board diversity. *Journal of Management and Governance*, 18(2), 347-372.
- Kamardin, H., & Haron, H. (2011). Internal corporate governance and board performance in monitoring roles: Evidence from Malaysia. *Journal of Financial Reporting and Accounting*, 9(2), 119-140.
- Kamarudin, F., Nassir, A. M., Yahya, M. H., Said, R. M., & Nordin, B. A. A. (2014). Islamic banking sectors in Gulf Cooperative Council Countries: Analysis on

revenue, cost and profit efficiency concepts. *Journal of Economic Cooperation and Development*, 35(2), 1.

Kamarudin, F., Sufian, F., & Nassir, A. M. (2016). Global financial crisis, ownership and bank profit efficiency in the Bangladesh's state owned and private commercial banks. *Contaduría y Administración*, 705-745.

Kamarudin, F., Sufian, F., Nassir, A. M., & Anwar, N. A. M. (2015). Technical efficiency and returns to scale on banking sector: Empirical evidence from GCC countries. *Pertanika Journal of Social Sciences & Humanities*, 23.

Karadag, H. (2017). The impact of industry, firm age and education level on financial management performance in small and medium-sized enterprises (SMEs): Evidence from Turkey. *Journal of Entrepreneurship in Emerging Economies*, (just-accepted), 00-00.

Keck, S. L. (1997). Top management team structure: Differential effects by environmental context. *Organization Science*, 8(2), 143-156.

Keselman, H. J., Wilcox, R. R., Othman, P., Rahman, M. A., & Fradette, K. (2002). Trimming, transforming statistics, and bootstrapping: Circumventing the biasing effects of heteroscedasticity and nonnormality. *Journal of Modern Applied Statistical Methods*, 1(2), 288-309.

Kiel, G.C. & Nicholson, G.J. (2006). Multiple directorships and corporate performance in Australian listed companies. *Corporate Governance*, 14(6), 530-546.

Kim, T. (2010). Efficiency of trucks in logistics: Technical efficiency and scale efficiency. *Asian Journal on Quality*, 11(1), 89-96.

Kimber, D., & Lipton, P. (2005). Corporate governance and business ethics in the Asia-Pacific region. *Business and Society*, 44(2), 178-210.

Kinda, T., Plane, P., & Veganzones-Varoudakis, M. A. (2014). Firm-level technical efficiency and investment climate in developing countries-an application to Middle East and North Africa manufacturing. *Economic and Social Development: Book of Proceedings*, 416.

King, T., Srivastav, A., & Williams, J. (2016). What's in an education? Implications of CEO education for bank performance. *Journal of Corporate Finance*, 37, 287-308.

Koellinger, P. (2008). Why are some entrepreneurs more innovative than others?. *Small Business Economics*, 31(1), 21.

Kor, Y. Y., & Sundaramurthy, C. (2008). Experience-based human capital and social capital of outside directors. *Journal of Management*, 35(10).

Krasniqi, B. A., & Mustafa, M. (2016). Small firm growth in a post-conflict environment: The role of human capital, institutional quality, and managerial capacities. *International Entrepreneurship and Management Journal*, 12(4), 1165-1207.

- Kumar, S. (2011). State road transport undertakings in India: Technical efficiency and its determinants. *Benchmarking: An International Journal*, 18(5), 616-643.
- Kundi, M., & Sharma, S. (2016). Efficiency of glass firms in India: An application of data envelopment analysis. *Journal of Advances in Management Research*, 13(1).
- Kuo, H. C., Wang, L. H., & Yeh, L. J. (2017). The role of education of directors in influencing firm R&D investment. *Asia Pacific Management Review*, (in press, corrected proof). Doi: [10.1016/j.apmr.2017.05.002](https://doi.org/10.1016/j.apmr.2017.05.002)
- Larcker, D. F., So, E. C., & Wang, C. C. (2013). Boardroom centrality and firm performance. *Journal of Accounting and Economics*, 55(2), 225-250.
- Law of Malaysia. (2006). Company Act 1965 (Revised – 1973). Retrieved from <https://www.ssm.com.my/acts/fscommand/CompaniesAct.htm>
- Lazear, E. P. (2004). Balanced skills and entrepreneurship. *The American Economic Review*, 94(2), 208-211.
- Le, S. A., Kroll, M. J., & Walters, B. A. (2013). Outside directors' experience, TMT firm-specific human capital, and firm performance in entrepreneurial IPO firms. *Journal of Business Research*, 66(4), 533-539.
- Lebedinski, L., & Vandenberghe, V. (2014). Assessing education's contribution to productivity using firm-level evidence. *International Journal of Manpower*, 35(8), 1116-1139.
- Lee, J. D., & Heshmati, A. (Eds.). (2009). *Productivity, efficiency, and economic growth in the Asia-Pacific region*. New York: Springer Physica-Verlag. Doi: [10.1007/978-3-7908-2072-0](https://doi.org/10.1007/978-3-7908-2072-0)
- Lee, K. W., & Lee, C. F. (2014). Are multiple directorships beneficial in East Asia?. *Accounting and Finance*, 54(3), 999-1032.
- Lei, A. C., & Deng, J. (2014). Do multiple directorships increase firm value? Evidence from independent directors in Hong Kong. *Journal of International Financial Management & Accounting*, 25(2), 121-181.
- Li, J., & Ang, J. S. (2000). Quantity versus quality of directors' time: The effectiveness of directors and number of outside directorships. *Managerial Finance*, 26(10), 1-21.
- Lin, Y. F., Yeh, Y. M. C., & Yang, F. M. (2014). Supervisory quality of board and firm performance: A perspective of board meeting attendance. *Total Quality Management and Business Excellence*, 25(3-4), 264-279.
- Lindorff, M., & Prior Jonson, E. (2013). CEO business education and firm financial performance: A case for humility rather than

- hubris. *Education+Training*, 55(4/5), 461-477.
- Linz, S. J., & Rakhovsky, I. (2011). Analyzing the efficiency of Russian firms. *Journal of Economic Studies*, 38(4), 430-451.
- Liu, C., & Paul, D.L. (2015). A new perspective on director busyness. *Journal of Financial Research*, 38(2), 193-218.
- Liu, Y. (2014). Outside options and CEO turnover: The network effect. *Journal of Corporate Finance*, 28, 201-217.
- López Iturriaga, F. J., & Morrós Rodríguez, I. (2014). Boards of directors and firm performance: The effect of multiple directorships. *Spanish Journal of Finance and Accounting/Revista Espanola de Financiacion y Contabilidad*, 43(2), 177-192.
- Lu, X., Wang, J., & Dong, D. (2013). Busy boards and corporate performance. *China Finance Review International*, 3(2), 203-219.
- Mace ML. (1971). *Directors: Myth and reality*. Boston: Harvard Business School.
- Mallin, C. A., & Michelon, G. (2011). Board reputation attributes and corporate social performance: An empirical investigation of the US best corporate citizens. *Accounting and Business Research*, 41(2), 119-144.
- Mandal, S., & Ghosh Dastidar, S. (2014). A DEA-investigation of efficiency of the Indian general insurance during recession. *Journal of Advances in Management Research*, 11(1), 115-136.
- Manzur Quader, S., & Dietrich, M. (2014). Corporate efficiency in the UK: A stochastic frontier analysis. *International Journal of Productivity and Performance Management*, 63(8), 991-1011.
- Margaritis, D., & Psillaki, M. (2007). Capital structure and firm efficiency. *Journal of Business Finance and Accounting*, 34(9- 10), 1447-1469.
- Matemilola, B. T., Bany-Ariffin, A. N., & Azman-Saini, W. N. W. (2013). Impact of leverage and managerial skills on shareholders' return. *Procedia Economics and Finance*, 7, 103-115.
- McDonald, M. L., Westphal, J. D., & Graebner, M. E. (2008). What do they know? The effects of outside director acquisition experience on firm acquisition performance. *Strategic Management Journal*, 29(11), 1155-1177.
- Méndez, C. F., Pathan, S., & García, R. A. (2015). Monitoring capabilities of busy and overlap directors: Evidence from Australia. *Pacific-Basin Finance Journal*. Doi: [10.1016/j.pacfin.2015.05.006](https://doi.org/10.1016/j.pacfin.2015.05.006)
- Ministry of Corporate Affairs Government of India. (2009). Corporate governance voluntary guidelines. Retrieved from [http://www.mca.gov.in/Ministry/latestnews/CG\\_Voluntary\\_Guidelines\\_2009\\_](http://www.mca.gov.in/Ministry/latestnews/CG_Voluntary_Guidelines_2009_)

24dec2009.pdf

- Mitra Debnath, R., & Sebastian, V. J. (2014). Efficiency in the Indian iron and steel industry-an application of data envelopment analysis. *Journal of Advances in Management Research*, 11(1), 4-19.
- Mizruchi, M. S. (1996). What do interlocks do? An analysis, critique, and assessment of research on interlocking directorates. *Annual Review of Sociology*, 271-298.
- Monetary Authority of Singapore. (2012). Code of corporate governance. Retrieved from [http://www.mas.gov.sg/~media/resource/fin\\_development/corporate\\_governance/CGCRevisedCodeofCorporateGovernance3May2012.pdf](http://www.mas.gov.sg/~media/resource/fin_development/corporate_governance/CGCRevisedCodeofCorporateGovernance3May2012.pdf)
- Muller-Kahle, M. I., Wang, L., & Wu, J. (2014). Board structure: An empirical study of firms in Anglo-American governance environments. *Managerial Finance*, 40(7), 681-699.
- National Association of Corporate Directors (1996). *Report of the NACD Blue Ribbon Commission on director professionalism*. Washington, DC.
- Nielsen, L. (2011). Classifications of countries based on their level of development: How it is done and how it could be done. *IMF Working Papers*, 1-45.
- OECD. (2003). White paper of corporate governance in Asia. Retrieved from <http://www.oecd.org/corporate/ca/corporategovernanceprinciples/25778905.pdf>
- OECD. (2009). The corporate governance lessons from the financial crisis. Retrieved from <http://www.oecd.org/finance/financial-markets/42229620.pdf>
- Othman, P., Rahman, M. A., Keselman, H. J., Wilcox, R. R., Fradette, K., & Padmanabhan, A. R. (2002). A test of symmetry. *Journal of Modern Applied Statistical Methods*, 1(2), 310-315.
- Pandey, R., Vithessonthi, C., & Mansi, M. (2015). Busy CEOs and the performance of family firms. *Research in International Business and Finance*, 33, 144-166.
- Park, J., & Park, J. (2015). Enterprise Resource Planning and efficiency: Evidence from the Korean property/casualty insurance companies. *Managerial Finance*, 41(4), 405-415.
- Peng, M. W., & Luo, Y. (2000). Managerial ties and firm performance in a transition economy: The nature of a micro-macro link. *Academy of Management Journal*, 43(3), 486-501.
- Pérez-Calero, L., Pérez-Calero, L., Villegas, M. D. M., Villegas, M. D. M., Barroso, C., & Barroso, C. (2016). A framework for board capital. *Corporate Governance*, 16(3), 452-475.
- Perry, T., & Peyer, U. (2005). Board seat accumulation by executives: A shareholder's

- perspective. *The Journal of Finance*, 60(4), 2083-2123.
- Pfeffer, J., & Salancik, G. (1978). *The external control of organizations: A resource-dependence perspective*. New York: Harper & Row.
- Pombo, C., & Gutiérrez, L. H. (2011). Outside directors, board interlocks and firm performance: Empirical evidence from Colombian business groups. *Journal of Economics and Business*, 63(4), 251-277.
- Poon, W. C., Yap, A. K. H., & Lee, T. H. (2013). The outcome of politically connected boards on commercial bank performance in Malaysia. *Modern Applied Science*, 7(1).
- Primeaux, P., & Stieber, J. (1994). Profit maximization: The ethical mandate of business. *Journal of Business Ethics*, 13(4), 287-294.
- Protogerou, A., Caloghirou, Y., & Vonortas, N. S. (2017). Determinants of young firms' innovative performance: Empirical evidence from Europe. *Research Policy*.
- PT Bursa Efek Indonesia (2016). Constituents. Retrieved from <http://www.idx.co.id/data-pasar/data-saham/indeks-saham/>
- Rao, A., Kashani, H., & Marie, A. (2010). Analysis of managerial efficiency in insurance sector in the UAE: An emerging economy. *International Journal of Managerial Finance*, 6(4), 329-343.
- Redor, E. (2015). Board attributes and shareholder wealth in mergers and acquisitions: A survey of the literature. *Journal of Management and Governance*, 1-33.
- Reeb, D. M., & Zhao, W. (2013). Director capital and corporate disclosure quality. *Journal of Accounting and Public Policy*, 32(4), 191-212.
- Ren, T., & Wang, Z. (2011). Female participation in TMT and firm performance: Evidence from Chinese private enterprises. *Nankai Business Review International*, 2(2), 140-157.
- Robb, A. M., & Watson, J. (2012). Gender differences in firm performance: Evidence from new ventures in the United States. *Journal of Business Venturing*, 27(5), 544-558.
- Rost, K. (2014). Social embeddedness of corporate elites and uncertainty in financial markets. *Corporate board: Roles, Duties of Composition*, 10(1), 18-38.
- Ruggiero, J. (1996). On the measurement of technical efficiency in the public sector. *European Journal of Operational Research*, 90(3), 553-565.
- S&P Dow Jones Indices. (2016). S&P/ ASX 300 (AUD). Retrieved from <http://us.spindices.com/indices/equity/sp-asx-300>
- Sahoo, B. K. (2016). Ownership, size, and efficiency: Evidence from software companies in India. *Benchmarking: An International Journal*, 23(2).

- Santos, R. L., da Silveira, A. D. M., & Barros, L. A. (2012). Board interlocking in Brazil: Directors' participation in multiple companies and its effect on firm value and profitability. *Latin American Business Review*, 13(1), 1-28.
- Sarkar, J., & Sarkar, S. (2009). Multiple board appointments and firm performance in emerging economies: Evidence from India. *Pacific-Basin Finance Journal*, 17, 271-293.
- Sealey, C. W., & Lindley, J. T. (1977). Inputs, outputs and a theory of production and cost at depository financial institutions. *Journal of Finance*, 32(4), 1251-1266.
- See, K. F. (2015). Exploring and analysing sources of technical efficiency in water supply services: Some evidence from Southeast Asian public water utilities. *Water Resources and Economics*, 9, 23-44.
- Shakibjoo, M. D., & Hassanzadeh, M. (2016). Investigation of the effect of leverage and CEO education on shareholders return of companies in Tehran Stock Exchange. *International Business Management*, 10(8), 1497-1502.
- Sharma, D., Sharma, A. K., & Barua, M. K. (2013). Efficiency and productivity of banking sector: A critical analysis of literature and design of conceptual model. *Qualitative Research in Financial Markets*, 5(2), 195-224.
- Sharma, S. (2008). Analyzing the technical and scale efficiency performance: A case study of cement firms in India. *Journal of Advances in Management Research*, 5(2), 56-63.
- Shepherd, D. A., Zacharakis, A., & Baron, R. A. (2003). VCs' decision processes: Evidence suggesting more experience may not always be better. *Journal of Business Venturing*, 18(3), 381-401.
- Shiah-Hou, S. R., & Cheng, C. W. (2012). Outside director experience, compensation, and performance. *Managerial Finance*, 38(10), 914-938.
- Shropshire, C. (2010). The role of the interlocking director and board receptivity in the diffusion of practices. *Academy of Management Review*, 35(2), 246-264.
- Shu, P. G., Yeh, Y. H., Chiu, S. B., & Yang, Y. W. (2015). Board external connectedness and earnings management. *Asia Pacific Management Review*, 20(4), 265-274.
- Sicilia, C., Lordan, O., & Gonzalez-Prieto, D. (2011). The business prestige: A preliminary study based on interlocks within companies. *Intangible Capital*, 7(2), 585-610.
- Singapore Corporate Governance Code. (2012). Code of corporate governance. Retrieved from [http://www.mas.gov.sg/~media/resource/fin\\_development/corporate\\_governance/CGCRevisedCodeofCorporateGovernance3May2012.pdf](http://www.mas.gov.sg/~media/resource/fin_development/corporate_governance/CGCRevisedCodeofCorporateGovernance3May2012.pdf)
- Solow, R. M. (1957). Technical change and the aggregate production function. *The*

*Review of Economics and Statistics*, 312-320.

Stourmaras, Y., Bakinezou, D., Pantazidis, S., Papadogonas, T., & Papazoglou, C. (2005). *Aspects of the Economic and Financial Integration of Greece into the European Union*. Bank of Greece, Research Department (July).

Sufian, F. (2004). The efficiency effects of bank mergers and acquisitions in a developing economy: Evidence from Malaysia. *International Journal of Applied Econometrics and Quantitative Studies*, 1(4), 53-74.

Sufian, F. (2007). The efficiency of Islamic banking industry in Malaysia: Foreign vs domestic banks. *Humanomics*, 23(3), 174-192.

Sufian, F. (2009). Determinants of bank efficiency during unstable macroeconomic environment: Empirical evidence from Malaysia. *Research in International Business and Finance*, 23(1), 54-77.

Sufian, F. (2011). Benchmarking the efficiency of the Korean banking sector: A DEA approach. *Benchmarking: An International Journal*, 18(1), 107-127.

Sufian, F., & Chong, R. R. (2008). Determinants of bank profitability in a developing economy: Empirical evidence from the Philippines. *Asian Academy of Management Journal of Accounting and Finance*, 4(2), 91-112.

Sufian, F., & Kamarudin, F. (2012). Bank specific and macroeconomic determinants of profitability of Bangladesh's commercial banks. *Bangladesh Development Studies*, XXXV(4).

Sufian, F., & Shah Habibullah, M. (2010). Developments in the efficiency of the Thailand banking sector: A DEA approach. *International Journal of Development Issues*, 9(3), 226-245.

Sufian, F., Kamarudin, F. & Nassir, A.M. (2017), Globalization and bank efficiency Nexus: Empirical evidence from the Malaysian banking sector. *Benchmarking: An International Journal*, 24(5), 1269-1290.

The Philippine Stock Exchange. (2016). All Shares Indexes. Retrieved from <http://www.pse.com.ph/stockMarket/marketInfomarketActivity.html?tab=1&indexName=All%20Shares>

The State of Asian and Pacific Cities. (2015). *Urban Transformations Shifting from Quantity to Quality*. Retrieved from <http://www.unescap.org/resources/state-asian-and-pacific-cities-2015-urban-transformations-shifting-quantity-quality>

The Stock Exchange of Thailand. (2016). SET 100 Indexes. Retrieved from [https://www.set.or.th/en/products/index/setindex\\_p3.html](https://www.set.or.th/en/products/index/setindex_p3.html)

Ucbasaran, D., Westhead, P., & Wright, M. (2008). Opportunity identification and pursuit: Does an entrepreneur's human capital matter?. *Small Business Economics*, 30(2), 153-173.

- Ujunwa, A. (2012). Board characteristics and the financial performance of Nigerian quoted firms. *Corporate Governance: The International Journal of Business in Society*, 12(5), 656-674.
- Wang, G., Jiang, X., Yuan, C. H., & Yi, Y. Q. (2013). Managerial ties and firm performance in an emerging economy: Tests of the mediating and moderating effects. *Asia Pacific Journal of Management*, 30(2), 537-559.
- White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, 48, 817-838.
- Wong, W. P., Soh, K. L., Chong, C. L., & Karia, N. (2015). Logistics firms performance: Efficiency and effectiveness perspectives. *International Journal of Productivity and Performance Management*, 64(5), 686-701.
- World Economic Outlook Database (October 2015). International Monetary Fund (IMF). Retrieved from <https://www.imf.org/external/pubs/ft/weo/2015/02/weodata/index.aspx>
- Yang, Y. J., Chen, J., Long Kweh, Q., & Chi Chen, H. (2013). Ownership structure and efficiency in Taiwanese electronics firms. *Review of Accounting and Finance*, 12(4), 351-368.
- Yatim, N., & Yusoff, H. (2014). Governance structure and practice in Malaysia: Board of directors' role and responsibilities. *Corporate Governance*, 199-228. Doi: [10.1007/978-3-642-45167-6\\_11](https://doi.org/10.1007/978-3-642-45167-6_11)
- Yatim, P., Iskandar, T. M., & Nga, E. (2014). Board attributes and foreign shareholdings in Malaysian listed firms. *Journal of Management and Governance*, 1-32.
- Zhang, S., & Li, X. (2008). Managerial ties, firm resources, and performance of cluster firms. *Asia Pacific Journal of Management*, 25(4), 615-633.