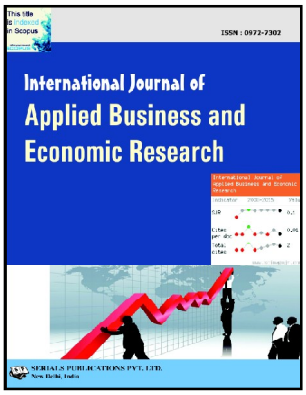

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Using SEM to Verify the Impacts of Board of Director Characteristics and Intellectual Capital Efficiency: A Case of Thailand-Listed Companies

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Abstract: This research studies the impact of the characteristics of the Board of Directors along with intellectual capital efficiency on Thai companies. The researcher uses the information from 403 Thai companies listed on the SET. The results of this research revealed that board size and audit committee meetings have a positive impact on intellectual capital efficiency. Meanwhile, factors such as audit committee size and the frequency of board meetings have a negative impact on intellectual capital efficiency. However, it was not found that the proportion of board independence, the proportion of women on the board, or firms with a separate chairman and CEO have an impact upon intellectual capital efficiency.

Keywords: Board of Directors characteristics, Intellectual capital efficiency

1. INTRODUCTION

In modern economies which rely upon knowledge, competitive advantages are derived primarily from intellectual capital, which is therefore considered vital in all industry sectors (Makki & Lodhi, 2014). It has therefore become commonplace for companies to attempt to store and encode such capital, which exists in the form of knowledge or experience (Chu *et al.*, 2006), especially since the transition whereby economies switched from the traditional model of competition to rely more heavily on knowledge, driving business to alter their strategies. Today, there is worldwide consensus that knowledge, in the form of experience, technical skills and expertise, the ability to innovate, the creation of processes, networks, and the development of customer service standards, are crucial in adding value to business activities, in a way that mere production can no longer match. In sectors such as information technology, this is particularly significant, given the importance of knowledge in that field (Bontis *et al.*, 2000). It was proposed by van der Meer-Kooistra and

Zijlstra (2001) that intellectual capital is able to add value through propagating new knowledge and supporting the sharing of that knowledge. In effect, that means that the book value and the true market value of a company may differ significantly due to the intangible nature of the intellectual capital which is now so critical. The assessment of intellectual capital, which comprises the intangible assets and organizational processes, can therefore be used in the creation of new models to determine the value of an organization (Falikhatun *et al.*, 2011), as has been demonstrated in studies performed in Japan (Mavridis, 2004), Malaysia (Muhammad, & Ismail, 2014), Italy (Puntillo, 2009), the UK (El-Bannany, 2008), and Indonesia (Sany & Hatane, 2014). The findings in these studies confirmed that banks are more competitive when their intellectual capital performance is strong. It is also clear that in order to make these improvements in intellectual capital performance, the contribution of the Board of Directors and the audit committee will be very important (Abidin *et al.*, 2014). The notion that the characteristics of the Board of Directors will have significant impact upon the way managers develop intellectual capital was proposed by Li *et al.* (2012), who also noted that agency problems including asymmetry of information, especially between stakeholders and managers, can also be influenced by the board. It can thus be assumed that an effective Board of Directors will be able to improve the performance and profitability of a company (Chen & Lee, 2012). Given this assertion, this paper will therefore aim to examine the influence of the characteristics of the Board of Directors in enhancing intellectual capital among companies listed on the SET during 2014. This will offer new insights because previous research has not analyzed the efficiency of intellectual capital using the characteristics of the Board of Directors as a variable in creating the structural model equation. As a result it is necessary to apply intellectual capital as a key measurement in assessing the role of corporate governance to make more accurate evaluations of the value of companies.

2. LITERATURE REVIEW AND CONSTRUCTION OF THE STUDY HYPOTHESES

2.1. Board of Directors characteristics and intellectual capital efficiency

Several research studies have considered the role of the characteristics of the Board of Directors in shaping the efficiency of intellectual capital, but the findings to date have not proved decisive, since the structures of the boards involved have differed widely, leading to differences in performance (Ho & Williams, 2003; Abidin *et al.*, 2009; Mahmudi & Nurhayati, 2014; Appuhami & Bhuyan, 2015). The construction of a structural equation model therefore requires the use of the characteristics of the Board of Directors which specifically influence intellectual efficiency.

Size of the Board: Empirical findings on board size are inconsistent. Cerbioni and Parbonetti (2007) find that board size has a negative impact on the quantity of intellectual capital. Meanwhile, Zamani *et al.* (2012) examined the relationship between intellectual capital efficiency and the size of the board by applying VAIC™ in a study of the Tehran Security Exchange, finding a positive connection between the variables. Similarly, a Malaysian study by Abidin *et al.* (2009) found that a large board could be positively linked to intellectual efficiency, while a positive relationship also existed between the number of non-executive directors and intellectual efficiency. However, these results were countered by Yermack (1996) who investigated 452 large companies in the United States and found that board size and efficiency of intellectual capital were negatively related. A similar sample size of 450 companies outside the financial sector was studied in Europe and North America by De Andres *et al.* (2008), who found the relationship between board size and the value of the company to be negative. Appuhami and Bhuyan (2015) also reported that

board size does not influence intellectual efficiency. Based on these studies and the agency theory, the first hypothesis can therefore be derived as follows:

Hypothesis 1: The size of the Board of Directors has a positive effect upon intellectual capital efficiency.

Size of the audit committee: Best Practice Guidelines for an audit committee indicate that such committees should ideally comprise three members: the first should be independent and serve as the committee chairman while two should be externally added from an independent source, with at least one having the ability to contribute in the field of finance. Earlier studies have revealed that the influence of audit committee size upon intellectual capital efficiency is both positive and significant (Felo *et al.*, 2011; Uzliawati, 2014). The audit committee is also valuable in overseeing management (Mahmudi & Nurhayati, 2015), with the number of audit committee members related to the pressure the committee can exert, so larger audit committees are better able to influence the efficiency of intellectual capital within a given company. Cerbioni and Parbonetti (2007) discovered, however, that the size of the audit committee has a negative influence upon the level of intellectual capital, while Ting *et al.* (2009) observed no effect at all for the influence of audit committee size upon intellectual capital. From these findings, the following hypothesis can be formed:

Hypothesis 2: The size of audit committees has a positive effect upon intellectual capital efficiency.

Proportion of independent directors: It has been found that independent directors show a greater likelihood of seeking a broader perspective from which to analyze company performance than internal directors, thereby reducing the reliance on a narrow set of financial measures (Ibrahim et al., 2003). Meanwhile, the work of Al-Musalli and Ismail (2012) showed that there is a significant link between the number of independent directors and a company's intellectual capital development. Mahmudi and Nurhayati (2014) concur, also noting the significant effect upon intellectual capital efficiency of the ratio of independent directors. Therefore, it can be concluded that strategies to develop intellectual capital, such as research and development work, human resources investment, and the implementation of IT, will be better supported by independent directors. Consequently, intellectual capital efficiency performance will be enhanced. Based on the description above, it can be formulated as the following hypothesis:

Hypothesis 3: The proportion of independent directors has a positive effect upon intellectual capital efficiency.

Female board participation: A study in South Africa by Williams (2001) showed that listed companies were often able to improve their performance in terms of intellectual capital through creating carefully structured boards which had a suitable mix of gender and ethnicity. This finding is supported by Matsaba (2010) and by Carter *et al.* (2003) who found that an increase in the proportion of women on the Board of Directors could affect performance. Van der Zahn (2006) also reported a positive link between intellectual capital performance and the board's percentage of women, although this was not supported by Khumalo (2011), whose work failed to confirm any connection between the proportion of female directors and the value of companies. The hypothesis is therefore constructed as follows:

Hypothesis 4: The board participation of women has a positive effect upon intellectual capital efficiency.

Combining the roles of CEO and chairman: The highest position within a company is the chairman of the board, while the CEO takes the role of managing the company, and this post is therefore the highest management position available. The CEO answers to the board. However, in some cases the board chairman and the CEO can be roles taken by the same person, resulting in absolute control over both the management of the company and the activities of the board (Butt, 2012). Such cases of CEO duality can result in the

management of the company taking precedence over the interests of the shareholders (Ho *et al.*, 2003) while the board loses its capacity for overseeing the company's activities. Studies have shown that there is a negative relationship between CEO duality and the efficiency of intellectual capital (Ho *et al.*, 2003). For example, Ho and Williams (2003) examined this question using a sample of listed companies from Sweden, South Africa, and the UK, finding no relationship between CEO role duality and VAIC™. However, Abidin, Kamal and Jusoff (2014) argued that a single person performing two roles can be effective in eliminating internal and external ambiguities regarding the company's processes and activities, thereby leading to better corporate performance. Abdullah (2004), did not, however, find this positive effect during his research studies of companies in Malaysia. From this discussion, the hypothesis constructed is as follows:

Hypothesis 5: Separating the roles of chairman and CEO has a positive effect upon intellectual capital efficiency.

Board meeting frequency: It has been shown that a period of high frequency board meetings is often followed by improved operational performance (Vafeas, 1999), although Makki and Lodhi (2009) found that both executive and non-executive directors had a tendency to treat board meetings as an academic exercise. The role of an executive director is to manage the general operation of the company, while for non-executive directors the role encompasses supervision, to ensure that the policies being pursued are effective and profitable. Under the findings of Pakistani Companies Ordinance (1984), listed companies are required to have four board meetings annually; it is considered that a fair number of meetings should be held in order to improve corporate performance, and also that the board members should comprise a balance of executives and non-executives. It was also shown that among the variables examined, board meeting frequency, number of executives, and the salaries paid to the CEO and other executives would have a significant effect upon EPS, and could thus be applied within VAIC to assess efficiency of intellectual capital. Further evidence in favor of frequent board meetings comes from Brick and Chidambaram (2007) who found that this can improve a company's performance, while Goh (2005) added that good performance in the banking sector can be predicted from the bank's efficiency in intellectual capital performance. On the basis of these observations, the following hypothesis can be formed:

Hypothesis 6: The frequency of board meetings has a positive effect upon intellectual capital efficiency.

Audit committee meeting frequency: Audit committee meetings are staged to assess the strategic plans of a company and evaluate its performance through the investigation and monitoring of the financial performance, the management, and the elements of corporate governance. If these meetings are held more frequently, the supervision of the company should be improved, and with better supervision comes improved performance, especially in the areas leading to enhanced efficiency of intellectual capital. On the basis of best practice for corporate governance, audit committee meetings should take place regularly with increased frequency to drive improved performance. This should serve to support the development of intellectual capital, and the hypothesis can be constructed as follows:

Hypothesis 7: The frequency of audit committee meetings has a positive effect upon intellectual capital efficiency.

3. RESEARCH METHODS

3.1. Sample and data collection

This research was conducted to collect data from a questionnaire via regular mail. The research used a quantitative approach and questionnaires were employed for collecting data of factory managers or

manufacturing managers in the electronic/electrical industry in 2014. The sample participants were Thai exporters based on the list of the Department of Export Promotion which enlisted a total membership of 824 companies. Simple random sampling techniques were applied to select the samples. A total of 520 questionnaires were distributed while 205 questionnaires were returned, which was a response rate of 39.42 percent.

3.2. The measurement characteristics of the variable

Table 1
Measurement of Board of Directors characteristics

Variable	*Definition*	*Measurement*
BSIZE	The size of the Board of Directors	Total number of members of the Board of Directors at year end
ACSIZE	The size of the audit committee	Total number of members of the audit committee at year end
BIND	The proportion of independent directors	Proportion of the number of independent directors to the size of the board at year end
BWOM	The participation of women on the board	Proportion of the number of women directors to the size of the board at year end
BMEET	The frequency of board meetings	Total number of board meetings in the year.
ACMEET	The frequency of audit committee meetings	Total number of audit committee meetings in the year.
BCEO	Combined role of chairman and CEO	Indicator variable which equals "1" if a separate chairman and CEO, and "0" otherwise

3.2.2. Measurement of intellectual capital efficiency

This study applied the concepts of Value Added Intellectual Coefficient (VAIC™) which was first proposed by Pulic (2000) as a means of measuring the efficiency of intellectual capital. It comprises three elements. These are Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), and Capital Employed Efficiency (CEE). The process to determine VAIC™ is shown as follows (Muhammad & Ismail, 2014):

Capital Employed Efficiency (CEE) = value added (VA) / capital employed (CE)
Human Capital Efficiency (HCE) = value added (VA) / human capital (HC)
Structural Capital Efficiency (SCE) = structural capital (SC) / value added (VA)
Value Added Intellectual Capital efficiency (VAIC™) = HCE + SCE + CEE

4. RESULTS

4.1. Descriptive statistical analysis

The results shown in Table 1 comprise the minimum, maximum, mean, and standard deviation calculated for the study variables. VAIC is between a minimum of -21.522 and a maximum of 15.460 with an average of 2.493. As reported by Abidin *et al.* (2009), the BSIZE falls in the range of 3 to 5, with a mean annual board size of 10.032. The ACSIZE falls in the range of 6 to 18 with a mean of 3.166 for the annual audit

committee size. The INDBOARD ranges from 0.200 up to 0.714 with a mean of 0.396 for the proportion of independent board members. The WOBOARD falls in the range of 0.000 to 0.666 and has a mean of 0.174 for the proportion of women on the board. The BCEO ranges from 0.000 to 1.000 and has a mean of 0.637 for companies which separate the roles of chairman and CEO. The BMEET lies within the range of 4.000 to 24.000 and has a mean of 7.828 annual board meetings while ACMEET has an identical range but a lower mean at 6.188 audit committee meetings annually.

Table 2
Independent and dependent variables used for descriptive statistics analysis

Variables	*N*	*Minimum*	*Maximum*	*Mean*	*Std. Deviation*
BSIZE	403	6.000	18.000	10.302	2.419
ACSIZE	403	3.000	5.000	3.166	0.428
INDBOARD	403	0.200	0.714	0.396	0.086
WOBOARD	403	0.000	0.666	0.174	0.150
BCEO	403	0.000	1.000	0.637	0.481
BMEET	403	4.000	24.000	7.828	3.725
ACMEET	403	4.000	24.000	6.188	3.432
VAIC	403	-21.522	15.460	2.493	4.537

4.2. Correlations matrix

Table 3
Correlation matrix of all variables for all (403) firm years

	BSIZE	*ACSIZE*	*INDBOARD*	*WOBOARD*	*BCEO*	*BMEET*	*ACMEET*	*VAIC*
BSIZE	1							
ACSIZE	.424**	1						
	.000							
INDBOARD	-.234**	-.020	1					
	.000	.685						
WOBOARD	-.131**	-.025	-.036	1				
	.009	.622	.476					
BCEO	.045	-.009	.003	-.056	1			
	.365	.861	.949	.264				
BMEET	.176**	.094	.104*	.010	.001	1		
	.000	.059	.037	.848	.978			
ACMEET	.107*	.089	.138**	-.039	-.017	.527**	1	
	.031	.076	.005	.429	.730	.000		
VAIC	.077	-.046	.006	-.051	-.023	-.010	.094	1
	.125	.355	.905	.303	.650	.842	.060	

**. Correlation is significant at the 1% level (2-tailed), *. Correlation is significant at the 5% level (2-tailed).

Table 2 presents the correlation matrix for the dependent and independent variables and shows that most of the coefficients are below the suggested cut-off value of 0.8, reducing concerns regarding correlation among the explanatory variables.

4.3. Structure equation model

The framework for the structure equation model (SEM) is presented in Figure 1. This SEM is applied in order to confirm the hypotheses in this study.

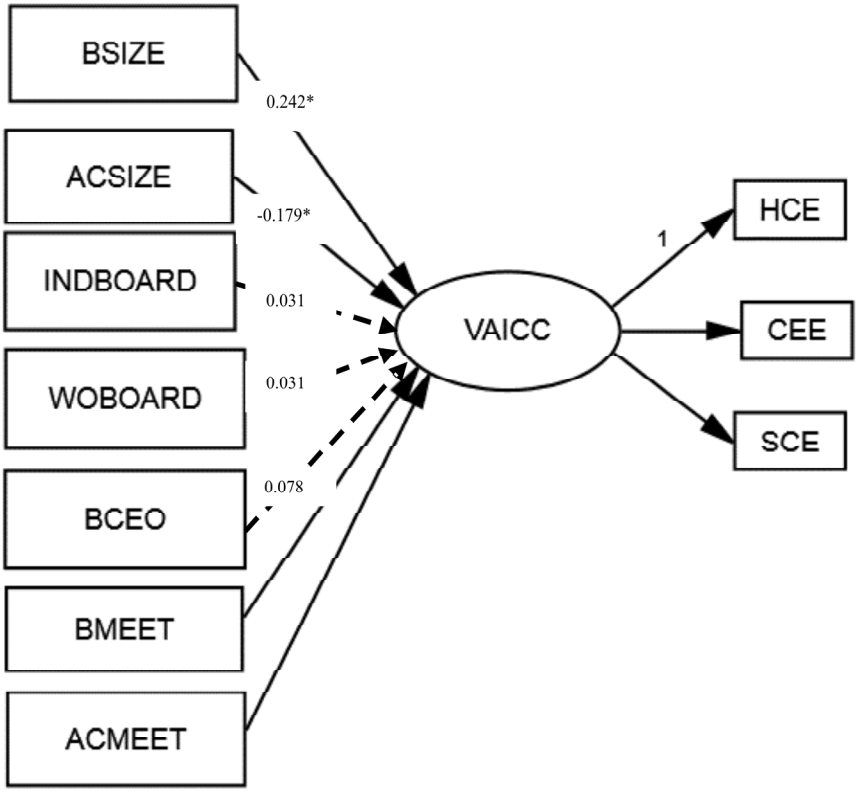

Figure 1: The structural equation model of the effects of Board of Directors characteristics upon intellectual capital efficiency for hypothesis testing

Figure 1 shows the structural model for the effects of Board of Directors characteristics. The concordant detail or the consistency of the model showed that the p-value of Chi-square was 40.999, CMIN/df was 1.323, p-value was 0.108, GFI was 0.980, AGFI was 0.964, CFI was 0.964, NFI was 0.871, and RMSEA was 0.028. The factor loading verification found that the critical ratio (C.R.) value was greater than 1.96 and the p-value was less than 0.001, so factor loading was not a zero (Vanichbuncha, 2013).

5. RESULTS

The size of Boards of Directors has a positive effect upon intellectual capital efficiency

The first hypothesis concerned the influence of the size of the Board of Directors upon intellectual capital. The test results of this hypothesis were significant since 0.010 < 0.05 (α) indicating that we can

Table 4
Parameter estimation and the significance test of Board of Director characteristics on intellectual capital efficiency

DV		*IV*	*Estimate*	*S.E.*	*C.R.*	*P*		*Standardized Coefficients*
VAICC	<—-	BSIZE	0.171	0.066	2.579	0.010	*	0.242
VAICC	<—-	ACSIZE	-0.714	0.355	-2.010	0.044	*	-0.179
VAICC	<—-	INDBOARD	0.604	1.606	.376	0.707		0.031
VAICC	<—-	WOMBOARD	0.885	0.908	.974	0.330		0.078
VAICC	<—-	BCEO	-0.507	0.284	-1.786	0.074		-0.143
VAICC	<—-	ACMEET	0.092	0.047	1.966	0.049	*	0.186
VAICC	<—-	BMEET	-0.095	0.044	-2.172	0.030	*	-0.206

*p< 0.05

accept the hypothesis which indicates that the size of the board has a positive influence upon intellectual capital. These results match those of Abidin *et al.* (2009). It can be suggested therefore that a large board will include persons with a broader and deeper understanding of economics and business and will therefore perform better as a result of the guidance provided, supporting greater intellectual capital performance.

The size of audit committees has a positive effect upon intellectual capital efficiency

The next hypothesis concerned the effects of the size of the audit committee upon intellectual capital efficiency. The test results were significant since 0.044 < 0.05 (α) and therefore it can be accepted that the size of the audit committee has an influence upon intellectual capital. These findings differ from those of Cerbioni and Parbonetti (2007) who observed that the quantity of intellectual capital efficiency was negatively impacted by audit committee size. It is believed that the role played by the audit committee can enhance the control exerted over a company's activities, improving performance and also improving the efficiency of intellectual capital.

The proportion of independent directors has a positive effect upon intellectual capital efficiency

For this hypothesis, the results show that it can be rejected since 0.330 > 0.05 (α). This result differs from the findings of Pathan *et al.* (2007) and Mahmudi and Nurhayati (2014) who reported a positive link between the proportion of independent directors and the efficiency of intellectual capital, suggesting that the proportion of independent directors would be an important factor determining level of intellectual capital. This supposition is based on the idea that independent directors will not be influenced by family, personal, or business ties to persons inside the company, so will be able to offer unbiased and uncompromised opinions and guidance to direct or monitor the company's activities with no conflict of interest.

The proportion of women on the board has a positive effect upon intellectual capital efficiency

The study results indicate that this hypothesis can be rejected since 0.707 > 0.05 (α), indicating that the proportion of women on the board may not significantly affect intellectual capital. This result matches the findings of Swartz and Firer (2005) who did not find the relationship between the proportion of women

on the board and intellectual capital efficiency to be significant, and suggest that a possible reason for this unexpected relationship, consistent with Khumalo (2011), is the low number of women on the board leading to insufficient influence to create a material difference. They argue that the lack of influence exerted by women upon a board of directors may potentially be due to the fact that women are often subjected to a "glass ceiling", an invisible barrier which prevents women from reaching leadership positions.

Separating the roles of chairman and CEO has a positive effect upon intellectual capital efficiency

The idea that a firm with a separate chairman and CEO will enjoy improved intellectual capital efficiency can be rejected since the results show that 0.074 > 0.05 (α). This hypothesis cannot be accepted, and therefore it can be argued that combining the roles of chairman and CEO does not affect intellectual capital. Judge et al. (2003) confirm that even in cases where there are legal limitations placed upon a single person taking both roles, it may still be informally possible for a single influence to govern both areas, thereby damaging company performance levels and avoiding the law. Therefore, while a majority of the companies in this study had separated the roles, this may only be a separation on paper, while the underlying realities may differ. For this reason, companies may not actually be benefitting from the ostensible separation of the two roles.

The frequency of board meetings has positively effect on the intellectual capital efficiency

For the hypothesis proposing that the frequency of board meetings has a positive influence upon intellectual capital efficiency, the results allow the hypothesis to be accepted since 0.030 < 0.05 (α). The indication is that there is a negative effect of board meeting frequency upon intellectual capital, possibly because meeting agendas are less effective in reviewing company performance (Klein, 2006). It can therefore be suggested that it is not simply high frequency levels which bring about benefits, but also the quality or effectiveness of the meetings. This result differs from the findings of Vafeas (2003) who observed that there is a positive effect to be seen from increasing the frequency of board meetings, since more frequent meetings allow the board members to assess the merits and progress of research and development projects more frequently, adding to the level of supervision and ensuring that any shortcomings can be addressed rapidly. These effects lead to improved intellectual capital efficiency.

The frequency of audit committee meetings has a positive effect upon intellectual capital efficiency

For this hypothesis, the results allow the notion that the frequency of audit committee meetings can affect intellectual capital to be accepted since 0.049 < 0.05 (a). Therefore there is a positive effect upon intellectual capital from increasing the frequency of audit committee meetings. According to Mahmudi and Nurhayati (2015), the purpose of an audit committee meeting is to assess the strategies and operations of a company by examining financial documents and data, internal management, and the elements of sound corporate governance. If meetings are held with greater frequency, the level of supervision can be improved, and its greater effectiveness can improve performance in all areas, including intellectual capital performance. Furthermore, Li *et al.* (2012) argued that audit committee meetings should be staged throughout the year, since an increased frequency can be expected to lead to improvements in the development of intellectual capital efficiency.

5. CONCLUSIONS

In summary, this study examined the influence of Board of Directors characteristics upon intellectual capital efficiency at listed companies in Thailand, and applied a structural equation model to assess the influence of Board of Directors characteristics on intellectual capital efficiency using secondary data obtained from the SETSMART and using a sample of 403Thai listed companies. The results of the study suggest a very satisfactory goodness-of-fit for the model created. The aim of this research was to evaluate the significance of the characteristics of the Board of Directors in terms of their influence upon the efficiency of intellectual capital. Based upon some of the previous studies of this issue, this research applied the VAIC approach to evaluate intellectual capital, on the basis of the three key factors: capital employed, human capital, and structural capital. From the results it can be inferred that increasing the size of the board and the audit committee can positively affect intellectual capital efficiency according to the outcomes of the VAIC measurements. At the 5% significance level, the size of the board and the frequency of audit committee meetings were found to have a positive impact on intellectual capital efficiency. However, the negative effects of audit committee size and frequency of board meetings were also observed with regard to intellectual capital efficiency. Additionally, the insignificant impact of three further characteristics, namely the proportion of board independence, the proportion of women on the board, and CEO duality on intellectual capital efficiency may indicate that such principles of corporate governance may be interpreted differently in this case when compared to those standards found overseas.

CONTRIBUTIONS OF THIS RESEARCH

The results and conclusions presented in this study should serve to encourage companies to improve the balance and activities of their Boards of Directors in order to develop their intellectual capital, since this can ultimately lead to enhanced growth, profits, and corporate development. This research produced and analyzed a model based on the findings of previous studies, before verifying the goodness-of-fit offered by the model to determine the nature of its fit-of-goodness impact. This study therefore not only examines a particularly interesting element of business structure and practice, but it also invites future study in relevant areas. The model in this study offers a description of the key factors which companies can improve in order to derive a competitive advantage while also providing valuable information to support more effective decision making from corporate managers.

RECOMMENDATIONS FOR FUTURE STUDIES

The subject matter for this study concerning the relationships between the characteristics of the Board of Directors and the efficiency of intellectual capital is relevant beyond Thailand's borders. Previous studies have proved inconclusive in this when addressing this topic, and have yet to establish suitable indictors for assessing corporate value. Meanwhile, this study was limited only to companies listed in Thailand. Therefore, in order to seek a wider range of data and increase the likelihood of achieving significant innovative discoveries, the question of corporate value should be examined in different types of business, with a broader sample allowing the qualities of successful companies to be established and comparisons to be made across industries and within particular sectors.

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REFERANCES

Abidin, Z. Z., Kamal, N. M., & Jusoff, K. (2009), Board structure and corporate performance in Malaysia. *International Journal of Economics and Finance*, *1*(1), 150.

Al-Musalli, M. A. K., & Ismail, K. N. I. K. (2012), Intellectual Capital Performance and Board Characteristics of GCC Banks. *Procedia Economics and Finance*, *2*, 219-226.

Appuhami, R., & Bhuyan, M. (2015), Examining the influence of corporate governance on intellectual capital efficiency: Evidence from top service firms in Australia. *Managerial Auditing Journal*, *30*(4/5), 347-372.

Bontis, N., Chua Chong Keow, W., & Richardson, S. (2000), Intellectual capital and business performance in Malaysian industries. *Journal of intellectual capital*, *1*(1), 85-100.

Butt, S. A., (2012), *Corporate Governance for Pakistan*. Lahore: Azeem Academy Publishers and Booksellers,

Carter, D. A., Simkins, B. J. and Simpson, W. G. (2003), Corporate governance, board diversity and firm value, *Financial Review,* 38(1), pp. 33 53.

Cerbioni, F., & Parbonetti, A. (2007), Exploring the effects of corporate governance on intellectual capital disclosure: an analysis of European biotechnology companies. *European Accounting Review*, *16*(4), 791-826.

Chen, C.H., dan Lee, Y.J., (2012), "Verifying the Effects of Corporate Governance on The Organizational Perfomance of Taiwan-Listed IC Design Houses : Using Productivity and Intellectual Capital as Mediators". Full Length Research Paper.

Chu, P.U., Y.L. Lin, H.H. Hsiung, T.Y. Liu, (2006), "Intellectual capital: An empirical study of ITRI". *Journal of Technological Forecasting and Social Change,* 73: 886-902.

De Andres, P., & Vallelado, E. (2008), Corporate governance in banking: The role of the board of directors. *Journal of Banking & Finance*, *32*(12), 2570-2580.

El-Bannany, M. (2008), A study of determinants of intellectual capital performance in banks: the UK case. *Journal of Intellectual Capital*, *9*(3), 487-498.

Falikhatun, Aryani, Y.A., & Prabowo, A., (2011), The Effect of Corporate Governance on the Intellectual Capital Disclosure: An Empirical Study from Banking Sector in Indonesia". *World Review of Business Research,* 1 (4): 66-83.

Felo, A. J. (2011), Corporate governance and business ethics. In *Corporate governance and business ethics* (pp. 281-296). Springer Netherlands.

Goh, B.W., Ng, J dan Yong, K.O., (2011), "Fair Value Disclosures Beyond SFAS 157's Three Level Estimates, Singapore Management University".

Ho, C. A., & Williams, S. M. (2003), International comparative analysis of the association between board structure and the efficiency of value added by a firm from its physical capital and intellectual capital resources. *The International Journal of Accounting*, *38*(4), 465-491.

Ibrahim, N. A., Howard, D. P., & Angelidis, J. P. (2003), Board members in the service industry: An empirical examination of the relationship between corporate social responsibility orientation and directorial type. *Journal of Business Ethics*, *47,* 393– 401

Judge, W.Q., Naoumova, I. and Koutzevoi, N. (2003), Corporate Governance and Firm Performance in Russia: An Empirical Study, *Journal of World Business*, 38, 4, pp 385-396.

Khumalo, V. (2011), *Effect of board size on return on equity of dual listed South African companies.* Unpublished Dissertation towards Master of Business Administration, Thesis, from University of KwaZulu Natal.

Klein, A., (2006), Audit Committee, Board of Director Characteristics, and Earnings Management. *Law and Economics Research Paper Series Working Paper*. No. 06-42.

Li, J., Mangena, M., & Pike, R. (2012), The effect of audit committee characteristics on intellectual capital disclosure. *The British Accounting Review*, *44*(2), 98-110.

Mahmudi, B., & Nurhayati, E. (2014), The Influence of Board Governance Characteristics on Intellectual Capital Performance (Empirical Study on Listed Banks in BEI 2008–2012).

Mahmudi, Bambang, & Enok Nurhayati. (2015), The Influence of Board Governance Characteristics on Intellectual Capital Performance (Empirical Study on Listed Banks in BEI 2008-2012). *Review of Integrative Business and Economics Research*. 4.1: 417.

Makki, M. A. M., & Lodhi, S. A. (2014), Impact of corporate governance on intellectual capital efficiency and financial performance. *Pak J Commer Soc Sci (Pakistan Journal of Commerce and Social Sciences)*, *8*(2), 305-330.

Matsaba, M. (2010), *Why are there so few women on South African company boards?* Unpublished Dissertation towards Master of Business Administration Thesis, from University of Pretoria.

Muhammad, N. M. N., & Ismail, M. K. A. (2014), Intellectual capital efficiency and firm's performance: Study on Malaysian Financial Sectors. *International Journal of Economics and Finance*, *1*(2), p206.

Pathan, S., Skully, M., dan Wickramanayake, J., (2007), Board Size, Independence and Performance : An Analysis of Thai Banks. *Asia-Pacific Finan Markets*. Vol. 14 : 211-227.

Puntillo, P. (2009), Intellectual capital and business performance.Evidence from Italian banking industry.

Ranjith Appuhami , Mohammed Bhuyan, (2015), Examining the influence of corporate governance on intellectual capital efficiency: Evidence from top service firms in Australia", Managerial Auditing Journal, Vol. 30 Iss: 4/5, pp.347 - 372.

Rehman, W. U., Chaudhary, A. R., Rehman, H. U., & Zahid, A. (2011), Intellectual capital performance and its impact on corporate performance: An empirical evidence from MODARABA sector of Pakistan. *Australian journal of business and management research*, *1*(5), 8.

Sany, & Hatane, S. E. (2014), The impact of value added of intellectual capital efficiency to firms'profitability and productivity: International conference on management proceeding,

Swartz, N. P., & Firer, S. (2005), Board structure and intellectual capital performance in South Africa. *Meditari Accountancy Research,* 13(2), 145-166.

Ting, I. W. K., & Lean, H. H. (2009), Intellectual capital performance of financial institutions in Malaysia. *Journal of Intellectual capital*, *10*(4), 588-599.

Uzliawati, L., Suhardjanto, D., & Djati, K. (2014), The Characteristics of Audit Committee and Intellectual Capital Disclosure in Indonesia Banking Industry. *Journal on Business Review (GBR)*, *3*(2).

Vafeas, N. (1999), Board meeting frequency & firm performance. *Journal of financial economics*, *53*(1), 113-142.

Van der Meer-Kooistra, J. and Zijlstra, S.M. (2001), Reporting on intellectual capital, *Accounting, Auditing & Accountability Journal*, Vol. 14 No. 4, pp. 456-476.

Van der Zahn, J. L. W. M. (2004), Association between gender and ethnic diversity on the boards of directors of publicly listed companies in South Africa and intellectual capital performance, *Research Collection School of Accountancy (Open Access)* (Paper 16).

Williams, S. M. (2001), *Corporate governance diversity and its impact on intellectual capital performance in an emerging economy*. University of Calgary, Faculty of Management.

Yermack, D. (1996), Higher market valuation of companies with a small board of directors. *Journal of financial economics*, *40*(2), 185-211.

Zamani, F. G., Nahandi, Y. B., Lalepour, M., & Re-zagholibeyghi, A. (2012), The relation between corporate governance and intellectual capital stressing human capital characteristics. *International Journal of Business and Management Tomorrow*. 2(7): 1-7.