



The Effects of Board Diversity on Intellectual Capital Performance: An Empirical Study from Knowledge-Intensive Companies in Indonesia

Imas Komala^a

Fuad^b

^a Department of Accounting, Faculty of Economics and Business, Universitas Diponegoro Jl. Prof. Soedharto SH Tembalang, Semarang 50239, Indonesia

^b Corresponding author, Department of Accounting, Faculty of Economics and Business, Universitas Diponegoro Jl. Prof. Soedharto SH Tembalang, Semarang 50239, Indonesia, tofuad@yahoo.com

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M10, M14.

Abstract

This study aims to investigate the effect of board diversities to the intellectual capital performance by also testing the board meetings effectiveness. Using the data from knowledge-intensive companies from 2012-2015, we found that board meetings effectiveness increase the positive effects of board diversities (i.e. gender, educational level, nationality and the extent of board independent) to the intellectual capital performance except nationality diversity. We however, cannot provide convincing evidence that nationality diversity affect the intellectual capital. The implications of our study indicate that corporate governance structure, particularly regarding the companies' oversight function, have an important roles in enhancing the intellectual capital performance.

Background

One of the general purpose of the company is to achieve the maximum performance of the company. The company's maximum performance can be achieved by good capital management. Capital is important in order to build, develop and maintain the establishment of a company. The company's capital comprises of physical, financial and intellectual capital. Companies must manage these capitals properly so that the companies can continue to grow and survive. Especially in this era of globalization, companies not only need to focus on the physical and financial capital, but also on the intellectual capital that became the characteristics of a knowledge-based companies. The development of intellectual capital is encouraged by the change of business conducted by the companies from labor-based business towards knowledge-based business. In addition, according to Efandiana (2011) in Indonesia, the phenomenon of the intellectual capital began to develop, especially after the advent of SFAS No. 19 2009 (revised 2000) about intangible assets. Intellectual capital is already supposed to be getting more attention related to the three components that can provide value added to the company. The three components of the intellectual capital (human capital, structural capital, and customer capital) are necessary to create value added for the companies that can compete in the era of knowledge-based business.

Corporate governance was viewed as an important factor of the intellectual capital performance due to corporate governance has responsibility to develop and utilize the intellectual capital as well as in people, structure, and processes of the companies. One of the most important mechanisms of corporate governance to improve the advantage of the intellectual capital and get a high performance is board structure.

In Indonesia, the composition of the board of the companies adheres to a two tier system, which is composed of a board of directors as those who manage and those who conduct the control by a board of commissioner. Board of directors and board of commissioners responsible for the company's decision making process, including with regard to the best way to obtain and utilize the necessary resources in the management of intellectual capital. The best decision would be obtained if a lot of innovation, perceptions and flexibility that goes into the process of acquisition (Williams, 2001). Processes more innovative could be

achieved if there is a high level of diversity in the structure of the board (Talke, Solomon, & Rost, 2010).

A previous study that investigated the influence of board diversity (gender and ethnic diversity) to intellectual capital performance found that a high level diversity of the board of directors will improve the intellectual capital performance (Swartz & Firer, 2005). However, the results were the opposite stated that board diversity in terms educational diversity and nationality diversity have a negative effect on intellectual capital performance (Al-Musali & Ismail, 2015). In Indonesia, the research about the effect of board diversity on the intellectual capital performance has not been conducted. Therefore, this research will examine the effect of board diversity on the performance of intellectual capital. As has been explained earlier that the composition of the board in Indonesia using a two tier system then board diversity in this research not merely referred to the diversity of the board of directors but the diversity of the whole board, board of directors and board of commissioners. However, Talke, Solomon, & Rost (2010) argue that board diversity does not affect firm performance as much, they further suggest that instead of investigating a simple direct relationship between board diversity and firm performance, variables that affect this relationship should be explored. Carpenter (2002) in Al-Musali & Ismail (2015) suggests that inconsistencies in diversity-performance relationships shown in prior studies may point to the possibility that important moderating or intervening variables have been overlooked. Based on the resource dependency theory, one factor that linked to board diversity and intellectual capital performance is the effectiveness of board meetings (Al-Musali & Ismail, 2015).

Auh and Menguc (2005) in Al-Musali & Ismail (2015) stated that greater diversity has been shown to cause process deficiencies by plaguing effective operation of the 4Cs (i.e. communication, collaboration, coordination and cohesiveness). Therefore, the direct effect of board diversity on intellectual capital performance can be mixed and ambiguous because of the dual impact of the benefits and costs associated with board diversity. Based on resource dependency theory, this research posits that the effectiveness of board meetings could help in lessening the disadvantages related to board diversity. Thus, the effect of board diversity in terms of gender, educational level, nationality, and independence diversity on intellectual capital performance will be positive as the effectiveness of board meetings improves.

Theoretical Framework and Hypotheses Development

Resource dependency theory provides understanding how organizations achieve a sustainable competitive advantage (Widaryanti, 2011). According to this theory, there are several important factors that affect the strength of an organization related to dominate the market. According to Damry (2015) these factors is an initial resource mix. An initial resource mix is a wide spectrum of resources (technology, finance, human, legitimacy, organizational structure and others) in the early stages of organization and to be able to dominate the market needed the right combination between them. The second factor is the balance of inducement which means that the most important resource in an organization is its human. The last factor is membership demographics. Demographic factors have long lasting impact on the organization. Some examples of demographic factors are age, race, and gender (Damry, 2015). According to the resource dependency theory, competitive advantage only occurs if there is a situation heterogeneity of resources (resources vary on companies) and immobility of resources (the inability of the companies competing for resources from other firms (Widaryanti, 2011).

Based on the resource dependency theory looked from the perspective of corporate governance shows that a high board diversity will increase the performance of the companies by giving the critical resources such as intellectual capital (Goodstein et al., 1994 in Al-Musali & Ismail, 2015). In other side, a higher board diversity also will lead to be conflict among board members. According to Goodstein *et al.* (1994) in Al-Musali & Ismail (2015), other than a higher board diversity can improve the performance of the companies by giving more innovation, perception and flexibility in decision making process, a higher board diversity also can improve the conflicts by limit the ability of board members to create the strategic decisions. Therefore, based on resource dependency theory, the effectiveness of board meetings can help to reduce the negative effect of board diversity by improving effectiveness of communication among board members, discussion of the issues is more depth and improve understanding among board members.

The Effect of Gender Diversity on Intellectual Capital Performance with The Moderating Role of The Effectiveness of Board Meetings

Graves and Powell (1988) in Swartz & Firer (2005) found that female directors were more concerned with the company's responsibility to the community and with incorporating this concern as a criterion for business growth and development than male directors were. One aspect of intellectual capital is a company's reputation with its external stakeholders, including the community. Therefore, they suggest that boards of directors with a higher percentage of women will make decisions on the future intellectual capital performance of the entity with more sensitivity toward community concerns than male-only boards. Swartz & Firer (2005) also found that the presence of women in board of director can increase the intellectual capital performance of the companies. In other side, Judge (2003) in Swartz & Firer (2005) noted that, while women were securing positions on company boards, the impact on company performance was negative. She stated that so much for smashing the glass ceiling and using their unique skills to enhance the performance of Britain's biggest companies – the triumphant march of women into the country's boardrooms has instead wrecked havoc on companies' performance and share prices'. Based on resource dependency theory from the perspective of corporate governance, the effectiveness of board meetings is considered can help in lessening the disadvantage of gender diversity.

H₁: Gender diversity with more effectiveness of board meetings have a higher level of intellectual capital performance

The Effect of Educational Level Diversity on Intellectual Capital Performance with The Moderating Role of The Effectiveness of Board Meetings

Educational level diversity means that differences of knowledge or skill among board member that will help to create the best solutions for resolving the issues and making formulation and evaluation in strategic decision making process (Ruigrok et al., 2006; AUH and Menguc 2006; Bantel and Jackson, 1989 in Al-Musali & Ismail, 2015). Furthermore, a high educational level diversity will improve capability, flexibility, and ability of board members in creating new ideas with high innovation (Wincent et al., 2010; Talke et al., 2010 in Al-Musali & Ismail, 2015). Therefore, these characteristics will help in making a good

intellectual capital management and a high performance of the companies. In other side, a high level of educational level diversity will lead to different levels of skills and knowledge where if there is no effective communication among board member will lead to disagreement and misunderstanding. Therefore, based on resource dependency theory, the effective meetings among board members needed in order to reduce the negative effect of high educational level diversity.

H₂: Educational level diversity with more effective board meetings have a higher level of intellectual capital performance

The Effect of Nationality Diversity on Intellectual Capital Performance with The Moderating Role of The Effectiveness of Board Meetings

Board members of commissioners and directors with foreign nationality bring diverse opinions and perspectives, language, faith, family background, and professional experience which varies from one country to another. Kamath (2007) in Al-Musali & Ismail (2015) found that the differences of cultural background among board members will create different perception and point of views which can increase the board's ability to utilize their intellectual capital to maximum advantage. Furthermore, nationality diversity also can help the companies in order to understand the customer preferences and make the best customer policies which will create a sustain long-term relation between the companies and customers. (Randoy et al., 2006; Williams, 2001 in Al-Musali & Ismail, 2015). In other side, a high nationality diversity means that a high domination as well as local and foreigners. If local and foreign directors cannot build an effective communication and alignment of understanding, then it may lead to conflict and disagreement in the decision making process. Therefore, based on resource dependency theory an effective board meeting used to reduce the negative effect of high nationality diversity.

H₃: Nationality diversity with more effective board meetings have a higher level of intellectual capital performance

The Effect of The Presence of Independent Board on Intellectual Capital Performance with The Moderating Role of The Effectiveness of Board Meetings

Agrawal and Knoeber (2000) stated that in addition to a role in surveillance activities, the presence of outside directors will help business management strategy with the expertise and knowledge of the technology and market owned by them. This means that the independent

board of commissioners and directors will help to develop a strategy and policies related to the management of intellectual capital. Al-Musali and Ismail (2012) found that the presence of an independent board has an important influence of the intellectual capital. In other side, a high presence of independent board considered to be less able to make strategic decisions of the companies due to the have no self-interest or ownership in the company as well as the lack of knowledge of the company's condition compared to dependent board, so it probably will not try its utmost to advance the company and achieve high performance. That inequality of interest will lead to conflict among board members if not balanced with frequent meetings, effective communication and alignment of sufficient understanding.

H₄: The presence of independent board with more effective board meetings have a higher level of intellectual capital performance

Research Method

The Research Variables

Intellectual capital performance was measured by value added intellectual capital (VAIC) developed by Pulic (1998) is the ability of the companies to create value added (VA). This method is very important because it allows us to measure the contribution of both tangible (physical and financial) and intellectual (human and structural) resources to create value added (VA) by the firm (Al-Musali & Ismail, 2012). VAIC is expressed as follows:

$$\mathbf{VAIC = CEE + HCE + SCE}$$

Where:

- VA is value added ($VA = OUT - IN$); OUT = all revenues, IN = all expenses except employee expenses
- CEE is an indicator of value added efficiency of capital employed ($CEE = VA/CE$); CE = total net asset/equity
- HCE is an indicator of value added efficiency of human capital ($HCE = VA/HC$); HC = total salaries and wages;
- SCE is an indicator of value added efficiency of structural capital ($SCE = SC/VA$); SC = $VA - HC$ or (value added) – (total salaries and wages).

Blau's Index is used to measure each characteristics of board diversity. Blau's index is viewed as a good measurement to measure board diversity with range number 0-1. 0 represent there are no diversity and higher number means higher diversity. The index is bounded and assumes that there are no negative values (Miller and Triana, 2009 in Al-Musali & Ismail, 2015).

$$H' = 1 - \sum P_i^2$$

Where:

H' = characteristic board diversity

Pi = proportion of board members in each of the *i* categories

Board diversity in this research divided into four characteristics, each characteristic was measured by Blau's Index: (1) gender diversity divided in two categories are male and female measured by 1-quadrat of proportion men and women divided by the number of the whole board. (2) educational level diversity divided in four categories are without a bachelor's degree, bachelor's degree, master's degree, and doctoral degree measured by 1-quadrat of proportion of each category divided by the number of the whole board. (3) nationality diversity divided in two categories are locals and foreigners measured by 1-quadrat of proportion of local boards and foreigner boards divided by the number of the whole board. (4) The presence of independent board divided into two categories is independent board and non-independent board measured by 1-quadrat of proportion of independent board and non-independent board divided by the number of the whole board. While, The effectiveness of board meetings measured by the number of joint meetings that have been held by the board of directors and board of commissioners per year.

Population and Samples

This research used secondary data sources with the population of data is the companies listed on the Indonesia Stock Exchange especially knowledge intensive companies which its characteristics are high technology, non labor-based business and a good customer service. Some examples of knowledge intensive companies are banks, insurance, telecommunication and computer companies. The data sample are their annual report and financial statements listed in Indonesia Stock Exchange since 2012-2015. Criteria for the company's data that was used as the sample is as follows:

1. The knowledge intensive companies such as banks, insurance companies, telecommunication companies and computer companies are listed on the Indonesia Stock Exchange in 2012-2015.
2. The knowledge intensive companies such as banks, insurance companies, telecommunication companies and computer companies published, the annual report and financial statement for 2012-2015 period.
3. The companies that explain about the variables needed in full in the annual report and financial statements.
4. The companies published financial statements for 2012-2015 period in Indonesia's currency (Rupiah (Rp)).

Analysis Method

This research used Moderated Regression Analysis (MRA) for hypotheses test. Moderated Regression Analysis (MRA) is the multiple linear regression specialized applications that contain elements of interaction (multiplication of two or more independent variables) in the regression equation (Liana, 2009). In this research there are 1 dependent variable (intellectual capital performance), 4 independent variables (gender diversity, educational level diversity, nationality diversity and the presence of independent board) and 1 moderating variable (the effectiveness of board meetings). Therefore, there are 4 equations of regression in this research are as follows:

$$\text{(Model 1)} \quad \text{VAIC} = \beta_0 + \beta_1\text{GD} + \beta_2\text{MEET} + \beta_3\text{GD.MEET}$$

$$\text{(Model 2)} \quad \text{VAIC} = \beta_0 + \beta_4\text{ED} + \beta_5\text{MEET} + \beta_6\text{ED.MEET}$$

$$\text{(Model 3)} \quad \text{VAIC} = \beta_0 + \beta_7\text{ND} + \beta_8\text{MEET} + \beta_9\text{ND.MEET}$$

$$\text{(Model 4)} \quad \text{VAIC} = \beta_0 + \beta_{10}\text{ID} + \beta_{11}\text{MEET} + \beta_{12}\text{ID.MEET}$$

Where:

VAIC = Value Added Intellectual Capital or the intellectual capital performance measurement

GD = Gender Diversity

MEET = The number of board meetings or the effectiveness of board meetings measurement

GD.MEET	= The multiplication between gender diversity and the effectiveness of board meetings
ED	= Educational Level Diversity
ED.MEET	= The multiplication between educational level diversity and the effectiveness of board meetings
ND	= Nationality Diversity
ND.MEET	= The multiplication between nationality diversity and the effectiveness of board meetings
ID	= The Presence of Independents Board
ID.MEET	= The multiplication between the presence of independent board and the effectiveness of board meetings

Result and Discussion

The Description of Research Object

This study examined the effect of board diversity on intellectual capital performance in knowledge intensive-based companies such as banks, insurance companies, telecommunication companies and computer companies with the moderating role of board meetings' effectiveness. The research sample selection process is described in table 1.

Table 1
Research Object Description

Criteria	Knowledge-intensive companies	Number of companies
Companies listed on the Indonesia Stock Exchange in a period of 2012-2015	Banks	43
	Insurance Companies	12
	Telecommunication companies	6
	Computer companies	6
Companies do not publish an annual report and financial statement for a period of 2012-2015	Banks	0
	Insurance Companies	(1)
	Telecommunication companies	(2)
	Computer companies	(2)
	Banks	0

Criteria	Knowledge-intensive companies	Number of companies
Companies do not explain all of variable needed	Insurance Companies	0
	Telecommunication companies	0
	Computer companies	0
Companies published financial statement in another currency	Banks	0
	Insurance Companies	0
	Telecommunication companies	0
	Computer companies	0
Final Sample	Banks	43
	Insurance Companies	11
	Telecommunication companies	4
	Computer companies	4

The Description of Variables

The result of descriptive statistic is described in table 2.

Table 2
Descriptive Statistic Result

	N	Minimum	Maximum	Mean	Std. Deviation
VAIC	167	0.899	5.173	2.642	0.990
GD	167	0.000	0.500	0.213	0.174
ED	167	0.320	0.740	0.536	0.087
ND	167	0.000	0.498	0.089	0.183
ID	167	0.219	0.500	0.366	0.070
MEET	167	1	18	7.790	3.835

Source: Analyzed secondary data, 2017

According to Table 4.2, it was seen that N is 167. N means that the number of data used to test the hypotheses. It was obtained after some elimination of the data carried out to pass some of the classic assumption test and get a higher R square. From 248, 167 was used to be the final data. The effectiveness of board meetings was measured by the number of meetings conducted by board members has the widest range of values between 1-18, it means that the largest number of board meetings was conducted by the company is 18 times per year and the smallest is 1 times per year. A higher number of board meetings means that more frequent and effective communication among board members. The intellectual capital performance measured by VAIC has a range value of 0.899-5.173, means that value added of intellectual capital for banks, insurance, telecommunication and computer companies in

Indonesia are not as high as expected. While gender diversity, educational diversity, nationality diversity and the presence of independent board have a range value of 0-0.5; 0.32-0.74; 0-0.498; 0.219-0.5 respectively. 0 on board diversity means that there is no diversity and the higher the number, the higher the level of diversity.

Interpretation and Discussion

This research used moderated regression analysis or interaction test to test the hypotheses. This research has 4 regression equation which has been described earlier and since the hypotheses test using moderated regression analysis, then some classical assumptions must be met such as normality test, autocorrelation test, heteroscedasticity test, and multicollinearity test. Based on the results of retesting, all the classic assumption test had been met. The result of hypotheses test can be seen in table 3.

Table 3
Hypotheses Test Result

	Variables	R ²	Adjusted R ²	F-statistic	T-statistic	β
Model 1	GD				-9.357	-1.268***
	MEET	0.775	0.769	125.176	18.937	0.754***
	GD.MEET				13.175	0.173***
Model 2	ED				-13.435	-1.268***
	MEET	0.812	0.809	235.242	s\26.014	0.814***
	ED.MEET				18.893	0.155***
Model 3	ND				2.000	0.723**
	MEET	0.420	0.409	39.296	10.774	0.373***
	ND.MEET				-2.553	-0.103**
Model 4	ID				-13.752	-0.840***
	MEET	0.838	0.835	281.433	26.378	0.864***
	ID.MEET				19.714	0.112***

* Statistically significant at less than 0.10

** Statistically significant at less than 0.05

*** Statistically significant at less than 0.01

Source: Analysis of secondary data, 2017

Based on the hypotheses test result of model 1 in Table 3, it showed that the first hypothesis is accepted. It showed that the effectiveness of board meetings moderates the effect of gender diversity to the intellectual capital performance significantly positive as much 0.173. While, gender diversity individually affects the intellectual capital performance significantly negative. This is consistent with Goodstein *et al.* (1994) in Al-Musali & Ismail (2015), other

than a higher board diversity can improve the performance of the companies by giving more innovation, perception and flexibility in decision making process, a higher board diversity also can improve the conflicts by limit the ability of board members to create the strategic decisions. Therefore, to address two of the concurrent impacts of high board diversity, then the effectiveness of board meetings used in this research to moderate the negative effect of board diversity on intellectual capital performance due to a high effectiveness of board meetings means that a high effectiveness of communication among board member, discussion of the issues in more depth and a better understanding among board member. Kusumastuti *et al.* (2006) revealed that the women had prudence is very high, tend to avoid risk, and more thoroughly than men. It means that women tend to prefer low risk decisions while men conversely. Therefore, if the companies have higher gender diversity, that difference will lead to improve the conflict among member. This finding is not consistent with previous studies which stated that higher gender diversity will improve the intellectual capital performance (Swartz & Firer, 2005). However, these studies just measure the diversity using the presence of women in board of director which do not reflect the level of diversity accurately.

Hypotheses test result showed that educational level diversity is significantly negative to the intellectual capital performance individually. This finding is consistent with the previous studies which find out that educational level diversity have negative effect to the intellectual capital performance (Musali & Ismail, 2012). However, these studies is not significant. The possible reason of the negative effect of board diversity is that a particular requirement does not consider as well as employee have university degrees and skill, then they accepted. But this condition will lead to difference knowledge and skill which can cause domination from board with a higher educational level. Therefore, the effectiveness of board meetings used to reduce its negative effect. Board with higher educational level diversity and more effectiveness of board meetings will have more strategic decision making because the decision will consist of many ideas and knowledge. This finding is also not consistent with a study that conducted by Al-Musali & Ismail (2015) which found that educational level diversity with more effectiveness of board meetings significantly negative to the intellectual capital performance. This inconsistency can be caused by the difference of requirement of educational level for the work. However, the hypotheses test result of model 2 in this

research supports the resource dependency theory which showed that the effectiveness of board meetings will moderate significantly positively as much 0.155 into the relationship between educational level diversity and the intellectual capital performance. So, the second hypothesis is accepted.

Hypothesis test result showed that the effectiveness of board meetings is a moderating variable which moderates the relationship between nationality diversity and the intellectual capital performance to a negative effect as much -0.103. It means that the third hypothesis is rejected. Nationality diversity itself individually affects the intellectual capital performance significantly positive. This result was consistent with the previous studies which stated that higher ethnic diversity will improve the intellectual capital performance (Swartz & Firer, 2005). The result of a negative effect on the effectiveness of board meetings in moderates the effect of nationality diversity to the intellectual capital performance is consistent with the study conducted by Al-Musali & Ismail (2015) which found that the effectiveness of board meetings moderates the relationship between nationality diversity and the intellectual capital performance to a negative effect. The possible reason of the negative effect of nationality diversity to the intellectual capital performance even moderates by the effectiveness of board meetings is the low number of foreigners on the boards in Indonesia companies. Furthermore, domination of local directors may favor only the national group due to their commonality in making decision. It gives the power of locals in the decision making and resource allocation processes of the companies, the effect of self-categorization by local directors will be given limited consideration or ignored completely. Based on hypotheses test result was obtained significantly positive effect as much 0.112 on the effectiveness of board meetings in moderates the effect of the presence of independent board on the intellectual capital performance. It means that the fourth hypothesis is accepted. While the presence of independent board itself have negative effect to the intellectual capital performance, which may be due to the number of independent board has been established in Indonesia that a number of at least 50% of the board of commissioners. The other possible reason is that a high number of independent board considered to be less able to make strategic decisions of the companies due to the have no self-interest or ownership in the company as well as the lack of knowledge of the company's condition compared to the dependent board, so it probably will not try its utmost to advance the

company and achieve high performance. That interests of inequality will lead to conflict among board member if not balanced with frequent meetings, effective communication and alignment of sufficient understanding. Therefore, in this research the effectiveness of board meeting proven can moderate the effect of the presence of an independent board to the intellectual capital performance into a positive effect. This result has supported the resource dependency theory which stated that the effectiveness of board meetings will help to reduce the negative effect of board diversity.

Conclusion and Limitation

This research found that board diversity in terms of gender, educational level, nationality diversity and the presence of independent board affect the intellectual capital performance significantly negative except nationality diversity which affect intellectual capital performance to a positive effect. This proven that board diversity is not only give positive effect but also can affect negatively. Furthermore, this research found that the effectiveness of board meetings moderates the relationship between each category of board diversity (gender, educational level, nationality diversity, and the presence of independent board) on the intellectual capital performance to positive effect except for nationality diversity. This result supports the resource dependency theory which stated that the effectiveness of board meetings will reduce the negative effects of board diversity. Therefore, it can be concluded that board diversity possibly can have a positive or negative significant effect of the intellectual capital performance. Furthermore, the presence of the effectiveness of board meetings moderates the relationship between board diversity to the intellectual capital performance to a positive effect even though not for nationality diversity. This is considered that the effectiveness of board meetings can help to reduce the negative effects of high board diversity such as stress, conflict, and counterproductive to build a frequent and effective communication.

This research has some limitations. First, this study only focused on knowledge intensive companies such as banks, insurance companies, telecommunication companies and computer companies that has chosen by a purposive sampling method with some criteria established by the researcher, which make the result might cannot be generalized to specific sectors. Second, the sample size used in this study is limited to listed banks, insurance

companies, telecommunication companies, and computer companies in Indonesia Stock Exchange not another country. The limited sample size might affect the reliability of the result. Third, this study only focused on the effect of moderating variable which moderates the relationship between board diversity in each category to the intellectual capital performance not the effect of overall board diversity, which make the result might deviate from the overall effect of board diversity.

Regarding with the limitations of this research, some suggestions addressed to the future researchers in order to have better exploration about this research topic. First, future research may include companies in specific sectors as the sample, such as the financial sector or nonfinancial sector. Second, future research may develop the sample to cover other countries, such as ASEAN countries. Third, future research may use another analysis method to get a better result of the effect of overall board diversity to the intellectual capital performance.

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