



## The Effect of Intellectual Capital towards Firm Performance and Risk with Board Diversity as a Moderating Variable: Study in ASEAN Banking Firms

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### Abstract

This paper finds out the impact of intellectual capital on firm performance and risk. Moreover, this paper also examines whether the board diversity in terms of gender and nationality can strengthen the effect of intellectual capital towards firm performance and risk that operates in banking industries in ASEAN. The data in this study obtained from Bloomberg and OSIRIS database and also the firm's annual reports over the period of 2012-2016 (375 observations) and conducted in ASEAN countries, namely Indonesia, Philippines, Malaysia, Singapore, and Thailand. The results find that the efficient and effective use of intellectual capital will make the firms achieved higher performance. Meanwhile, intellectual capital can help reduce credit risk. In the interaction effect, the result is consistent with social psychology theory and shows that the presence of board diversity actually reduces firm performance and increases risk.

## Analisis Pengaruh Intellectual Capital terhadap Kinerja dan Risiko dengan Keberagaman Direksi sebagai Pemoderasi: Studi pada Perusahaan Perbankan di Asean

### Abstrak

Penelitian ini bertujuan untuk menguji pengaruh antara intellectual capital dengan kinerja dan risiko. Selain itu, penelitian ini juga menguji apakah keberagaman direksi dapat memperkuat hubungan antara intellectual capital terhadap kinerja dan risiko pada perusahaan-perusahaan yang beroperasi di industri perbankan di ASEAN. Data dalam penelitian ini diperoleh dari database Bloomberg dan OSIRIS dan juga laporan tahunan perusahaan selama periode 2012-2016 (375 observasi) dan dilakukan di negara-negara ASEAN, yaitu Indonesia, Filipina, Malaysia, Singapura, dan Thailand. Hasil penelitian menunjukkan bahwa penggunaan intellectual capital yang efisien dan efektif akan membuat perusahaan mencapai kinerja yang lebih baik. Sementara itu, intellectual capital dapat membantu meminimalisir adanya risiko kredit. Pada hubungan interaksi, hasil penelitian sejalan dengan social psychology theory dan menunjukkan bahwa adanya keberagaman direksi justru mengurangi kinerja dan meningkatkan risiko yang dihadapi perusahaan.

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## INTRODUCTION

In developing countries such as ASEAN, the capital markets play an increasingly important role in the growth of the global economy. Since the enactment of the ASEAN Economic Community (AEC) by the end of 2015, the economic growth in the ASEAN region has been improved. Based on the enactment of AEC, ASEAN will become a more dynamic and competitive region. Therefore, every organization needs to utilize efficient resources so that the company can improve and increase its performance and manage the risks faced by the competition so that the company is able to create value-added and compete in a competitive market.

Based on Resource-based Theory (hereinafter referred to as RBT) the firm's competitive advantage could be driven by Intellectual Capital (hereinafter referred to as IC) (Barney, 1991). The company's success will be achieved by the continuous competitive advantage of IC. IC tends to be relied upon by companies engaged in knowledge-intensive fields such as service industries because of their corporate activities that make them more likely to invest in IC, including the banking industry (Chen et al., 2005; Wang, 2008)

The effect of IC on firm performance has been examined. Several studies have shown that firm performance could be improved by IC (Firer & Stainbank, 2003; Chen et al., 2005; Tan et al., 2007; Ulum, 2008; Clarke et al., 2011; Mondal & Ghosh, 2012; Jafarnezhad & Tabari, 2016; Kaupelytė & Kairyte, 2016; Ozkan et al., 2017). However, not all research results were consistent (Firer & Williams, 2003; Chan, 2009; Maditinos et al., 2011). Firms that perform well because they can manage ICs should be able to minimize their risks. However, it is still difficult to find research that examines the effect of IC on risk. Gosh and Maji (2014) found evidence that ICs can reduce the firm risk that seen from credit risk.

However, Grant (1996) explained that IC does not provide a competitive advantage

without proper organization and placement. Therefore, corporate governance is important in terms of the role of the board of directors because of their abilities to control the company to optimize the management of IC, so as to improve performance and reduce risk. One of the issues on board diversity is the diversity of gender and citizenship. Resource dependence theory (hereinafter referred to as RDT) suggests that diversity in the board of director brings unique information capable of assisting better decision making (Carter et al., 2010).

In some countries, the existence of women in the board of director has already established regulations on the board of director composition. In 2006, Norway became the first country that applied gender quotas to the board of director by deciding that at least 40 percent of women in the board of director. According to Staffing Industry Analysts (2015), some countries in ASEAN are trying to implement gender quotas. In 2016, Malaysia required a 30 percent quota of women director. In Singapore, it is already discussed that the increasing of gender diversity in the board of director was needed.

ASEAN economy has grown and involves massive foreign investment. Ruigrok et al. (2007) explained that the demand for directors who are able to contacts overseas markets is increasing. A foreign director may connect the company to a different opportunity to the foreign market.

This research predicts that women and foreign directors can strengthen the impact of IC on performance and risk. In the previous research, no one has raised the board diversity in effect to IC, performance and risk. Previous studies are also mostly only researching with one country as an institutional setting. So researchers are motivated to use the setting of ASEAN countries in order to provide an overview of the impact of ICs on company performance and risks to developing country market countries and to provide an overview of companies in ASEAN in dealing with the issue of the ASEAN Economic Community.

### Hypothesis Development

Resource-based theory serves to explain and predict what can be the basis for competitive advantage and firm performance (Barney et al., 2011). From an RBT perspective, sustainable competitive advantage is closely linked to the company's ability to maintain valuable, scarce and irreversible resources also allocate and deploy these resources effectively (Barney, 1991).

Resource dependence theory is of the opinion that external organizations can be connected with companies by directors to face environmental dependence (Pfeffer & Salancik, 1978). Human capital theory (hereinafter referred to as HCT) discusses the role of knowledge, experience, and skills possessed by someone who can be used for the organization (Terjesen et al., 2009). In this study, the diversity of directors is seen from gender and citizenship.

Value creation and the sustainability of corporate growth require the role of the IC. This is supported by RBT which explains that IC is the firm's competitive advantage (Barney, 1991). According to RBT's perspective, the creation of sustainable competitive advantage is closely related to the company's ability to maintain valuable, scarce and irreplaceable resources and allocate and disseminate these resources effectively (Barney, 1991). Given the sustainable competitive advantage, the company that owns it will be able to win the competition on the market so that it can create value and achieve optimal firm performance.

Several studies have shown that firm performance could be improved by IC (Firer & Stainbank, 2003; Chen et al., 2005; Tan et al., 2007; Ulum, 2008; Clarke et al., 2011; Mondal & Ghosh, 2012; Jafarnezhad & Tabari, 2016; Kaupelytė & Kairyte, 2016; Ozkan et al., 2017). From above explanations, we could propose the following hypotheses:

H1: Intellectual capital has a positive effect on firm performance of banking firms in ASEAN.

Success in credit activities is highly dependent on the skills, knowledge, imaginative thoughts and professional experience of bank

employees to identify and analyze precisely the possibility of threats at an early stage when credit lending decisions are made and to solve problems throughout the credit duration of the credit agreement (Ghosh & Maji, 2014). Structural capital consisting of the system of information, databases, copyrights, patents, processes, and relationships with others supports human resources to introduce new products that are better and provide new ideas and services to attract new customers and retain customers that exist. Bontis et al. (2000) argued that structural capital which includes all non-human knowledge in organizations can support human resources to improve efficiency and reduce the probability of bank credit risk.

The previous study in Portugal Banking sector during 2005-2009 showed that IC can be one of the most reliable tools for predicting further banking activities (Curado et al., 2014). Banks that were rated as having very low ICs in 2005 experienced bankruptcy or were unable to continue their activities independently during the financial crisis. Ghosh and Maji (2014) found that ICE was negatively related to credit risk, while HCE was significantly and negatively related to credit risk.

In a free-market economic environment where a company must continue to adapt to the dynamic nature of the market, the role of the decision-maker or, in other words, the managerial staff is very important. In an environment of intense competition, human capital and structural capital, help improve bank solvency or reduce the possibility of bankruptcy. Theoretically, the higher IC Efficiency (ICE) and component efficiency namely Human Capital Efficiency (HCE) and Structural Capital Efficiency (SCE) will reduce bank credit risk. From the above explanations, we could propose the following hypotheses:

H2: Intellectual capital has a negative effect on the risk of banking firms in ASEAN.

IC does not provide a competitive advantage without proper organization and placement (Grant, 1996). Therefore, corporate governance is important in terms of the role of the board of

director because of their abilities to control the company to optimize the management of IC, One of the issues on board diversity is the diversity of gender and citizenship. Gender diversity in the board will result in more precise deliberation and discussion of tighter issues often considered unacceptable to male directors (Huse & Solberg, 2006). Women can morally contribute with a fresh perspective to solve complex problems, which can reduce the formulation of information strategies (Francoeur et al., 2008); supporting the development of good communication and the establishment of better relationships (Hillman et al., 2007). The previous research has found that women in the board of director can improve firm performance (Deszo & Ross, 2012; Luckerath-Rovers, 2013; Post & Bryon, 2015; Isidro & Sobral, 2015). From the above explanations, we could propose the following hypotheses:

H3: Women directors strengthen the positive effect of intellectual capital on the firm performance of banking firms in ASEAN.

The presence of foreign directors provides several benefits in developing countries (Ramaswamy, 2001). The foreign directors will send a signal about the company's intention to conduct global expansion. Foreign directors can introduce the heterogeneity of perspectives (Ezat & El-Masry, 2008; Samaha et al, 2012). Moreover, the information asymmetry could be reduced by the diversity of board; the increasing of potential investors and financing opportunities is improved by the financial flexibility of domestic firms; and the expansions of knowledge and technology (Fogel et al., 2013); the independency of foreign directors tends to be better (Ruigrok et al., 2007). From the above explanations, we could propose the following hypotheses:

H4: Foreign directors strengthen the positive effect of intellectual capital on the firm performance of banking firms in ASEAN.

Some literature shows the role of gender as a factor when making risk-related decisions.

One of the most prominent women attributes is their risk aversion (Barsky et al., 1997). Women directors can improve bias in important decisions, especially about the strategic oversight and risk by thinking about problems and detailing solutions. It can be concluded that women are more conservative than men (Wiersema & Bantel, 1992; Cabo et al., 2012).

Bellucci et al. (2010) and Beck et al. (2014) focuses on the banking sector. In a credit officer context, women were more risk-averse than men and reduced the number of received loans (Bellucci et al., 2010). The failure rate of loans was reduced because it handled by women credit officers (Beck et al., 2014). From the above explanations, we could propose the following hypotheses:

H5: Women directors strengthen the negative effect of intellectual capital on the risk of banking firms in ASEAN.

Previous studies have examined how foreign ownership can influence decision making, such as risk-taking decisions. The presence of foreign ownership may decrease risk taking as foreign investors (Vo, 2016). Given the characteristics of foreign investors who tend to avoid risks, the researchers are interested to examine whether the diversity of citizenship of directors seen from the presence of foreign directors can reduce the risk

Diversity in the board is related to the cognitive diversity and information shared by corporate board members (Kim & Rasheed, 2014). Diverse boards have superior cognitive abilities than homogeneous boards (Du et al., 2017). From above explanations, we could propose the following hypotheses:

H6: Foreign directors strengthen the negative effect of intellectual capital on the risk of banking firms in ASEAN.

## METHOD

### Sample

Based on the obtained data from Bloomberg and OSIRIS database and also annual report, the total number of sample can be shown

in Table 1. The banking sector is used as sample in this research. The countries selected as the sample are the countries in Southeast Asia that have complete data namely Indonesia, Philippines, Malaysia, Singapore, and Thailand.

The initial sample consists of 89 firms with years of observations during 2012 to 2016. Due to incomplete data on the variables selected, the final sample used in this study amounts to 75 firms with a total of 375 firm-year observations. Table 1 shows the final sample used and its distribution by country.

**Table 1.** Sample Distribution by Countries

Country Name	Number of Firm	Number of Observation
Indonesia (IN)	40	200
Philippines (FL)	13	65
Malaysia (ML)	9	45
Singapore (SN)	4	20
Thailand (TH)	9	45
Total	75	375

Intellectual Capital (VAIC). IC measured using VAIC which was developed by Pulic (2000, 2004). VAIC measured by the following equation:

Notes:

VAIC<sub>t</sub>: Value added intellectual coefficient at t

HCE<sub>t</sub>: VA<sub>t</sub> / HC<sub>t</sub>; human capital efficiency coefficient at t

SCE<sub>t</sub>: SC<sub>t</sub> / VA<sub>t</sub>; structural capital efficiency coefficient at t

CEE<sub>t</sub>: VA<sub>t</sub> / CE<sub>t</sub>; capital employed efficiency coefficient at t

VA<sub>t</sub>: OP<sub>t</sub> + EC<sub>t</sub> + D<sub>t</sub> + A<sub>t</sub>; OP<sub>t</sub> is operating income; EC<sub>t</sub> is employee costs; (D<sub>t</sub>) is depreciation; and A<sub>t</sub> is amortization

HC<sub>t</sub>: total salary dan wages at t

SC<sub>t</sub>: VA<sub>t</sub> - HC<sub>t</sub>; structural capital at t

CE<sub>t</sub>: book value of the net assets at t

Composition of Women Directors (FemaleDir). The composition of the women Di-

rectors is proxied with the proportion of the women directors' composition measured by number woman director or board of director.

The proportion of Women Directors Composition = Number of Women Directors / Number of Board of Directors. Composition of Foreign Directors (ForeignDir). Same with the study from Du (2017), the composition of the foreign directors is proxied with the proportion of foreign director composition measured by: The proportion of Foreign Directors Composition = Number of Foreign Directors / Number of Board of Directors.

Firm Performance (Firm\_Perf). Same with the studies from Firer and Williams (2003), Chen et al. (2005) and Mondal and Ghosh (2012), the firm performance is measured by ROA (return on assets): ROA = Profit before tax / Average total assets. Credit Risk (Risk). Same with the study from Gosh dan Maji (2014), credit risk measured by: Credit Risk = Net non-performing loans / Net advances. Board Size (BoardSize). Board is proxied with the number of directors on the board of directors. Bank Size (BankSize). Bank Size is measured by the natural logarithm of bank total asset at year t. Net Interest Margin (NIM). Net interest margin is measured by dividing revenue from net Interest with total earning assets. Loan to Asset Ratio (LTAR). Loan to Asset Ratio is measured by dividing Loan and total assets.

### Regression Model

This study uses panel data regression model analysis, which is fixed effect or random effect regression. Our study finds out the most suitable panel data regression model by using Hausman test (Gujarati & Porter, 2009). The hypotheses testing in this study were using six equation models. The equation models used are as follows:

Model 1. Interaction Model between VAIC on Firm Performance

$$\text{Firm\_Perf} = \beta_0 + \beta_1 \text{VAIC} + \beta_2 \text{BoardSize} + \beta_3 \text{BankSize} + \beta_4 \text{NIM} + \beta_5 \text{LTAR} + \epsilon_t$$

Model 2. Interaction Model between VAIC on Risk

$$\text{Risk} = \beta_0 + \beta_1 \text{VAIC} + \beta_2 \text{BoardSize} + \beta_3 \text{BankSize} + \beta_4 \text{NIM} + \beta_5 \text{LTAR} + \epsilon_t$$

Model 3. Interaction Model between VAIC and Women Director on Firm Performance

$$\text{Firm\_Perf} = \beta_0 + \beta_1 \text{VAIC} + \beta_2 \text{FemaleDir} + \beta_3 \text{VAIC*FemaleDir} + \beta_4 \text{BoardSize} + \beta_5 \text{BankSize} + \beta_6 \text{NIM} + \beta_7 \text{LTAR} + \epsilon_t$$

Model 4. Interaction Model between VAIC and Foreign Director on Firm Performance

$$\text{Firm\_Perf} = \beta_0 + \beta_1 \text{VAIC} + \beta_2 \text{ForeignDir} + \beta_3 \text{VAIC*ForeignDir} + \beta_4 \text{BoardSize} + \beta_5 \text{BankSize} + \beta_6 \text{NIM} + \beta_7 \text{LTAR} + \epsilon_t$$

Model 5. Interaction Model between VAIC and Women Director on Risk

$$\text{Risk} = \beta_0 + \beta_1 \text{VAIC} + \beta_2 \text{FemaleDir} + \beta_3 \text{VAIC*FemaleDir} + \beta_4 \text{BoardSize} + \beta_5 \text{BankSize} + \beta_6 \text{NIM} + \beta_7 \text{LTAR} + \epsilon_t$$

Model 6. Interaction Model between VAIC and Foreign Director on Risk

$$\text{Risk} = \beta_0 + \beta_1 \text{VAIC} + \beta_2 \text{ForeignDir} + \beta_3 \text{VAIC*ForeignDir} + \beta_4 \text{BoardSize} + \beta_5 \text{BankSize} + \beta_6 \text{NIM} + \beta_7 \text{LTAR} + \epsilon_t$$

Notes:

- Firm\_Perf = Firm Performance
- Risk = Credit Risk
- VAIC = Intellectual Capital
- FemaleDir = Proportion of Women Directors
- ForeignDir = Proportion of Foreign Directors
- VAIC\*FemaleDir = Moderating Variables of the Women Directors on IC
- VAIC\*ForeignDir = Moderating Variables of the Foreign Directors on IC
- BoardSize = Control Variable of Board Size
- BankSize = Control Variable of Bank Size
- NIM = Control Variable of Net Interest Margin
- LTAR = Control Variable of Loan to Asset Ratio
- $\epsilon_t$  = Error term

## RESULT AND DISCUSSION

### Descriptive Statistics

Table 2 showed the descriptive statistics. The variable Firm\_Perf has a mean value of 1.25594. Risk variable has a mean value of 0.10498. The VAIC variable being the proxy of the intellectual capital of the sample firms has a mean of 3.41482. The Board of Directors in the study sample averaged nine people, while women directors and foreign directors numbered two. Overall, the descriptive statistics of each variable can be seen in Table 2.

**Table 2.** Descriptive Statistics of Selected Variables

Variable	Max	Min	Mean	Std. Dev.
Firm_Perf	4.04	-3.65	1.26	.90
Risk	.42	.00	.10	.13
VAIC	6.87	1.09	3.41	1.11
FemaleDir	.75	.00	.17	.16
ForeignDir	1.00	.00	.12	.17
Board_Size	25.00	1.00	9.478	4.78
Bank_Size	22.23	13.86	18.13	2.09
NIM	16.64	.56	4.35	2.09
LTAR	1.06	.05	.60	.13

### Results of Hypothesis Testing

Table 3 shows the results of hypothesis testing. Hypothesis 1 testing aims to measure the positive effect of intellectual capital on firm performance (ROA). Hypothesis 1 testing showed a significant positive effect of VAIC towards Firm\_Perf with coefficient of 0.6549 at 1% level of significance. This indicates that if a company can use the IC owned more efficiently, it can lead to improved financial performance at the company.

The result is in line with the previous studies which show that intellectual capital has a positive effect on firm performance (Firer & Stainbank, 2003, Chen et al., 2005, Tan et al., 2007; Clarke et al., 2011). In the banking sector, similar results were found (Ulum, 2008;

**Table 3.** Hypothesis Testing Results

Independent Variable	Dependent Variable					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Firm_Perf	Risk	Firm_Perf	Firm_Perf	Risk	Risk
Const	2.9050 (3.28)**	.2675 (2.03)	3.0892 (3.33)	2.9440 (2.48)*	.2809 (2.51)*	.2894 (2.42)*
Vaic	.6549 (12.65)***	-.0146 (-6.03)***	.7170 (18.94)***	.6595 (9.70)***	-.0191 (-9.71)***	-.0157 (-7.48)***
FemaleDir			1.6166 (2.73)*		-.0762 (-4.67)***	
ForeignDir				.4159 (.84)		-.0340 (-1.06)
Vaic_FemaleDir			-.4307 (-2.30)*		.0306 (3.80)**	
Vaic_ForeignDir				-.0629 (-.34)		.0133 (1.24)
Board_Size	.3762 (12.00)***	.0030 (4.01)**	.0351 (9.52)***	.0378 (10.37)***	.0029 (3.29)**	.0031 (4.34)**
Bank_Size	-.2943 (-8.00)***	-.0100 (-1.14)	-.3159 (-7.12)***	-.2976 (-5.67)***	-.0099 (-1.25)	-.0119 (-1.37)
Nim	.1268 (3.12)**	.0061 (3.64)**	.1313 (3.47)**	.1264 (5.38)**	.0061 (3.60)**	.0064 (3.99)**
Ltar	.9094 (2.44)*	.0229 (.057)	.8576 (2.23)*	.8820 (2.32)*	.0179 (.42)	.0227 (.58)
R <sup>2</sup> Within	.5989	.1004	.6088	.5999	.1197	.1057
F	7896.55	147.42	4.81	642.47	28.72	6.30
Prob > F	.0000	.0001	.0741	.0000	.0029	.0473

Description: \*\*\* significant at 1%; \*\* significant at 5%; \* significant at 10%

Mondal & Ghosh, 2012; Kaupelytė & Kairytė, 2016; Jafarnezhad & Tabari, 2016; Ozkan et al., 2017.

Hypothesis 2 testing aims to measure the negative effect of intellectual capital on risk. Hypothesis 2 testing showed a significant negative effect of intellectual capital and credit risk with coefficient of -0.0146 at 1% level of significance. This indicates that success in credit activities is highly dependent on the skills, knowledge, imaginative thoughts and professional experience of bank employees to identify and analyze precisely the possibility of threats at an early stage when credit decision is made and to solve problems throughout the

loan duration of the credit agreement (Ghosh & Maji, 2014). Structural capital consisting of information systems, databases, copyrights, patents, processes and relationships with others supports human resources to improve efficiency and reduce the probability of bank credit risk.

Hypothesis 3 testing aims to measure whether the women director strengthens the positive effect of intellectual capital on firm performance. Hypothesis 3 testing showed a significant negative effect between VAIC\*FemaleDir and Firm\_Perf interaction variables with a coefficient of -0.4307 at a significance level of 10%. The result is consistent with social psychology

theory which states if there is board diversity, it will make slower decision-making and the possibility of conflicting will be higher (Carter et al., 2010). Data in this research indicate that the proportion of women in directors is still a minority. Minority directors will make them become less committed and the turnover intention and absenteeism will be higher (Marimuthu & Kolandaisamy, 2009). In addition, minority directors will have less satisfaction, feel more discrimination, and result in other behaviors and negative attitudes (Jayne & Dipboye, 2004).

One of the reasons that the existence of women directors can reduce performance or not have an impact on performance is because the appointment of women directors is limited to meet the rules and propriety so they may not have enough knowledge and experience so they have no value added for the firm (Fauzi & Locke 2012).

Moreover, in a study conducted by Darmadi (2011) showed that family-controlled firm is dominated in Indonesia (Claessens et al., 2000), women existence in councils is simply due to familial relationships with controlling shareholders versus skills and the experience it has. Therefore, the management performed by women directors will not maximize and reduce performance.

Hypothesis 4 testing aims to measure the foreign directors strengthen the positive effect of intellectual capital on firm performance. Hypothesis 4 testing showed that there is no effect between VAIC\*ForeignDir and Firm\_Perf interaction variables with a coefficient of -0.0629.

Although the results show that foreign directors have no effect on intellectual capital and firm performance, the negative value coefficient has several reasons. Similar to hypothesis 3, hypothesis 4 is supported by social psychology theory. The data in this study indicate that foreign directors are a minority. The existence of foreign director negatively affects firm performance (Marimuthu & Kolandaisamy, 2009).

The existence of foreign directors will make them not familiar with the rules of laws and regulations, national accounting, the stan-

dard of governance and management methods, it will make them more difficult to evaluate managerial performance (Masulis et al, 2012). In line with this, working with people who are different in demographics often results in negative results (Riordan, 2000). Suggest that the differences in demographics will decrease social unity between groups and social barriers (Westphal & Milton, 2000).

Hypothesis 5 testing aims to measure research questions whether women directors strengthen the negative effect of intellectual capital on risk. Hypothesis 5 testing showed a significant positive effect of VAIC\*FemaleDir and Risk interaction variables with a coefficient of 0.0306 at 5% significance level. Therefore, hypothesis 5 which states that women's directors strengthen the negative effect of intellectual capital against risk, is not supported.

The result is in line with the previous research examining the effect of the presence of women directors on corporate risk has found that women directors can increase risk. Berger et al. (2014) also has some opinions to explain why women directors can increase risk. This may be due to a lack of women's experience as top management. Many women directors who clearly look less experienced, give the sign that lack of experience leads to increased risk. This opinion is similar to Ahern and Dittmar (2012) who state that the existence of gender quotas negatively affects the firm value because the appointment of women in the director is compulsory even though they lack experience and only to meet the quota.

Hypothesis 6 testing aims to measure whether foreign directors strengthen the negative effect of intellectual capital on risk. The testing of hypothesis 6 shows that there is no effect between VAIC\*ForeignDir and Risk interaction variables with a coefficient of 0.0133.

Although the results found that the presence of foreign director did not affect the relationship between intellectual capital and risk, the effect of this negative value coefficient has several reasons. This is in line with the social psychology theory. Similarly, as explained in



hypothesis 4, Masulis et al. (2012) showed that foreign directors make them to be less able to familiarize themselves with the country where he works so do not understand the method of management. This will affect their decision-making, including risk-taking decisions. Foreign ownership positively affects the risk-taking process (Boubakri et al., 2013). The existing of governance will make the risk-taking from foreign owners is higher, including from top management, as they are an extension of the foreign owner. From these foreign ownership characteristics, we suspect that the characteristics of foreign directors also make risk-taking process and risk are higher.

## CONCLUSION AND RECOMMENDATION

This research finds out the effect of intellectual capital on performance and risk with board diversity as moderator conducted in the banking sector in ASEAN over the period of 2012-2016.

The first objective of this study was to find out the positive effect between intellectual capital and firm performance in the banking industry in ASEAN. The results showed that the use of intellectual capital efficiently and effectively will make the company achieve higher performance.

The second objective of this study is to find out whether intellectual capital has a negative effect on risk in the banking industry in ASEAN. The results showed that the existence of intellectual capital components consisting of HCE, SCE and CEE can help reduce credit risk. The results are in line with the previous study (Ghosh & Maji, 2014).

The third, fourth, fifth and sixth objectives of this study are to find out whether board diversity can strengthen the effect of intellectual capital on performance and risk. The results showed that board diversity viewed from the presence of women directors and foreign directors actually decreased the performance and increased risk. This is in line with social psychology theory which states that decision-making will be slower

and more conflicting if there is a diversity of directors (Carter et al., 2010) so that it will affect the performance and risk of the company.

This research has several implications in both theoretical and business fields. First, this research contributes to the theoretical field by adding a reference to the effect of intellectual capital on performance and risk, with the board of directors as moderator. This research also gives a new perspective in ASEAN countries as emerging market especially in the financial industry, while most of the studies are conducted in the US and Europe.

Second, this study contributes to the practical field by reinforcing the effect of intellectual capital on performance improvement and risk reduction, so companies need to manage intellectual capital as well as possible in order to encourage performance improvement and risk reduction. Third, this research can be a consideration for the policy makers to review the need for minimum requirements in setting quotas for the existence of women directors and foreign directors with more attention to the experience and capabilities of the board of directors.

## REFERENCES

- Ahern, K.R., & Dittmar, A.K. (2012). The Changing of the Boards: the Impact on Firm Valuation of Mandated Female Board Representation. *The Quarterly Journal of Economics*, 127(1), 137-197.
- Barney, J. B. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99-120.
- Barney, J. B., Ketchen D. & Wright M. (2011). The Future of Resource Based Theory: Revitalization or Decline?. *Journal of Management*, 37(5), 1299-1315.
- Barsky, R. B., Juster, F. T., Kimball, M. S., & Shapiro, M. D. (1997). Preference Parameters and Behavioral Heterogeneity: an Experimental Approach in the Health and Retirement Study. *Quarterly Journal of Economics*, 112(2), 537-579.
- Baxter, J., & Wright, E. O. (2000). The Glass Ceiling Hypothesis: a Comparative Study of the United States, Sweden, and Australia. *Gender & Society*, 14(2), 275-94.

- Bellucci, A., Borisov, A., & Zazzaro, A. (2010). Does Gender Matter in Bank-Firm Relationships? Evidence from Small Business Lending. *Journal of Banking & Finance*, 34(12), 2968-2984.
- Beck, T., Behr, P., & Guttler, A. (2014). Gender and Banking: are Women Better Loan Officers?. *Review of Finance*, 17(4), 1279-1321.
- Boubakri, N., Cosset, J., & Saffar, W. (2013). The Role of State and Foreign Ownership and Corporate Risk-taking: Evidence from Privatization. *Journal of Financial Economics*, 108(3), 641-658.
- Cabo, R. M., Gimeno, R., & Nieto, M. J. (2012). Gender Diversity on European Banks' Boards of Directors. *Journal of Business Ethics*, 109(2), 145-162.
- Carter, D. A., D'Souza, F., Simkins, B.J., & Simpson, W.G. (2010). The Gender and Ethnic Diversity of US Boards and Board Committees and Firm Financial Performance. *Corporate Governance: an International Review*, 18(5), 396-414.
- Chan, K. H. (2009a). Impact of Intellectual Capital on Organizational Performance: an Empirical Study of Companies in the Hang Seng Index (Part 1). *The Learning Organization*, 16(1), 4-21.
- Chan, K. H. (2009b). Impact of Intellectual Capital on Organizational Performance: an Empirical Study of Companies in the Hang Seng Index (Part 2). *The Learning Organization*, 16(1), 22-39.
- Chen, M. C., Cheng, S. J., & Hwang, Y. (2005). An Empirical Investigation of the Relationship between Intellectual Capital and Firms' Market Value and Financial Performance. *Journal of Intellectual Capital*, 6(2), 159-176.
- Claessens, S., Djankov, S., & Lang, L. H. P. (2000). The Separation of Ownership and Control in East Asian Corporations. *Journal of Financial Economics*, 58(1-2), 81-112.
- Clarke, M., Seng, D., & Whiting, R. H. (2011). Intellectual Capital and Firm Performance in Australia. *Journal of Intellectual Capital*, 12(4), 505-530.
- Curado, C., Guedes, J. M., & Bontis, N. (2014). The Financial Crisis of Banks (Before, During and After): an Intellectual Capital Perspective. *Knowledge and Process Management*, 21(2), 103-111.
- Darmadi, S. (2011). Board Diversity and Firm Performance: the Indonesian Evidence. *Corporate Ownership and Control*, 8(2), 450-466.
- Deszo, L. C., & Ross, G. D. (2012). Does Female Representation in Top Management Improve Firm Performance? a Panel Data Investigation. *Strategic Management Journal*, 33(9), 1072-1089.
- Du, X., Jian, W., & Lai, S. (2017). Do Foreign Directors Mitigate Earnings Management? Evidence from China. *International Journal of Accounting*, 52(2), 142-177.
- Eagly, A. H., & Carli, L.L. (2003). The Female Leadership Advantage: an Evaluation of the Evidence. *The Leadership Quarterly*, 14(6), 807-834.
- Ezat, A., & El-Masry, A. (2008). The Impact of Corporate Governance on the Timeliness of Corporate Internet Reporting by Egyptian Listed Companies. *Managerial Finance*, 34(12), 848-867.
- Fauzi, F., & Locke, S. (2012). Board Structure, Ownership Structure and Firm Performance: a Study of New Zealand Listed-Firms. *Asian Academy of Management Journal of Accounting and Finance*, 8(2), 43-67.
- Firer, S., & Stainbank, L. (2003). Testing the Relationship between Intellectual Capital and a Company's Performance: Evidence from South Africa. *Meditari Accountancy Research*, 11(1), 25-44.
- Firer, S., & Williams, S.M. (2003). Intellectual Capital and Traditional Measures of Corporate Performance. *Journal of Intellectual Capital*, 4(3), 348-360.
- Fogel, K. S., Lee, K. K., Lee, W. Y., & Palmberg, J. (2013). Foreign Direct Investors as Change Agents: the Swedish Firm Experience. *Corporate Governance: an International Review*, 21(6), 516-534.
- Francoeur, C., Laballe, R., & Sinclair-Desgagne, B. (2008). Gender Diversity in Corporate Governance and Top Management. *Journal of Business Ethics*, 81(1), 83-95.
- Ghosh, K. S., & Maji, G. S. (2014). The Impact of Intellectual Capital on Bank Risk: Evidence from Indian Banking Sector. *The IUP Journal of Financial Risk Management*, 11(3), 18-38.
- Grant, R. M. (1996). Toward a Knowledge based Theory of the Firm. *Strategic Management Journal*, 17(2), 108-122.

- Gujarati, D. N., & Porter, D. C. (2009). *Basic Econometrics 5<sup>th</sup> edition*. McGraw Hill/Irwin. New York: McGraw-Hill.
- Hillman, A. J., Cannella, J. A. A., & Paetzold, R. L. (2000). The Resource Dependence Role of Corporate Directors: Strategic Adaption of Board Composition in Response to Environmental Change. *Journal of Management Studies*, 37(2), 235-255.
- Högberg, A. (2009). Formal and Informal Institutions in Asia: a Survey of Asian Corporate Governance. *Proceedings, Risk Management and Corporate Governance*. Professor Loyola University, 2009.
- Huse, M., & A. Solberg. (2006). Gender Related Boardroom Dynamics: How Women Make and Can Make Contributions on Corporate Boards. *Women in Management Review*, 21(2), 113-130.
- Isidro, H., & Sobral, M. (2015). The Effects of Women on Corporate Boards on Firm Value, Financial Performance, and Ethical and Social Compliance. *Journal of Bussines and Ethics*, 132(1), 1-19.
- Jafarnezhad, M., & Tabari, N. A. Y. (2016). The Effect of Intellectual Capital on Financial Performance: Evidence from Iranian Banks Listed in Tehran's Stock Exchange. *International Journal of Management, Accounting and Economics*, 3(1), 1-13.
- Jayne, M., & Dipboye, R. (2004). Leveraging Diversity to Improve Business Performance: Research Findings and Recommendation for Organizations. *Human resource management*, 43(4), 409-424.
- Kaupelytė, D., & Kairyte, D. (2016). Intellectual Capital Efficiency Impact on European Small and Large Listed Banks Financial Performance. *International Journal of Management, Accounting and Economics*, 3(6), 367-377.
- Kim, K. H., & Rasheed, A. A. (2014). Board Heterogeneity, Corporate Diversification and Firm Performance. *Journal of Management Research*, 14(2), 121-139.
- Luckerath-Rovers, M. (2013). Women on Boards and Firm Performance. *Journal Management Governance*, 17(2), 491-509.
- Maditinos, D., Chatzoudes, D., Tsairidis, C., & Theriou, G. (2011). The Impact of Intellectual Capital on Firms' Market Value and Financial Performance. *Journal of Intellectual Capital*, 12(1), 132-151.
- Marimuthu, M., & Kolandaisamy, I. (2009). Ethnic and Gender Diversity in Boards of Directors and their Relevance to Financial Performance of Malaysian Companies. *Journal of Sustainable Development*, 2(3), 139-148.
- Masulis, R., Wang, C., & Xie, F. (2012). Globalizing the Boardroom-the Effects of Foreign Directors on Corporate Governance and Firm Performance. *Journal of Accounting and Economics*, 53(3). 527-554.
- Mondal, A., & Ghosh, K., S. (2012). Intellectual Capital and Financial Performance of Indian Banks. *Journal of Intellectual Capital*, 13(4), 515-530.
- Ozkan, N., Cakan, S., & Kayacan, M. (2016). Intellectual Capital and Financial Performance: a Study of the Turkish Banking Sector. *Borsa Istanbul Review*, 17(3), 190-198.
- Pfeffer, J., & Salancik, G. R. (1978). *The External Control of Organizations: a Resource Dependence Perspective*. New York: Harper & Row.
- Pulic, A. (2000). VAIC: an Accounting Tool for IC Management. *International Journal of Technology Management*, 20(5-8), 702-714.
- Pulic, A. (2004). Intellectual Capital-does it Create or Destroy Value?. *Measuring Business Excellence*, 8(1), 62-68.
- Ramaswamy, K. (2001). Foreign Investors, Foreign Directors and Corporate Diversification: an Empirical Examination of Large Manufacturing Companies in India. *Asia Pacific Journal of Management*, 18(2), 207-222.
- Riordan, C. M. (2000). Relational Demography Within Groups: Past Developments, Contradictions, and New Directions. *Research in Personnel and Human Resources Management*, 19, 131-173.
- Ruigrok, W., Peck, S., & Tacheva, S. (2007). Nationality and Gender Diversity on Swiss Corporate Boards. *Corporate Governance: an International Review*, 15(4), 546-557.
- Samaha, K., Dahawy, K., Hussainey, K., & Stapleton, P. (2012). The Extent of Corporate Governance Disclosure and Its Determinants in a Developing Market: the Case of Egypt. *Advances in Accounting, Incorporating Advances in International Accounting*, 28(1), 168-178.
- Staffing Industry Analysts. (2015). Asia Pacific Women Scarce in the Boardroom. Staffingin-

- dustry.com. Available at: <https://www2.staffingindustry.com/row/Editorial/Daily-News/Asia-Pacific-Women-scarce-in-the-boardroom-33766>. 10 October 2017.
- Tan, H. P., Plowman, D., & Hancock, P. (2007). Intellectual Capital and Financial Returns of Companies. *Journal of Intellectual Capital*, 8(1), 76-95.
- Terjesen, S., Sealy, R., & Singh, V. (2009). Women Directors on Corporate Boards: a Review and Research Agenda. *Corporate Governance: an International Review*, 17(3), 320-337.
- Ulum, I. (2008). Intellectual Capital Performance Sektor Perbankan di Indonesia. *Jurnal Akuntansi dan Keuangan*, 10(2), 77-84.
- Vo, V., X. (2016). Foreign Investors and Corporate Risk Taking Behavior in an Emerging Market. *Finance Research Letters*, 18(C), 273-277.
- Wang, J. C. (2008). Investigating Market Value and Intellectual Capital for S & P 500. *Journal of Intellectual Capital*, 9(4), 546-563.
- Wiersema, M. F., & Bantel, K. (1992). Top Management Demography and Corporate Strategic Change. *Academy of Management Journal*, 35(1), 91-121.