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Influence of Malaysian accounting standards and corporate governance on intellectual capital performance and firm's value

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ABSTRACT

The purpose of this study is to investigate the moderating effect of corporate governance and the adoption of the new accounting standards on the relationship between firms' value and intellectual capital performance in Malaysian companies. The study's sample contains 228 listed firms in Bursa Malaysia Berhad for the years 2011, 2012 and 2013. A self-constructed index was utilized to asses corporate governance. In addition, this paper used the value added of intellectual capital coefficient method (VAIC) to asses intellectual capital performance (ICP). The study employed panel data to analyse the results. The findings show that the association between ICP and firms' market capitalization was insignificant while this association was significant when it is moderatedwith corporate governance (CG). The study also foundthat the adoption of the new accounting standards had insignificant impact on the association between firms' value and ICP.

Background

In the era of globalization and knowledge based economy, where competition is the corner stone of any market, the importance of intangible assets has grown to become an essential factor of generating additional value and gaining competitive advantage. This, consistent with Lev and Daum (2004) who state that the percentage of intangible assets in organizations' value has rapidly increased from 38 percent in 1982 to 62 percent in 1992. Kaplan and Norton (2004) stated that firms' value from mid-1990 to 1998 may be represented by more than 75% of intangible assets. This growth creates attention on the issue of intangible assets. In an emerging economy, Salamudin, Bakar, Ibrahim and Hassan (2010) found that intangible assets represent 44% of Malaysian firms' market value. Therefore, these statistics indicate a shift in the focus of management from tangible to intangible capital. Thus, Chen, Cheng and Hwang (2005) argued that firms' financial statements no longer depend on material goods in explaining firm value, but on creation of intellectual capital (IC).

The intention to narrow the gap between firms market and book value has attracted more research on IC's hidden value since firms in new economy atmosphere tend to depend more on intangible assets than tangible assets (Salamudin, Bakar, Ibrahim and Hassan, 2010; Maditinos, Chatzoudes, Tsairidis and Theriou, 2011). Specifically, IC improves firms' competency towards its vitals, strategic asset, provides better competitive position in the global market and creates firm value as well as give a clearer view of a firms' real value hence improves company financial performance (Mavridis and Kyrmizoglou, 2005; El-Bannany, 2012). Abeysekera (2006) opines that since IC is a key part of intangible assets, companies are placing more focus on IC, with the notion that it creates firm value.

In this respect, IC can be considered from a measurement viewpoint as Rehman, Rehman, Usman and Asghar (2012) stated that IC is an asset which draws a gap between firms' market and book value. Thus, the difference between market and book value can be defined as the value of intellectual capital in the firm (Liu, Tseng and Yen, 2009).

Similar developments are seen in Malaysia, in line with globalization, global market changes and knowledge based economy. Malaysia is targeting to become a developed nation by 2020. Thus, specific initiatives have been taken in order to meet this target. The Malaysian government has initiated code of corporate governance, which is the Malaysian code of corporate governance (MCCG) in 2000. This code has been revised on 2007 and amended on 2012 (Securities Commission, 2007; MCCG, 2012). This code requires more transparency and disclosure in companies as a whole but particularly in

relation to corporate governance. Moreover, on 1 August 2008, Malaysian Accounting standard Board (MASB) declared its plan of full convergence to International Financial Reporting Standards (IFRS) by 1 January 2012[1]. This shift was from Financial Reporting Standards (FRS) to Malaysian Financial Reporting Standards (MFRS). The MFRS is equivalent to IFRS in order to enable Malaysian firms to enhance their competitive level to be at par with their international counterparts. These changes in the standards should have an effect on disclosure and figures in the financial statements, including those related to IC.

Although there are many studies on IC, they are lacking in taking in consideration the introduction of IFRS and the MCCG impact on IC practices, also, literature is lacking in investigating the moderating effect of CG on IC association with firms' value, which would be more comprehensive review of ICP. Hence, the main motivation to conduct this study is the lack of studies that investigate the relationship between ICP and firm market capitalization (MCAP) and ICP association with MCAP when it is moderated by CG taking in consideration MFRS adoption and MCCG amendments attributes in a longitudinal setting in Malaysia. Therefore, it is worthwhile to investigate the association between ICP and firm's value and further the study examined this association when it is moderated by CG, under the Malaysian accounting standards settings and code of corporate governance.

The rest of the paper is structured as follows: Section two reviews ICP literatures. Section three develops study's hypotheses. Section four presents study's research method. Section five discusses the main results, and section six concludes with the main findings, the limitations and implications of the results, as well as suggestions for further research in this area.

Literature Review

Generally, studies regarding the issue of IC influence on firms' value and performance have been conducted in different countries such as Australia (Joshi, Cahill and Sidhu, 2010), Turkey (Yalama and Coskun 2007), Malaysia (Bontis, Keow and Richardson, 2000; Ting and Lean, 2009; Kweh, Chan and Ting, 2013), South Africa (Firer and Williams, 2003), India (Mondal and Ghosh 2012; Vishnu and Gupta, 2014) and Spain (Díez, Ochoa, Prieto and Santidrián, 2010), Serbia (Komnenic and Pokrajcic, 2012), Iran (Mehralian, Rajabzadeh, Sadeh and Rasekh, 2012) and Luxembourg and Belgium (Mention and Bontis, 2013).

In addition, previous studies have investigated ICP issues in different industry types especially knowledge incentive sectors; for example, Mehralian et al. (2012) study is conducted in the pharmaceutical industry, Kweh, et al.'s (2013) study conducted in the software sector. Even though, prior studies conducted on different types of knowledge incentives companies there are considerable studies that gave special attention to ICP in financial institutions arguing that banking industry is knowledge based sector which leads to increase in the importance of IC in this sector (e.g. Firer and Williams, 2003; Yalama and Coskun, 2007; Kamath, 2008; Mondal and Ghosh, 2012). Moreover, El-Bannany (2008) mentioned that in a knowledgeable base economy like UK; intellectual capital is more important than physical capital especially to banking sector in terms of wealth creation since this type of institution is largely dependent on knowledge. Mavridis (2004) views that banks are generally best model for intellectual capital research arena because the nature of bank's business is more intellectually focused and banks employees are more intellectual than other sectors. Kamath, (2007) point out, as banks are part of service sector, they employ an enormous amount of human capital and customer capital for its continued existence in the market. Similarly, Shih, Chang and Lin (2010) said that service sector industries have dissimilar features compared to other industries since this later is more knowledge base in its provided services or products. Thus, it is essential for banking institutions to utilize practices in knowledge management to build up intellectual capital in order to survive with progressively more unstable atmosphere.

More likely, prior studies on ICP conducted on different countries, they have been as well conducted on different ICP issues such as, Ahmadi, Jalilian, Salamzadeh, Saeidpour, and Daraei (2012) studied the influence of different IC component on the performance of developing new products, Chien and Chao (2011) investigate the impact of IC on sales performance of new products, Mention (2012) discussed the relationship between IC and innovation using systematic literature review, Hsu and Wang (2012)examined the effect of IC and knowledge management on each other and how the association between IC and knowledge management influence on firm performance. Even though, prior studies have empirically examined different ICP issues, this study focuses only on literatures regarding ICP determinants and ICP association with firm value and performance.

In this respect, empirically quantitative studies that investigated IC influence on firms' performance measured ICP using the value added intellectual coefficient (VAIC) created by "Pulic", depending on firms' annual reports as source of data. However, Murthy and Mouritsen (2011) used mixed method to investigate ICP extent; they conducted interviews with senior executives and obtained data from annual reports, stakeholder impact reports, internal strategy reports. Furthermore, in examining IC influence on firms' performance and value creation, prior researchers have relied on different performance indicators in the firm to reach their objectives. For example, Ting and Lean (2009) used return on assets,

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[1]Malaysian Accounting Standard Board (MASB),
http://www.masb.org.my/index.php?option=com_content&view=article&id=1431

Mondal and Ghosh (2012) used return on assets and equity, Joshi, Cahill and Sidhu (2010) used bank size, total number of employees and total shareholders' equity and Díez et al., (2010) used sales ratio. Gan and Saleh (2008) and Maditinos, Chatzoudes, Tsairidis and Theriou (2011) used market performance indicators.

In order to be in accordance with the study objectives, this section will be divided into three groups: those that used VAIC methodology, studies that tested the interaction effect of IC components, other variables mediating and moderating impact on firm performance and those studies that examine IC performance using primary data. For the first group studies will be separated as follow; studies that examined ICP level and ICP association with firms'' performance and studies that examine IC performance determinants.

Starting with the first studies group; those that adopted VAIC approach as measurement of IC measurement. Firstly, with respect to ICP extent and association with firms' performance studies, Mavridis (2004) used data from 141 Japanese banks. His study applied VAIC method in order to analyse IC value added and performance practice in Japanese banking sector. His results indicate that there is a significant association between banks' performance and IC, with differences of ICP level among Japanese banking groups. Also both IC components human capital and physical capital value added have different impacts on various banking groups.

In the same sector, Kamath (2007) utilized the VAIC in order to determine the value-based performance of 98 Indian banks. His findings show that there is a huge variance in intellectual capital and value creation performance of the Indian banks; where foreign banks were on the top of value creation performance efficiency while local banks suffer from shortage in human capital which reflected in luck of value creation. In the same country and sector, Mondal and Ghosh (2012) VAIC methodology to measure banks ICP. They found that IC is significant determinant of banks performance represented by profitability and productivity. In addition, Mondal and Ghosh (2012) found that human capital efficiency plays a very important role in improving banks' return.

Similarly, Yalama and Coskun (2007) examined the effect of IC on Turkish banks performance and profitability. They obtained data from 18 banks listed on Istanbul Stock Exchange Market for the period from 1995 to 2004. Their findings show that banks efficiency in transforming IC to profitability is different among the banks and from year to another. They found also that only two banks are stable in using IC efficiency value within five out of ten years included in the analysis. Continuing with Turkey, Aras, Aybars and Kutlu (2011) examined the interaction between VAIC and corporate social disclosure responsibility (CSR). Their study sample were composed of 39 manufacturing Turkish firms covering two years from 2007 to 2008 and listed in Istanbul stock of exchange. Their findings point out that there is a negative association between VAIC and CSR.

In insurance firms, Alipour (2012) examined IC association with frim performance. He analysed 39 firms by using VAIC approach. His findings reveal that all components of IChave positive relationship with firm profitability. Also Alipour (2012) results show that IC has a positive relationship with frim return on assets.

In a developed country, Clarke, Seng and Whiting (2011) examined the effect of IC on Australian firm performance. Clarke et al. (2011) uses the Pulic's framework; value added intellectual coefficient (VAIC). Their findings point out that there is a significant relationship between VAIC and Australian firms, particularly capital employed efficiency with lower impact of human capital efficiency. Consistently with Tan, Plowma and Hancock (2007)who concluded that IC is significantly related to Singaporean company performance, is associated with company future performance, growth and IC contribution varies to company performance according to its industry type.

With respect to Malaysian context, most of the studies that utilized VAIC approach in order to measure IC performance and its relationship with firm performance; have been conducted on financial institutions (Goh, 2005; Muhammad and Abbasi, 2009; Ting and Lean, 2009). Goh (2005) examined the influence of IC on 17 commercial banks performance for the period from 2001 to 2003. Goh (2005) results indicate that both domestic and foreign banks in Malaysia depend largely on human capital attribute in its value creation. Moreover, foreign banks were more efficient than domestic banks which still rely more on physical capital for value creation. Nevertheless, domestic banks created more IC value added than foreign bank.

Likewise, Muhammad and Ismail (2009) analysed ICP in 18 Malaysian companies under financial sector; comprised of banking institution, insurance and security brokerage companies for the year 2007. Consistent with prior study's findings, their empirical results reveal that IC is significantly associated with companies' performance measured by profitability and return on assets. Their findings also showed that banking sector reveal the highest level of IC efficiency, more specifically higher human capital element efficiency compared to insurance and securities companies and other IC elements (structural and customer capital). These results were inconsistent Firer and Williams (2003) arguments who suggested that in emerging economy like South Africa; physical capital remains the most significant fundamental resource of corporate performance.

In the same line, Ting and Lean (2009) collected data from 20 financial firms, which were listed in Bursa Malaysia from 1999 to 2007. Their empirical result indicates that there is a significant association between VAIC and firms performance measured by return on assets. Line, et al. (2009) found that both humane capital and structural capital have significant influence on profitability while capital employed has negative impact.

Moreover, Kweh et al. (2013) examined the efficiency of Malaysian software companies in converting IC into firm value. By using data envelopment analysis methodology, VAIC as input variable, return on equity and Tobin's Q as output

variables, they conduct their study on 25 companies. Their results show that firm invest more on human capital efficiency compared to structural and customer capital efficiency; main market firms were less efficient in using IC compared to ACE-market firms. Also ACE market firms have higher structural capital efficiency and a lower human and customer capital efficiency compared to companies listed on main market.

In another study, Vishnu and Gupta (2014) aimed to measure IC and its association with firm performance. They aimed as to measure IC using and extended VAIC model by adding another variable to the model which is relational capital in addition to the other three variables (Human capital, structural capital, capital employed). They examined 22 large pharmaceutical Indian firms. They found that IC is significantly associated with firms' financial performance (return on sales and assets). Also relational capital was insignificantly associated with firm performance in the extended model.

With respect to mediating and interaction effect studies will be divided to studies that used variables which mediated and moderated the relationship between firm performance and ICP and studies that used the interaction of IC elements impact on firm performance. Prior studies that tested different factors as mediating or moderation effect on IC relationship with firm performance. Like, Kamukama, Ahiauzu and Ntayi (2011) who examined the effect of competitive advantage as mediating variable between IC and firm performance. With a sample which consists of 65 microfinance Uganda firms. They found the mediating effect of competitive advantage increases the association between ICP and firm performance by 22.4 percent.

Correspondingly, Lin, Huang, Du and Lin (2012) examined the association between human capital disclosure and firm performance in accordance to moderating effect of firm size and knowledge intensity. Their sample comprised 428 firms. Lin et al., (2012) found that human capital has positive association with firm performance. Firm size negatively affects the association between firm performance and human capital disclosure. However, the above relationship was positively moderated by knowledge intensity.

With respect to corporate governance moderating effect, Wang (2013) examined effect of ICP measured by (VAIC) effect on firm value when its moderated by corporate governance. For this reason they selected a sample of 361 firms listed on Taiwan Stock Exchange. Their results point out that ICP has a significant effect on firm value also results shows that ICP is more value relevance when is moderated by corporate governance attributes.

Based on the reviewed literatures regarding ICP practices impact on firm value, the gap in these studies has been identified. Precisely, studies in the association between ICP and firm value specifically taking into consideration MFRS and corporate governance. Moreover, studies in Malaysia didn't investigate the CG moderating effect on the association between ICP and firm value.

Hypothesis Development
Hypotheses Development of ICP and Firms' market Capitalization
There are many studies that have examined the relationship between IC and firms' financial performance and firm value using different ratios (Bontis, Keow, and Richardson, 2000; Riahi-Belkaoui, 2003; Joshi et al., 2010). Although these studies found that there is a significant relationship between IC and firm performance, results of prior literatures show as well that the impact of IC different components on firms' value is mixed (Kamath, 2007; Mondal and Ghosh, 2012; Kweh et al., 2013).

On a theoretical level, Stewart (2000) argued that human capital is the most important component of IC since it is the generator of creativity; restitution and innovation. Landeiro (2003) added that human capital increases knowledge generation. Similarly, Yan-ji and Xiu-li (2012) stated that human capital is a fundamental factor in progressing corporate employees' capabilities and assets in order to improve productivity and endure a good competitive advantage.

In empirical studies, Mondal and Ghosh (2012) found that human capital is the main contributing element to Indian banks' financial performance. Joshi et al. (2010) found that human capital efficiency has higher impact on Australian banks efficiency compared to structural capital efficiency. Moreover, Mavridis (2004) found that best performing Japanese banking were those that mainly depended on human capital rather than depending on physical capital.

However, Kamath (2007) found that ICP differs among Indian banks, where foreign banks were highest performers in human capital efficiency while public banks perform better in capital employed efficiency. Wang and Chang's (2005) findings pointed out that the different attributes of IC have positive influence on corporate performance except human capital. These were similar to Alipour (2012) who find that the three elements of IC contributed to Iranian insurance companies' financial performance. Also only human capital was negatively associated with traditional financial performance ratios.

In the Malaysian context, Ting and Lean (2009) discovered that human capital and capital employed efficiency have significant positive influence on profitability of Malaysian financial institutions while structural capital efficiency has negative influence. Similarly, Goh (2005) found that the performance of human capital is greater than structural capital and physical capital in Malaysian banks. Similarly, Kweh et al. (2013) found that Malaysian software sector companies are investing more in human capital compared to structural capital and capital employed. However, Bontis et al. (2000) found that human capital have positive association with firm's performance when it is moderated by structural capital and he observed a positive relationship between structural capital and firm performance

On the other hand, Riahi-Belkaoui (2003) argued that investors will give greater value for companies with higher IC. In other words, firms value is higher with higher IC which will be significantly reflected in higher book value (Chen et al., 2005; Firer and Williams, 2003; Riahi-Belkaoui, 2003). Thus, resource based theory can explain this association, in the sense that IC is a valuable and important resource which plays an important role in developing company's competitive advantage and contributes to its financial performance position. This advantage my push firms to use all its resources in order to benefit for IC efficiently.

From the above discussion it seems that there are different results in prior IC literature in terms of IC dimensions impact on firm value even in studies that have been conducted in the same country such as the Malaysian context. Thus it is worthwhile to examine ICP influence on Malaysian listed companies' market capitalization individually. Based on this discussion the hypotheses will be as follows:

H1. There is a positive association between intellectual capital performance and firms' market capitalization.

Hypotheses development of MFRS adoption effect on the models

Prior to the data analysis using linear regression and *t*-test, it is crucial to confirm the reliability and validity of the Prior studies studied on IFRS impact adoption on different firms' practices (Iatridis and Dalla, 2011; Landsman, Maydewa and Thornock, 2012; Okaro and Tauringana, 2012; Mardini, Crawford, and Power, 2012; Cheng, 2012; Ledoux and Cormier, 2013). In line with this study's objectives, prior studies on IFRS adoption influence on firm's financial ratios, like Callao Jarne and Laı´nez (2007) found that IFRS adoption have different impact on EU countries and on accounting ratios including financial ratios. Similarly, Iatridis (2010) examined the influence of IFRS implementation on main financial measures of UK firms. His results indicated that IFRS adoption has positively influenced the financial performance of the firms. Thus, it can be argued that MFRS adoption may influence different financial performance ratios from one side and from another it may affect IC performance measured by VAIC, as VAIC is a total of different accounting ratios. These impacts may affect as well the association between ICP and firms' market capitalization.

On the other hand, prior studies investigated IFRS impact on intangible assets, such as Vergauwen and Alem (2005) who mentioned that IFRS has decreased the amount of recognized intangibles assets in financial statements. Abeysekera (2007; 2008) stated that with the implementation of the IFRS in several countries, the information gap between the fair value and disclosed value of companies decreased because the IFRS adopts the prudent approach for assets (tangible and intangible). Sahut, Boulerne and Teulon (2011) found that the book value of intangible assets in European listed firms has increased under IFRS. Ledoux and Cormier (2013) stated that the value of intangible assets under IFRS is higher than under local standards GAAP, because IFRS are generally more detailed and strict than local accounting standards they came instead of.

This influence on intangibles might be reflected in an effect on IC, which can be seen in empirical studies that looked to IC relationship with IFRS. For example, Liao, Chan and Seng(2013) found that ICD have increased under IFRS. Vafaei, Taylor and Ahmed (2011) found that ICD moderates the incremental value-relevance of earnings and net assets reported under IFRS adjustments. Ho Kim and Taylor (2014) examined whether available data on human capital after IFRS adoption have an impact on the productivity of IC and its elements. He found that productivity measurements of IC elements are positively and highly significantly related with share price. However, Abeysekera (2007) argued that IFRS implementation in many cases embodies a step backwards in the reporting and measurement of IC.

Thus MFRS can be seen as strong legitimacy that may shape firms' structure in order to compete in the global market (Yeow and Mahzan, 2013). This new shape that has been sketched by MFRS may sketch its foot prints on IC practices due to same goals MFRS adoption and IC creation in the firm. Based on this the hypothesis will be as follows:

H2: MFRS adoption positively affects the relationships between intellectual performance and firms' market value.

Hypotheses development of corporate governance moderating effect on IC performance association with firms' market capitalization

The issues of corporate governance practices influence on firm value and firm performance has taken a significant place in academicians' researches in the last decades. For example, Al-Najjar (2010) found that institutional investors prefer to control firms with higher level of growth since this later may provide higher profit to institutional investors. Kula and Tatoglu (2006) found that board process attributed is significantly associated with firm performance in Turkish family owned firms. Ehikioya (2009) empirical results pointed out that ownership concentration has positively influenced firms'

performance while CEO duality has been proved to have an adverse effect on firm performance. However, Abdullah (2004) findings indicate that both board independence and CEO duality, whether individually or mutually, is not significantly associated with corporate performance.

On the other hand, with respect to IC and corporate governance Keenan and Aggestam (2001) stated that wisdom and expertise of corporate governance create and leverage IC to sustain the gains of the last decade's knowledgeable intensive organization since corporate governance systems mobilize different IC components toward realizing firms' targets and values. Empirically prior studies have indicated different results of corporate governance influence on IC practices.

Regarding ICP, Al-Musalli and Ismail (2012) found that the number of independent directors have a significant adverse effect on ICP while the other board characteristics (board size, nationality diversity, educational level diversity and board interlocking) were not related with ICP. Similarly, Swartz and Firer (2005) found empirically that there is a positive connection between ethnic percentage on the board of directors and intellectual capital performance.

From the above discussion, prior literatures show that corporate governance has different effect on firm performance ratios and ICP extent. Therefore, it might be expected that corporate governance plays a moderating role between the IC different elements and firm performance. This has been proven by Wang (2013) who found that, the characteristic of director board is moderating the effect of ICP measured by the value added intellectual coefficient on firm value. In addition, Bontis and Serenko (2007) stated that majority of researches agree that the existence of a moderator variable changes the strength of the association between the dependent and independent variable. As corporate governance attributes plays important role in allocating and organizing different firms' resources. Thus, the moderating effect corporate governance may affect firms' ICP practices. Based on this the hypotheses will be as follows:

H3. There is a positive relationship between intellectual capital performance and firms' market capitalization when it is moderated by corporate governance in the annual reports of Malaysian listed companies.

Research methodology

Sample size and selection

This research used stratified sampling method[2] in order to get a representative sample. The reason of using this sampling method according to Cavana, Delahaye and Sekaran (2001), Brayen and Bell (2007), Copper and Schindler (2011) is that it helps researchers to conduct different methodological technique and procedures in different strata, yields more accurate results than the simple random sampling and it maximizes the statistical efficiency of sampling. Following sample selections steps, two sectors (Finance and closed-end funds) were excluded from the population due to their specific characteristics and regulations which may affect their disclosure of information in the annual reports (Ho and Taylor, 2013). Moreover, this study excluded firms that have missing data. Therefore, after eliminating finance and closed-end funds sectors and firms with missing data from population and selected sample, the final sample composes of 228 firms for the years 2011, 2012 and 2013 which is equivalent to 648 firms' year observation.

Further, this study's selection of the years 2011, 2012 and 2013 was for the motive that before, after and during the adoption of the new standards could be a suitable period to measure the development of ICP practices in the annual reports of Malaysian. Where, the MFRS adoption and the revision of MCCG were on 2012 (Securities Commission, 2007; MCCG, 2012). Thus, the years 2011, 2012 and 2013 were selected due to the different initiatives that have been taken

On the other hand, this study used two sources in order to collect data. First, data regarding index checklists (corporate governance index checklist) will be collected from the annual reports of selected firms. In this regard, as annual reports are available through Bursa Malaysia website (www.bursamalaysia.com) annual reports for the years 2011, 212 and 2013 were obtained from this data base. Second, data for the other variables market capitalization, VAIC, firm size, leverage andprofitability were collected from Bloomberg database. This database is considered reliable and has been the source of some IC literatures (e.g. Abdolmohammadi, 2005;Haji and MohdGhazali, 2013).

To detect the potential existence of multi-collinearity problems among the independent variables correlation analyses were conducted. The findings in Table 2 as stated in the appendix disclose correlation analysis of VAIC impact on MCAP

2Stratified sampling as its name implies, involves a process of stratification or segregation, followed by random selection of subjects from each stratum. The population is first developed into mutually exclusive groups that are relevant, appropriate and meaningful in the context of the study (Cavana, Delahaye and Sekaran, 2001; 258).

model. Moreover, the correlation matrix reported that none of the coefficients exceeded the value of 0.9. In this regard, Gujarati and Porter (2009) proposed that the extent of correlation coefficient exceeding 0.9 could amount to collinearity. Thus, the models do not witness problem of multi-collinearity.

The objective of the current study was to examine the factors that might influence the Moroccan investors' intention to invest in cryptocurrencies. The findings revealed that attitude, subjective norms and perceived behavioural control could influence the Moroccan investors' decision to invest in cryptocurrencies. Furthermore, the Moroccan investors showed a significant tendency to invest in cryptocurrencies.

These findings have significant implications for the theory, for the policy makers and regulators as well as for the practitioners. Particularly, this study sets the ground on the cryptocurrencies investment behavior. Thus, the findings of the current study will certainly help advance the body of knowledge on cryptocurrency investment behavior in the future. Furthermore, the current study is an extension of the theory of planned behaviour to a different setting and to a different new area of study that has been empirically understudied.

Finally, the study provides insights to policymakers and practitioners on the aspects that need to be emphasized in order to enhance the cryptocurrencies investment and usage. Indeed, this will not just contribute to investors' wellbeing, but the wellbeing of the economy as a whole. This is only possible is the policy makers and regulators could enhance the logistical tools necessary for the effective investment in cryptocurrencies.

The current study has a number of limitations that should be considered in the future studies in this area. Mainly, the sample size is relatively limited, though accurately calculated, hence the results cannot be generalised to all Moroccan investors. Thus, the future studies are recommended to select a larger and more representative sample size, in order to generalise the results to the whole population. The future studies are also recommended to extend these findings to other contexts and preferably using other models as well. Finally, many dimensions such as knowledge and awareness of cryptocurrencies could not be covered in this study. Hence, future studies are highly recommended to establish a comprehensive model that overs most of the important dimensions.

Measurement of dependent variable
MCAP in this study is used to measure the impact of ICP on firm's' market value. Firm's market capitalization is defined as shareholders' equity market value which measured by multiplying number of shares outstanding by share price at the end of accounting year (Hussey, 1999; Abdolmahammadi, 2005)

Measurement of the Independent Variables
Measurement of VAIC
In measuring VAIC prior studies divided VAIC to three components representing the independent variables (Williams, 2001; Ting and Lean, 2009; Mavridis and Kyrmizoglou, 2005) namely; CEE, HCE, and SCE. Where, VAIC measures the value creation efficiency of tangible and intangible assets within the firm (Tan, Plowman and Hancock, 2007; Clarke, Seng, and Whiting, 2011). Specifically, CEE represents the value added (VA) of capital employed. HCE represents VA efficiency of human capital, while SCE signifies VA efficiency of structural capital. Algebraically and conceptually, they can be defined as follows, respectively:

$$VAIC = HCE + SCE + CEE$$

Where:

$$VA = \text{operating revenues} - \text{operating expenses} = N + T + DP + I + W \qquad (1)$$

$$HCE = VA/HC \qquad (2)$$

Where: HC = total salaries and wages

$$\left. \begin{array}{l} SC = VA - HC \\ SCE = SC/VA \end{array} \right\} \quad (3)$$

$$\left. \begin{array}{l} CE = \text{total assets} - \text{intangible assets} \\ CEE = VA/CE \end{array} \right\} \quad (4)$$
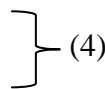
Corporate Governance Checklist measurement and development

The current study developed an index checklist in order to measure CG quality. Since the aim of the current study is to develop an index checklist which compatible to Malaysian corporate governance this study followed the following steps to develop this index

1. The study reviewed a number studies that used a CG index checklist in order to get the relevant items (Lazarides and Drimpetas, 2011; Hassan, 2012; Siagian, Siregar and Rahadian, 2013)
2. The study has reviewed the both Malaysian code of corporate governance issued in the years 2007 and 2012 and has given an attention to them amendment initiated in the year 2012 in order to include the relevant and amended item in this index
3. The initial draft of CG index checklist will be discussed with researchers and lecturers in the area of CG in order to determine the understandably and validity of the disclosure index. Based on the discussion some the disclosure items will be removed or improved.

This resulted in a CG index composed of 20 items. These 20 corporate governance attributes, source and score description are tabulated in table. Each of these items is treated as a dummy variable. Where, a value of 1 is assigned if the item is disclosed and 0 otherwise. The corporate governance index score (CGIS) for the company (i) is treated as percentage and calculated as follows:

$$CGIS_i = \frac{Total\ Disclosed\ Items}{Tatal\ Items} \times 100$$

The developed corporate governance index items, source and scoring is represented in Table 1 in the Appendix

Accounting standards adoption

MFRS represent the dichotomous variables taking the value of '0' before the adoption which is presenting the year 2011 and for the adoption it takes the value of '1' representing the years 2012 and 2013.

Control variables

In consistency with previous literatures (e.g. Cerbioni and Parbonetti, 2007; Wang, 2013; Kweh et al., 2013; Vishnu and Gupta, 2014), this study includes firm size, leverage and profitability as control variables. These variables had been significantly associated with IC practices (Goh, 2005; Ting and Lean, 2009; Alipour, 2012)

Regression models

In order to answer this study's research objectives, this research usedPanel Data regression models to determine the relationship between the dependent and independent variables, as it was used by several studies (Yaacob and Che-Ahmad, 2012; Haji and MohdGhazali, 2013). The main advantage of using Panel Data method regression is argued to have better statistical techniques then other methods as it permits for more data points and it involves the investigation of a specific substance within several spots periodically over a defined time setting (Yaffe, 2006 ; Kyereboah-Coleman, 2007; Yaacob and Che-Ahmad, 2012).

Table 1.Measurement of dependent and independent variables

Variable	Definition	Measurement	Type	Data source
MCAP	market capitalization	Share price×number of shres outstanding	Independent	Bloomberg
VAIC	Value added of intellectual capital efficiency	HCE+SCE+CEE	Dependent	Bloomberg
CGIS	Extent of corporate governance disclosure	Number of items in CG checklist divided by the total score (i.e. 20)		Annual reports
MFRS	Malaysian financial reporting standards adoption	code 0 before MFRS was adopted (i.e. 2011), 0 otherwise		/
SIZE	Firm size	natural log of total assets	Control variable	Bloomberg
LEV	Firm leverage	Total debt to total assets		
POFIT	Firm profitability	Total equity to net income		
α	Constant	/		
e	Error term			

Results

Descriptive statistics presented in Table 2 show that MCAP ranged from 15.2325 to 24.6205 with a mean of 18.8648. VAIC ranged from -3.6420 to 9.0857 with a mean of 2.1468. This shows a wide difference in measuring IC among firms. CGIS ranged from 0.3 to 0.85 with a mean of 0.55. The results of CG extent depicts that CG extent have higher variation among firms listed in Bursa Malaysia Berhad this was consistent with prior studies conducted in Malaysia (Wahab, Zain, and James, 2011; Ho and Taylor, 2013).

Table 2. Descriptive statistics

	N	Mean	Std. Deviation	Minimum	Maximum
MCAP		18.8648	1.6380	15.2325	24.6205
VAIC		2.1468	1.2029	-3.6420	9.0857
CGIS	684	.5537	.1235	.3	.85
SIZE		19.7059	1.4871	15.1473	25.3284
ROA		1.5424	1.1112	-3.5065	4.1726
LEV		.4614	1.3684	-4.6051	4.3308

Table 3. Empirical results for the models

Variables	Model (1)		Model (2)	
	T-value	P-value	T-value	P-value
VAIC	(0.81)	0.416	(-0.11)	0.911
CGIS	(2.78)	0.006*	(3.87)	0.000*
MFRS	(2.45)	0.015**	(2.46)	0.014**
SIZE	(2.50)	0.013**	(2.25)	0.025**
ROA	(1.08)	0.282	(1.27)	0.207
LEV	(-1.39)	0.164	(-1.77)	0.078***
VAIC*CGIS	-	-	(-2.67)	0.008*
Constant	(18.05)	0.000	(18.35)	0.000
R^2	0.5483		0.4971	
Significant	0.0000		0.0000	
F Ratio	5.28		5.61	
Significant of Hausman Test	0.0000		0.0000	
Hausman Ch2	241.33		232.26	

The values in the parentheses are T_values. *** denotes significance at 0.10 level;

**denotes significance at 0.05 level; *denotes significance at 0.01

VAIC: value added of intellectual capital coefficient, CGIS: corporate governance disclosure index,

MFRS: Malaysian finacail reporting standards adoption, SIZE: firm size, ROA: firm profitability, LEV:

firm leverage, VAIC*CGIS: the interaction of value added of intellectual capital coefficient with

corporate governance disclosure index.

Table 3 shows the empirical findings of panel data analysis for ICP impact on firms' MCAP and CG moderating effect on this association. First, this research conducted The Breush Pagan Lagrangian Multiplier test in order to choose the best model that suits the data for both models. The Breush Pagan Lagrangian Multiplier test (random effect-Pooled OLS) indicate that the variance of the random effect is not zero. Thus, the random effect is more suitable than pooled OLS for both models. Afterwards, The Husman's test has been conducted in order to select the best model that fits that data (fixed effects – random effects). Table 1 results demonstrate that the p-value of both modles is 0.000, thus, the null hypothesis is rejected, which implies that there is significant difference between the coefficients of fixed models and random models. Thus, Husman's tests results supports fixed effects assumption for correlation to exist in both models.

Moreover, table 3 depicts for main effect model (model 1) that R² was0.54, this designate that the model is able to explain 54 per cent of the relationship between ICP and firms' MCAP. Moreover, the F value was 5.28 with a significance level of 0.000, showing that the model is significant.

For interaction effect model (model 2) results shows that R² was 0.49, this entitle that the model is able to explain 49 per cent of the association between ICP and firms' MCAP. Further, the F value was 5.61 with a significance level of 0.000, indicating the interaction model is also significant.

With respect to the main variables results report that VAIC was not statistically associated with firms' MCAP in both models. Interestingly, this association became significant at 1 % when ICP was moderated with CGIS with P-value of 0.008. Moreover, results shows in main and interaction models that CGIS is significantly related to firms' MCAP at 1 % with a P-value of 0.006 and 0.000 respectively. Similarly, Findings in both models also report that MFRS is significantly associated with firms' MCAP at 5 % with a P-value of 0.015 and 0.014 respectively. For control variables results depicts that firms' size was statistically significant in main and interaction models at 5 % with a P-value of 0.013 and 0.025. However, firms' profitability results were not significant in both models. Finally, firms' leverage was not significant in the first model while it shows a significance level of 10% with a P-value of 0.078 in the second model.

On the other hand, results of model 1 do not support H1; these findings provides another continuity to prior studies that failed to support IC significance (measured using VAIC method) to explain firms valuation (Firer and Williams, 2003, Chen et al., 2005; Shiu, 2006). This insignificant results raises the critiques on VAIC method reliability and effectiveness on describing properly firms' business reality in the context of emerging economies since most of the empirical studies conducted in developing economies such as (Turkey, South Africa, Malaysia, Bangladesh, Thailand) shows same results. Therefore, it seems that the absence of transparent and mature financial reporting system in emerging economies doesn't fit with requirement of VAIC as an ideal method of capturing IC value.

Considering H2 of model 1 do not support the hypothesis, this may further add another argument to the arguments raised in H1 in the way that the adoption of MFRS in Malaysia didn't effectively improve the quality of financial statements in a level that improves the explanation of IC valuation through VAIC method.

Finally, model 2 supports the hypothesis H3, this finding were consistent with Wang (2013) results, where the interaction effect of CG with VAIC explains IC impact on firm value. This finding demonstrates that CG amendments where better than MFRS adoption in capturing IC value and played a very important role in improving the financial structure of Malaysian firms. This was in line with Ahmed and Duellman (2007) who found that when a firm has a better CG, conservativeness in accounting is higher, consequently, has a favourable impact on firm value.

Conclusion

The current research aimed to investigate the impact of ICP on MCAP in Malaysian context taking in consideration MCCG amendments and MFRS adoption. Study found that ICP was insignificantly associated with MCAP and the adoption of the new accounting standards didn't affect this association. These results could be due the absence of clear guidelines of measuring IC efficiency in Malaysia. Further, this study's results offer an addition bibliography to prior studies conducted in Malaysia; where firms fails to comply with allegations concerning intangible assets(Carlin, Finch and HidayahLaili, 2009; Yaacob and Che-Ahmad, 2012); which explains the insignificant impact of the new standards on ICP effect on MCAP. In other words, Malaysian firms fail to comply with new accounting standards related to intangible assets provides rational interpretation that the significance impact of MFRS adoption on firm value might be related to other standards. More precisely, the study also examined the impact of CG moderating effect on ICP relationship with firms' MCAP. Findings revealed that CG moderating impact had positively affected the association between ICP and MCAP. This might be interpreted that the new amendments in MCCG were efficient tool in monitoring IC resources. Hence, it can be concluded that the improved CG code has better effect on ICP efficiency then MFRS adoption.

This research contributed to the body of IC literatures in many ways. First, only few ICP literatures investigated the association between ICP and MCAP taking in consideration both CG and new accounting standards adoption in Malaysian context and precisely examined the CG moderating effect on this association. Thus, the findings of the present study provide more precise results on discovering which; of the new standards permits firms' to monitor IC resources more efficiently. Secondly, the present study developed a CG index that generated most of its items from the new MCCG and different CG allegation which may provide the study's results a more comprehensive view of CG's effect on IC resource generation. Finally, few studies conducted panel data analysis in investigating IC practices (e,gCerbioni and Parbonetti, 2007; Haji and MohdGhazali, 2013). Thus, the current study might be considered as referring point to future research intending to investigate ICP impact on firm value specifically in emerging economies.

Nonetheless the present paper has some limitations, first, the study conducted only in three year (e.g 2011, 2012 and 2013). Albeit this might be considered a short period to examine the impact of new standards on IC efficiency. Hence, future researcher should extended the study' period in order to have a more comprehensive view of accounting allegations changes on IC efficiency. Second, the study didn't consider firms' industry type influence on IC association with firm value. Hence, future studies should consider firms type in order to have broad view of factors affecting ICP efficiency on firm value as

prior studies proven that knowledge incentive firms have better utility of IC resources then firms' in other sectors (e.gMavridis, 2004;Alipour, 2012; Mondal and Ghosh, 2012)

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Appendix

Table 1. Corporate governance index checklist

Section 1	Characteristics of the Board	Bursa Malaysia listing (chapter15)	Mandatory	/voluntary	MCCG 2012	Prior literature	Score
1.	Size of the board: Does the company have more members than the average sample companies?	2 members at least (15.02/1)	*			(Qu and Leung, 2006; Cerbioni and Parbonetti , 2007; Li, Pike and Haniffa, 2008; Hassan, 2012; Ujunwa, 2012; Ho and Taylor, 2013; Siagian, Siregar and Rahadian, 2013)	More than 2, takes 1
2.	Independent non-executive directors: Do the independent non-executive directors constitute more than 1/3 of the board?	1/3 (15.02/1)	*			(Qu and Leung, 2006; Cerbioni and Parbonetti , 2007; Wahab, Zain, and James, 2011; Hassan, 2012; Ho and Taylor, 2013)	>1/3, takes value of 1
3.	Family members in the board: Do the family members on the board constitute less than 50% of the board?	Depends on company		*		(Hassan, 2012)	Less than 50%, value of 1
4.	Board diversity: Are the board members racially diverse?	Depends on company	*			(Swartz and Firer, 2005; Ujunwa, 2012; Zhang, 2012; Al-Musalli, and Ismail, 2012)	1 if racial diverse
5.	Chairperson and CEO: Are the roles of the chairperson and CEO separated? 90%			*	Recomndation3.4	(Cerbioni and Parbonetti , 2007; Li, Pike and Haniffa, 2008; Wahab, Zain, and James, 2011; Lazarides and Drimpetas, 2011;Hassan, 2012; Ho and Taylor, 2013)	Value of 1 if separated
6.	Independent directors' assessment: Does board undertake an assessment of its independent directors annually?				Recomndation3.1		1 if they do the assessment
7.	Nominating Committee: does the committee comprise exclusively of non-executive directors, a majority of whom must be independent?			*	Recommendation 2.1	(Wahab, Zain, and James, 2011; Lazarides and Drimpetas, 2011; Ho and Taylor, 2013; Siagian, Siregar and Rahadian, 2013)	1 if they have
8.	Does the company disclose recommendations made by the nomination committee?			*	Recommendation 2.2	(Wahab, Zain, and James, 2011)	1 if they do
9	Is the frequency of nomination committee meetings disclosed?			*		Wahab, Zain, and James, 2011)	1 if they do
10	Is the list of the nomination committee members disclosed?			*		Wahab, Zain, and James, 2011)	1 if they do

Section 2	Board Committees						
11.	Audit committee size: Does the audit committee comprise more than the mandatory requirement of three directors? (average)	>3 (15.09/1,a)	*			(Li, Pike and Haniffa, 2008; Lazarides and Drimpetas, 2011; Ho and Taylor, 2013; Siagian, Siregar and Rahadian, 2013)	More than 3, value of 1
12.	Audit committee composition: Does the audit committee comprise fully independent non-executive directors?	Majority independent (15.09/1,b)	*			Lazarides and Drimpetas, 2011; Qu and Leung, 2006; Ho and Taylor, 2013)	2/3 takes one 1
13.	Financial expertise: Does the majority (2/3) of the audit committee members have accounting or finance background/ experience?	At least one qualified (15.09/1,c)	*			(Qu and Leung, 2006; Ho and Taylor, 2013; Siagian, Siregar and Rahadian, 2013; Siagian, Siregar and Rahadian, 2013)	2/3 takes one 1
14.	Attendance of audit committee meetings: Does the company disclose individual members' attendance at audit committee meetings?	Average		*		(Qu and Leung, 2006; Ho and Taylor, 2013; Siagian, Siregar and Rahadian, 2013)	1 if they do
15.	Remuneration committee: Are the members of the remuneration committee wholly independent non-executive directors?			*	*Recommendation 2.3*	(Qu and Leung, 2006; Haat, Rahman and Mahenthiran, 2008; Wahab, Zain, and James, 2011; Lazarides and Drimpetas, 2011;Hassan, 2012; Ho and Taylor, 2013;Siagian, Siregar and Rahadian, 2013)	1 if they do
16.	Remuneration of the directors: Does the company disclose details (range) of the directors' remuneration?	Stated in (7.23,724)	*		Recommendation 2.3	(Qu and Leung, 2006; Haat, Rahman and Mahenthiran, 2008; Wahab, Zain, and James, 2011; Lazarides and Drimpetas, 2011; Hassan, 2012; Ho and Taylor, 2013;Siagian, Siregar and Rahadian, 2013)	1 if they do
17.	Is the list of remuneration committee members disclosed?			*		(Wahab, Zain, and James 2011)	1 if they do
18.	Does the company disclose recommendations made by the remuneration committee?			*		(Wahab, Zain, and James 2011)	1 if they do
19.	Risk management committee: Does the company have a separate risk management committee?			*	Recommendation 6.1	(Hassan, 2012)	1 if they do
20.	Does the company disclose a statement on internal control?			*	Recommendation 6.2	Haat, Rahman and Mahenthiran, 2008; Wahab, Zain, and James 2011; Hassan, 2012; Ho and Taylor 2013; Siagian, Siregar and Rahadian, 2013)	1 if they do

Table 2. Correlation Analysis for VAIC effect on MCAP Model

Variables	MCAP	VAIC	CGE	MFRS	LEV	ROA	SIZE
MCAP	1.0000						
VAIC	0.0722	1.0000					
	(0.0681)						
CGE	0.0527	0.0003	1.0000				
	(0.1687)	(0.9936)					
MFRS	0.0238	-0.1127**	0.1093**	1.0000			
	(0.5335)	(0.0043)	(0.0042)				
LEV	0.0532	0.0649	-0.0616	-0.0005	1.0000		
	(0.1642)	(0.1010)	(0.1075)	(0.9896)			
ROA	0.2793	0.1142**	0.0521	-0.0154	-0.2087***	1.0000	
	(0.0000)	(0.0038)	(0.1737)	(0.6873)	(0.0000)		
SIZE	0.8686***	0.0969**	0.0663**	0.0192	0.2604***	0.1243**	1.0000
	(0.0000)	(0.0143)	(0.0830)	(0.6159)	(0.0000)	(0.0011)	

Note

***Correlation is significant at the 0.01 level
**Correlation is significant at the 0.05 level
The value in the parentheses presents the significance level.