

• Word Count: 8607

Plagiarism Percentage

22%

sources:

- 1 1% match (Internet from 07-May-2016)
<http://dro.deakin.edu.au/eserv/DU:30053520/kansal-intellectualcapitaland-post-2013.pdf>
- 2 1% match (Internet from 26-Feb-2017)
<http://eprints.utcc.ac.th/1660/2/1660fulltext.pdf>
- 3 1% match (Internet from 04-Mar-2012)
http://otago.ourarchive.ac.nz/bitstream/handle/10523/1585/Working_paper_Clarke-Seng-Whiting-revised.pdf?sequence=3
- 4 1% match (publications)
[Journal of Intellectual Capital, Volume 12, Issue 4 \(2011-10-29\)](#)
- 5 1% match (Internet from 24-Feb-2016)
<http://researcharchive.vuw.ac.nz/xmlui/bitstream/handle/10063/4965/thesis.pdf?sequence=1>
- 6 1% match (publications)
[Journal of Intellectual Capital, Volume 15, Issue 1 \(2013-12-21\)](#)
- 7 1% match (Internet from 23-Apr-2014)
http://213.155.109.122/files/articles/Charting%20intellectual%20capital%20performance%20of%20the%20gateway%20to%20China_20111029190635889.pdf
- 8 1% match (publications)
[SHERIF, MOHAMED, and MAHMOUD ELSAYED. "THE IMPACT OF INTELLECTUAL CAPITAL ON CORPORATE PERFORMANCE : EVIDENCE FROM THE EGYPTIAN INSURANCE MARKET". International Journal of Innovation Management, 2015.](#)
- 9 1% match (Internet from 16-May-2016)
http://www.ijmbr.org/article_48_058defa506f7ff3fc4b119f5c2ae8cb4.pdf
- 10 1% match (publications)
[Singh, Raman Deep, and Karam Pal Narwal. "Intellectual capital and its consequences on company performance: a study of Indian sectors". International Journal of Learning and Intellectual Capital, 2015.](#)
- 11 < 1% match (Internet from 20-May-2016)
<http://digilib.teiimt.gr/jspui/bitstream/123456789/3548/1/03DSSZ01Z0100.pdf>
- 12 < 1% match (Internet from 11-Aug-2017)
<http://agba.us/pdf/2015-AGBA-Malaysia-Conference-Proceedings.pdf>
- 13 < 1% match (publications)
["Management, Valuation, and Risk for Human Capital and Human Assets". Springer Nature, 2014](#)
- 14 < 1% match (Internet from 02-Jun-2015)
<http://adb.org/sites/default/files/pub/2014/innovative-asia-knowledge-based-economy.pdf>
- 15 < 1% match (Internet from 10-Apr-2015)
http://internationalconference.com.my/proceeding/icm2014_proceeding/4thICM2014/030_102_4thICM2014_Proceeding_p342.pdf
- 16 < 1% match (Internet from 25-Jan-2014)
<http://www.aensiweb.com/aeb/2013/1405-1411.pdf>
- 17 < 1% match (Internet from 19-Apr-2016)
<http://www.icbm.com.pk/proceedings/4th%20International%20Conference%20on%20Business%20Management%20-%20Proceedings.pdf>

- 18 < 1% match (Internet from 13-Aug-2017)
<http://studentjournal.petra.ac.id/index.php/ibm/article/download/5877/5368>
- 19 < 1% match (Internet from 14-Mar-2016)
<http://www.macrothink.org/journal/index.php/rae/article/download/8675/7454>
- 20 < 1% match (publications)
[Journal of Intellectual Capital, Volume 8, Issue 4 \(2007-10-28\)](#)
- 21 < 1% match (Internet from 10-Aug-2013)
<http://www.hrmars.com/admin/pics/1420.pdf>
- 22 < 1% match (Internet from 11-Jun-2017)
http://studentsrepo.um.edu.my/4724/1/KAVEH_ASIAEI_CHA080015.pdf
- 23 < 1% match (Internet from 07-Aug-2014)
http://wbiworldconpro.com/uploads/china-conference-2013/accounting/1370752092_106-Hasnah.pdf
- 24 < 1% match (Internet from 13-Sep-2016)
<http://researchleap.com/impact-of-intellectual-capital-on-financial-performance-of-banks-in-tanzania/>
- 25 < 1% match (Internet from 06-Jul-2016)
<https://issuu.com/acpii/docs/icickm2013-proceedings-issuu1>
- 26 < 1% match (Internet from 05-Jan-2013)
<http://ainshams-accounting.com/Download/8702.pdf>
- 27 < 1% match (Internet from 13-Mar-2017)
http://www.virtusinterpress.org/IMG/pdf/COC_Volume_13_Issue_2_Winter_2016_Continued_1_3.pdf
- 28 < 1% match (publications)
[Filipe Sardo, Zelia Serrasqueiro. "Intellectual Capital and Firms' Financial Performance: A European Empirical Study". Business and Economic Research, 2017](#)
- 29 < 1% match (Internet from 23-May-2016)
<http://www.inderscience.com/storage/f512116194210378.pdf>
- 30 < 1% match (Internet from 21-Jul-2017)
http://afaanz.org/openconf/2017/modules/request.php?a=Accept%3A+Research+Interactive&action=view.php&file=1%2F232.pdf&id=232&module=oc_proceedings
- 31 < 1% match (publications)
[Seyed Alireza Mosavi. "A study of relations between intellectual capital components, market value and finance performance". African Journal of Business Management, 2012](#)
- 32 < 1% match (publications)
[Journal of Intellectual Capital, Volume 15, Issue 3 \(2014-09-16\)](#)
- 33 < 1% match (Internet from 10-Jan-2017)
<http://www.issr-journals.org/links/papers.php?application=pdf&article=IJIAS-16-140-09&journal=ijias>
- 34 < 1% match (publications)
[Guerrini, Andrea, Giulia Romano, and Chiara Leardini. "Does intellectual capital efficiency affect financial performance? The case of Italian listed firms". International Journal of Learning and Intellectual Capital, 2014.](#)
- 35 < 1% match (Internet from 05-Apr-2016)
<http://www.inderscience.com/storage/f141079821235116.pdf>
- 36

< 1% match (Internet from 06-Mar-2015)

http://www.researchgate.net/profile/Ming-Chin-Chen/publication/228279421_An_Empirical_Investigation_of_the_Relationship_between_Intellectual_Capital_and_Firms_Market_Value

37 < 1% match (publications)

[Journal of Intellectual Capital, Volume 14, Issue 2 \(2013-05-27\)](#)

38 < 1% match (publications)

[Dinh, Minh Thi Hong. "The returns, risk and liquidity relationship in high frequency trading: Evidence from the Oslo stock market", Research in International Business and Finance, 2017.](#)

39 < 1% match (Internet from 17-Feb-2012)

<http://www.awriters.net/>

40 < 1% match (Internet from 28-May-2016)

<http://www.inderscience.com/storage/f114863101972512.pdf>

41 < 1% match (Internet from 16-Oct-2016)

<http://mdpi.com/2071-1050/8/9/867/htm>

42 < 1% match (Internet from 14-May-2016)

https://acctgrev.ut.ac.ir/article_56251.html?_action=article&_kw=%D9%86%D9%82%D8%AF%D8%B4%D9%88%D9%86%D8%AF%DA%AF%DB%8C+%D8%B3%D9%87%D8%A7%D9%85&kw=45664

43 < 1% match (publications)

[Pietrantonio, Rinaldo, and Gianpaolo Iazzolino. "Intellectual capital and business performances in Italian firms: an empirical investigation", International Journal of Knowledge Management Studies, 2014.](#)

44 < 1% match (publications)

[El Telbani, Nihaya. "The Relationship between Intellectual Capital and Innovation in Jawwal \ Jordan Journal of Business Administration - 2013, Vol. 9, No. 3, pp. 619 - 650.", University of Jordan : Deanship of Academic Research, 2013.](#)

45 < 1% match (Internet from 05-Jan-2017)

<http://www.pims.zim.pcz.pl/files/Impact-of-the-Value-Added-Intellectual-Coefficient-and-its-Components-on-Overall-Performance-of-Selected-European-Companies.pdf>

46 < 1% match (Internet from 28-Jun-2016)

<http://www.bzu.edu.pk/PJSS/Vol34No22014/PJSS-Vol34-No2-04.pdf>

47 < 1% match (Internet from 12-Jun-2015)

http://ijrte.eab.org.tr/media/volume1/issue1/ideir_odepren_skilic.pdf

48 < 1% match (Internet from 22-Oct-2015)

http://klibel.com/wp-content/uploads/2015/04/A9-C9_KLIBEL6_Acc_17_pl6MPS17pP.pdf

49 < 1% match (Internet from 05-May-2016)

http://www.ijac.org.uk/images/frontImages/gallery/Vol_3_No_4/14.pdf

50 < 1% match (Internet from 17-Aug-2017)

http://jafas.org/articles/2017-3-2/4_Intellectual_Capital_FULL_TEXT.pdf

51 < 1% match (Internet from 03-Mar-2016)

<http://ccsenet.org/journal/index.php/ass/article/download/39657/21947>

52 < 1% match (Internet from 12-Feb-2017)

http://centrefexcellence.net/JJSS/Vol5/No3/JSSarticle7.5_3_pp277-290.pdf

53 < 1% match (Internet from 10-Jan-2014)

<http://epublications.bond.edu.au/cgi/viewcontent.cgi?article=1091&context=theses>

54 < 1% match (Internet from 20-Mar-2014)

<http://www.lisboncouncil.net/component/downloads/?id=915>

- 55 < 1% match (publications)
[Ghosh, Santanu Kumar and Maji, Santi Gopal. "The Impact of Intellectual Capital on Bank Risk: Evidence from Indian Banking Sector", IUP Journal of Financial Risk Management, 2014.](#)
-
- 56 < 1% match (publications)
[Gruian, Claudiu-Marian. "THE INFLUENCE OF INTELLECTUAL CAPITAL ON ROMANIAN COMPANIES' FINANCIAL PERFORMANCE", Annales Universitatis Apulensis - Series Oeconomica, 2011.](#)
-
- 57 < 1% match (publications)
[Li-Chang Hsu. "Clarifying the Effect of Intellectual Capital on Performance: The Mediating Role of Dynamic Capability - Clarifying the Effect of Intellectual Capital on Performance", British Journal of Management, 11/2010](#)
-
- 58 < 1% match (Internet from 25-Jan-2016)
<http://www.mbace.eu/fulltxt.php?ICID=1069188>
-
- 59 < 1% match (Internet from 10-Apr-2016)
<http://crsuiind.org/news/32.pdf>
-
- 60 < 1% match (Internet from 26-Jun-2017)
https://eber.uek.krakow.pl/index.php/eber/issue/download/20/pdf_19
-
- 61 < 1% match (Internet from 26-Mar-2017)
http://www.mnje.com/sites/mnje.com/files/07-33- dalia_et_al.pdf
-
- 62 < 1% match (Internet from 21-Apr-2012)
http://esqp.istanbulsmmmodasi.org.tr/files/articles/Analysing%20value%20added%20as%20an%20indicator%20of%20intellectual%20capital%20and%20its%20consequences%20on%20company%20performance_20111029190026854.pdf
-
- 63 < 1% match (Internet from 01-Jun-2016)
http://ijbssnet.com/journals/Vol_5_No_8_July_2014/16.pdf
-
- 64 < 1% match (publications)
[Silvestri, Antonella, and Stefania Veltri. "Overcoming the additive property of value added intellectual capital \(VAIC™\) methodology", International Journal of Learning and Intellectual Capital, 2014.](#)
-
- 65 < 1% match (publications)
[Journal of Intellectual Capital, Volume 13, Issue 1 \(2012-01-07\)](#)
-
- 66 < 1% match (Internet from 27-Jan-2017)
http://businessperspectives.org/component/option.com_journals/task.view/jid.4/id.404/
-
- 67 < 1% match (Internet from 16-May-2016)
<http://www.inderscience.com/storage/f589436127101112.pdf>
-
- 68 < 1% match (Internet from 10-Nov-2012)
<http://www.sb.iub.edu.bd/internship/autumn2005/0220175.pdf>
-
- 69 < 1% match (Internet from 05-Jun-2011)
<http://web.edu.hku.hk/staff/samchu/docs/publications/Chu-2011-Empirical-Study-of-Impact-of-Intellectual-Capital-on-Business-Performance.pdf>
-
- 70 < 1% match (Internet from 12-Apr-2016)
<http://www.toknowpress.net/ISBN/978-961-6914-13-0/papers/ML15-131.pdf>
-
- 71 < 1% match (Internet from 23-Feb-2015)
<http://academic-conferences.org/pdfs/ICICKM2011-Book-V-2.pdf>
-
- 72 < 1% match (Internet from 23-Apr-2014)
http://213.155.109.122/files/articles/Intellectual%20capital%20in%20the%20quoted%20Turkish%20ITC%20sector_20111029193350474.pdf
-

- 73 < 1% match (Internet from 10-Oct-2014)
http://jbsq.org/wp-content/uploads/2013/12/December_2013_12.pdf
-
- 74 < 1% match (Internet from 09-Jul-2017)
<http://www.eikm.com/issue/download.html?idArticle=706>
-
- 75 < 1% match (Internet from 14-Oct-2014)
<http://www.indist.org/index.php/indist/article/download/30185/26122>
-
- 76 < 1% match (Internet from 06-Apr-2017)
<http://www.i-scholar.in/index.php/index/search/authors/view?firstName=Amitava&lastName=Mondal&middleName=>
-
- 77 < 1% match (Internet from 14-Jun-2017)
https://umexpert.um.edu.my/file/publication/00001067_137723.pdf
-
- 78 < 1% match (Internet from 21-May-2014)
http://ses.library.usyd.edu.au/bitstream/2123/6260/1/SA%20Abhayawansa_Full%20Thesis.pdf
-
- 79 < 1% match (Internet from 13-Jun-2017)
<http://organizacija.fov.uni-mb.si/index.php/organizacija/article/download/757/1153>
-
- 80 < 1% match (publications)
[Journal of Intellectual Capital, Volume 13, Issue 1 \(2012-01-07\)](#)
-
- 81 < 1% match (publications)
[Saeed, Sohail, Siti Zaleha Abdul Rasid, and Rohaida Basiruddin. "The Mediating Role of Intellectual Capital in Corporate Governance and the Corporate Performance Relationship". Mediterranean Journal of Social Sciences. 2015.](#)
-
- 82 < 1% match (publications)
[Abdul-Rahim, R, H Jafaridehkordi, N Abdullah, and N Hamzah. "Intellectual capital in advanced technology companies in Malaysia". Recent Trends in Social and Behaviour Sciences. 2014.](#)
-
- 83 < 1% match (publications)
[Andrews, Dan Criscuolo, Chiara Pilat, Di. "The future of productivity improving the diffusion of technology and knowledge.". Communications & Strategies, Oct 2015 Issue](#)
-
- 84 < 1% match (Internet from 05-Apr-2016)
<http://www.inderscience.com/storage/f125671011428931.pdf>
-
- 85 < 1% match (publications)
[Ahmad, Muhammad, and Naveed Ahmed. "Testing the relationship between intellectual capital and a firm's performance: an empirical investigation regarding financial industries of Pakistan". International Journal of Learning and Intellectual Capital. 2016.](#)
-
- 86 < 1% match (publications)
[Kavida, V.. "Intellectual Capital: A Strategic Management Perspective", IUP Journal of Knowledge Management/09729216_20090901](#)
-
- 87 < 1% match (publications)
[Chang, William S, and Jasper J Hsieh. "Intellectual Capital and Value Creation-Is Innovation Capital a Missing Link?". International Journal of Business and Management. 2011.](#)
-
- 88 < 1% match (publications)
[Lu, W.M.. "Capability and efficiency of intellectual capital: The case of fabless companies in Taiwan". Expert Systems With Applications. 201001](#)
-
- 89 < 1% match (publications)
[Dadashinasab, Majid, and Saudah Sofian. "The Impact of Intellectual Capital on Firm Financial Performance by Moderating of Dynamic Capability". Asian Social Science. 2014.](#)
-
- 90 < 1% match (Internet from 22-Mar-2016)
<http://www.omicsgroup.org/journals/exploring-the-disclosure-of-intellectual-capital-in-ghana>

paper text:

Introduction In the past, it was believed that the most important asset in the companies would be physical/tangible assets such as machinery, equipment and building. However it is not relevant to present's economy or what so called as knowledge-based economy (KBE) that the source of productivity and business value creation has changed to Intangible Assets or being called as knowledge-based capital (KBC) eg. organization know how, software, patents, designs, firms specific skills etc (OECD, 2013; Suraj and Bontis, 2013; Stewart, 1997;

Edvinsson and Malone, 1997; Sveiby, 1997; 2002). **The** following definition
of

67

knowledge-based economy is derived from Asian Development Bank (2014) based on World Bank and OECD which is "an economy that uses information resources-technologies, skills and processes-to achieve and accelerate economic growth potential". Knowledge-based capital (KBC) is various types of intangible assets that create future benefits and being classified into three types:

**computerized information, innovative property and economic
competencies** (OECD, 2013). Firms in

83

OECD countries are investing as much or

more in knowledge- based **capital** (KBC) as in the **physical capital** and in

14

some countries, the investment made by business entities in KBC is exceeding significantly the physical capital. KBC is not only boosting growth and productivity about 20% to 34% of labor productivity growth based on the study in the European Union and US, but also transforming to make firms competitive (OECD, 2013). Asia Pacific countries have been experienced a prominence growth of their economic that could be seen from the

share of world **gross domestic product (GDP)**, only reached **21% in 1980**
and has achieved **38% in 2012**. However in order to

14

sustain such high growth then the countries need to engage in the knowledge-based economy (KBE) development (ADB, 2014). Some countries like Japan, South

Korea, Singapore, Hong Kong, China and Taipei, China

14

managed to achieve high rank in knowledge economy index and have shown that labor force demanded to be provided with proper skills and knowledge. One of the Intangible Assets that play significant role and experiencing tremendous growth until today is Intellectual Capital (Bollen, Vergauwen, & Schnieders, 2005). Intellectual Capital (IC) have received many attentions from various scholars and practitioners in a worldwide over the last two decades as knowledge-based equity of organizations (Bontis, 2001)(Petty and Guthrie, 2000). There are various term have been used interchangeably to represent Intellectual Capital (IC), like

Intangible Assets, Intangibles or knowledge assets (Bontis, 2001).
Position of **IC** has

1

dominated the creation of wealth in firms for the past periods (Vishnu & Gupta, 2014) then it is noteworthy to manage and measure IC to develop their competitive competence and achieve companies' goals (Cahill and Myers, 2000; Wang, 2008). In order to keep the value and growth, companies will be likely to depend more on the performance of their IC along with the growth of the knowledge economy that leads to dominate the form of commerce (Stewart, 2001 in (Joshi, Cahill, Sidhu, & Kansal, 2013) ; Wood, 2003; Sveiby, 2010

According to several **scholars**, **IC** is believed **to be the hidden value** that
is not revealed **in the financial**

10

reports (Chen, Cheng, & Hwang, 2005; Mondal & Ghosh, 2012)(Lev, 2001;

Edvinsson and Malone, 1997). IC itself is not

11

very easy to be recognized, detected and reported in the financial reports (Nazari, Herremans, Nazari, & Herremans, 2007; Nimtrakoon, 2015). Current financial reporting standard cannot explain adequately the underlying firm value leads to the problem of information asymmetry for investors (Lev, 2001) and influence negatively to the value of financial statements in the knowledge- based economy (Bukh et al., 2005) The

main objective of this research is to explore and to know the relationship between IC, market value and

12

financial performance in all sector industries of Indonesia except banking and financial institutions from the year of 2009-2014, using the Modified

VAIC model to calculate the efficiency of IC based on the studies of

29

Ulum

et al. (2014), Vishnu and Gupta (2014) and Nimtrakoon et al. (2015).

30

Besides, this research also aim to present the comparison of high and low level of knowledge industries regarding to IC performance. Panel

regression analysis is applied as the tool to examine the relationship

76

as the previous researches mostly used Ordinary Least Square (OLS) as shown in Table 1. Maji and Goswami (2016) mentioned that Pooled OLS Model is showing failure in obtaining the correlation between years of the variables within a firm. The following section discusses about the conceptual framework related to theories being used in the study. While

in the third and fourth section, it is the summary of the

21

relevant literature and hypothesis developed in this study. Last section will be concerned with the methodology research, results and empirical analysis including the conclusions

and limitations of the study. Conceptual Framework and Hypotheses

60

1. Intellectual Capital No acceptable uniform definition of IC have been approved by both practitioners and academicians until today. In the past, several scholars like

Edvinsson and Malone (1997, p. 358) defined IC simply as "knowledge that can be converted into value." And Stewart (1997, p. x)

20

defined IC as "intellectual material – knowledge, information, intellectual property, experience – that can be put to use to create wealth." Other

90

scholars in brief could describe IC as "something related to knowledge, wealth creation and intangibility"((Bontis, 2001; Vishnu & Gupta, 2014),(Sullivan Jr & Sullivan Sr, 2000) and Skaikh, 2004. Chen et al. (2005), Lev (2001) and Mondal and Gosh (2012) believed that IC is the hidden value that do not appear in the financial report (particularly in financial statement position/balance sheet) but if being managed well then it will create competitive advantage for the company across time.

In this study the definition of IC is all knowledge that

18

can be used to create wealth and added value as the competitive advantage in achieving company's goal.

Researchers have not reached general agreement in classifying or measuring the Intellectual Capital (IC).

One of the earliest model of IC is Skandia Navigator (Edvinsson and Malone, 1997)

31

or navigator model that encouraged other researcher to look beyond traditional concepts in creating organization value. This model changed the nature of relationship with customer and recognize its role in value creation (Bontis, 2001). The other well-known method to measure IC is Intangible Asset Monitor (Sveiby, 1997 in 2010) (Mondal & Ghosh, 2012). These models take IC as the input and analyze the impact to the companies output (Shakina & Barajas, 2014). The problems arise with most of IC methods are unavailability of data for the party outside of the firm, information required is often in the form of qualitative and depend on judgments and cannot translate the information into quantitative value (Clarke, Seng, & Whiting, 2011) Further development in measuring IC and its components, scholars classify it into 4

categories: direct intellectual capital (DIC) methods, market capitalization methods (MCM), Return on Assets (ROA) methods and scorecard (SC) methods

6

(Sveiby, 2010; (Nazari

et al., 2007; Tan, Plowman, & Hancock,

88

2008) or combination of these methods (Chan, 2009). Direct methods calculate IC in the form of monetary value using micro level components of intangible assets data either as aggregate coefficient or as individual while Scorecard method utilizes indices to show the performance and reported as scorecards or graphs (Nazari et al., 2007; Tan et al., 2008). They are more fitted to demonstrate the comprehensive conditions of a company and it is easy to be applied in any level of an organization (Sveiby, 2002). On the other hand, MCM and ROA methods using macro level aggregate data to measure (Nazari et al., 2007). These methods are more suitable for merger and acquisition and stock market valuation (Sveiby, 2002). Most popular measurement of IC

was developed by Pulic (1998, 2000) that measures the IC efficiency

65

quantitatively by determining value added intellectual coefficient (VAIC). Consistently with stakeholder theory that to increase the stakeholder value (shareholders, employees, customers,

debtors and government – Riahi-Belkaoui, 2003),

4

firm uses its physical, financial and intellectual capital.

3

Pulic (1998,2000) defined that

market value of the companies are created by capital (physical and financial) employed and intellectual capital (human capital and structural capital). The value of

21

VAIC is the sum of these capital efficiencies – human capital

31

efficiencies (HCE), structural

capital efficiency (SCE) and capital employed efficiency (CEE – consist of physical and financial capital efficiency) then together HCE and SCE constitute IC efficiency (ICE)

3

(Firer & Williams, 2003) Human capital consists of knowledge and skills that enable employees to perform in different kinds of situations including values and motivation and Human resources' capability is believed to

be the main intangible resource (Sveiby, 2001b). Experience is another factor of human capital that can be improved with training and could be divided into micro (individual) or macro (organization) levels (Joshi et al., 2013). Structural capital that also being known as internal capital that

consist of organization **structures, procedures, strategy, systems, hardware, databases and** also organizational **cultures**

1

to support employees to achieve business goals. Those capabilities are developed within organization and cannot be separated (Joshi et al., 2013). In developing structural capital, the most influential factor is human capital and that makes the process of development will be subjected to human capital (Nazari et al., 2007).

The examples of structural capital could be brand names, **patents, technologies,**

37

innovations created by research and development department, etc. Additionally,

Sveiby (1997) classified **structural capital as concepts, models, and computer and administrative systems.**

1

Further, Lev (2001) defined stated that IC have been

developed from innovation, organizational **designs** and **human resource practices**

37

while other researchers (Bontis, 2001; Herremans & Isaac, 2004; Kujansivu & Lonnqvist, 2007; Petty & Guthrie, 2000) (Stewart, 1997; Roos & Roos, 1997) identify IC resources and capabilities in

three dimensions – human capital, internal capital (databases and organization structural) and **external/ customer capital**

63

(interaction with external environment eg. supplier and customer). VAIC has been widely adopted in many previous researches that both conducted in the developed countries (Joshi et al., 2013; Riahi-Belkaoui, 2003; Tan, Plowman, & Hancock, 2007; Zeghal & Maaloul, 2010) or developing countries

(Chen et al., 2005; Gan & Saleh, 2008; Nimtrakoon, 2015;

28

Phusavat, Comepa, Sitko-Lutek, & Ooi, 2011).

28

VAIC method have several advantages as first, the data being

used in VAIC is based on audited information

68

(Chan, 2009; Firer & Williams, 2003) that makes it objective and verifiable (Pulic, 1998, 2000) (Chan, 2009). Second, the method is also simple, reliable and comparable (Madinios, Chatzoudes, Tsairidis, & Theriou, 2011) and third, VAIC provides a standardized and integrated measure that acknowledge the analysis and comparison of cross-organization or cross-nation

((Chen et al., 2005; Nimtrakoon, 2015; Phusavat et al., 2011;

66

Sullivan Jr & Sullivan Sr, 2000; Zeghal & Maaloul, 2010) (Roos & Roos, 1997). Forth, external stakeholders are able to evaluate the IC of the company using the model promptly (Vishnu & Gupta, 2014). Fifth, the component factors used are matching well with many accepted definitions of IC (Goh, 2005). Lastly, VAIC fits well with the condition of emerging and developing countries where there is still lacking of practices in advanced accounting and less mature of financial structures (Madinios et al., 2011) However, there are some limitations of VAIC model that being indicated by some researchers, Andriessen (2004) emphasized about the basic assumptions and validity of VAIC model and his work is in line with

Stahle et al. (2011) that also pointed out the “perfect superimposition” between

84

formula

of human capital (HC) and structural capital (SC) or theory inconsistencies and no inclusion of relational capital (RC)

11

to determine VAIC (Vishnu & Gupta, 2014). Another criticism raised about VAIC

is the inability of the model to measure the companies that experience negative book value of equity or negative operating profit which leads to negative value added score then

7

those companies must be removed from the sample as it is not providing meaningful analysis (Chu, Chan, & Wu, 2011; Zeghal & Maaloul, 2010) Some researchers have extended the original VAIC model to overcome the limitations and measure value added efficiency in more comprehensive manner (Nazari

et al., 2007; Nimtrakoon, 2015; Ulum et al.,

28

2014; Vishnu & Gupta, 2014) to accommodate all

four components of IC which are Human Capital (HC), Structural Capital (SC), Relational Capital (RC) and Capital

22

Employed (CE) and known as

Modified Value Added Intellectual Coefficient (MVAIC). Relational Capital

18

(RC) as also known

as external capital defined as the ability of the organization

77

in collaborating with external parties or stakeholders such as suppliers, customers, creditors, trade associations, government bodies (Bontis, 2001).

Sveiby (1997) identified relational capital as

1

“relationships with customers and suppliers”. It is significant not only to create but also to sustain the relationship with external parties to be successful (Joshi et al., 2013) and the cost required to have such relationship is marketing, selling and advertising (Nazari et al., 2007). Then it is reasonable to have marketing, selling and advertising cost as the proxy of RC. Human HCE Capital Copy Structural Intellectual Capital SCE ICE Capital MVAIC Relational RCE Capital Capital CEE Employed Source : (Ulum et al., 2014) 2. IC and corporate value and performance Resource Based Theory (RBT – folder : other source IC) Based on OECD (2013), the positive relationship

between the market value of the firms and investment in KBC

54

have been found in several countries. Nonetheless limited information is provided in companies' financial statements about the investment in KBC. Leveraging effect of IC towards profitability ((Sullivan Jr & Sullivan Sr, 2000) Previous researches conducted in the both developed or less developed economies countries show various results of the

relationship between the VAIC and the performance of the companies in

24

terms of

profitability, productivity and market value.

Riahi-Belkaoui (2003) reported a positive relationship between IC and financial performance in US multinational companies. Followed by Chen et al. (2010) set positive

2

and significant relationship between IC and performance of the firms in the

6

US healthcare industry as well as Wang (2008) that examined the relationship in US Standard & Poor 500 publicly listed electronic firms from 1996-2005. The same result being shown by and

Clarke et al. (2011) also found a direct relationship between IC and the performance of publicly listed companies in

1

Australia. However

Joshi et al. (2013) established that value creation capability

74

is highly influenced by human capital and two thirds of the sample companies showed very low level of IC efficiency in the financial sector of

1

Australia. From European countries, the research being conducted by Morariu (2014) to examine IC performance and the

association between IC and corporate performance in Romanian firms that

59

consist of profitability, productivity and market value resulted

significant negative association between VAIC and market value

81

which means that the companies do not create

value from intellectual, physical and financial resources.

32

In Italy, Celenza and Rossi (2014) examined 23

companies listed in Stock Exchange from period of 2003-

75

2008 and found insignificant relationship between IC and corporate financial indicators, also toward the M/B value. Similar result is being confirmed by Maditinos

et al. (2011) who studied the relationship between IC, market value and financial performance in

16

Greek during period of 2006-2008 using the sample of 96 listed companies except, they managed to show the

significant relationship between the efficiency of human capital and

13

ROE. Gosh and

Mondal (2009) have resulted inconclusive result

regarding the relationship between IC and performance in

34

India as they found

positive relation between IC and profitability (ROA)

6

but

failed to show significant result in the case of IC and

5

productivity (asset turnover ratio) and the same result for the

relationship between IC and market valuation (market to book value).

11

While another research in software production firms in India from the period of 2000-2010 conducted by Venugopal and Subha (2012) failed

to find the direct relationship between VAIC and the financial performance, and

12

yet the

efficiency of capital employed and the efficiency of structural capital were both significantly and positively related to the financial performance.

13

Vishnu and Gupta (2014)

studied the relationship between IC and performance of pharmaceutical companies in

2

India using

three extended and modified VAIC models (e-

6

VAIC). The result shown

a positive association between IC and firm's performance, however not in the case of

2

relational capital (RC).

Phusavat et al. (2011) conducted the research in manufacturing industry in Thailand and

1

resulted in the

positive and significant relationship between IC and firm's performance

2

(ROE, ROA,

revenue growth and employee productivity). The recent study by Nimtrakoon (2015) used the method of

52

MVAIC

to measure the intellectual capital of technology companies

72

in 5 ASEAN countries and found

that there is a significant positive relationship between IC and firm's performance, likewise with market value. Whereas the relationship between the components of IC and

16

firm's performance or market value showed various result. Meanwhile

Firer and Williams (2003), Chan (2009b) and

4

Kujansivu and Lonnqvist (2007) failed to find the significant association between the efficiency of IC

26

towards corporate value, market value or financial performance.

Chang and Hsieh (2011) found a negative relationship between IC and the financial /market performance of the companies.

44

Even though

Gan and Saleh (2008) was able to find the relationship between VAIC towards profitability and productivity, but

51

unable in finding one to market value. There are several of past researches about IC from Indonesia as shown by Razafindrambinina and Anggraeni (2011) who emphasized the research on studying

the relationship between IC and corporate financial performance of the consumer goods companies listed in Jakarta Stock Exchange in Indonesia and

42

show the IC contribution to the financial performance of the corporate. Femianti and Anantadjaya (2014) examined the same industry in Indonesia from 2008-2012 using VAIC from the perspective of market value (M/B ratio, EPS, P/E ratio) and accounting value (Debt Ratio, ROE, Net Working Capital and Asset Turnover) and

found that VAIC is having positive correlation towards the market value and

79

accounting value. Djamil

et al. (2013) studied the impact of Intellectual Capital to stock return in banking sector of

61

Indonesia from 2005-2009 and resulted that there is no effect of IC towards

current stock return but having influence to stock return growth.

73

Among 3 components of VAIC only human capital efficiency found to be positively impact the stock return. In the opposite of the previous studies in Indonesia that emphasize more on the single type of the industry and

using the VAIC model as the measurement of IC,

20

this research is filling the gap by having companies from all industries except banks and financial institutions as the focus of the research and utilizing Modified-VAIC (MVAIC) as the model of IC measurement. Additionally panel regression is being employed in this study as the tool of analysis as mentioned by Baltagi (2013) due to 1) the ability of controlling the heterogeneity, considering that it can lead to bias in the resulting estimates; 2)having

more variability, efficiency, and also less collinearity among variables
due to larger data

17

set; 3)having higher proficiency in studying the dynamics of adjustment; 4)ability to detect and measure

effects that cannot be found in pure -cross section/ pure-times series;

82

5)having more reliable estimates and less assumptions in testing more sophisticated behavioral models. Hypothesis Development As referred to Table 1 , there is an overwhelming

number of works have been conducted in investigating the impact of the IC

78

to firm performance, both in overall industries or specific sector of industry and conducted not only in developed economic countries but also less developed ones. Most of the results are showing positive association

between IC and financial performance (Bollen et al., 2005; Chu et al., 2011; Clarke et al.,

46

2011; Goh, 2005; Rahman, 2012;

Riahi-Belkaoui, 2003; Tan et al., 2008).

8

Definitely those are in line with the resource-based theory that mentioned IC as "the value driver of all companies" (Stewart, 1997 in Maditinos et al. ,2011) or IC as "strategic resource that is used by a firm to gain competitive advantage and create value that the firm can use to enhance its performance "(Wernerfelt, 1984; Marr

et al., 2003 in Clarke et al. 2011). Whilst, Peng et al. (2008) highlighted the drivers of

27

success or failure in emerging economies based on the strategy tripod (within industry conditions, firm-specific differences and institutional relationship) which IC is becoming the core of the strategy in order

to achieve sustainable competitive advantage (Chen et al., 2005;

80

Goh, 2005). Hence this study is intended to test the first hypothesis: H1 : MVAIC is positively related with firm performance The research also looks into the association of the IC components to the

firm performance. Prior studies have found that each component of IC has different impact

3

from one to another to firm performance; HCE found to be major impact to increase the firm performance (Chan, 2009;

Chen et al., 2005; Gan & Saleh, 2008;

85

Maditinos

et al., 2011; Tan et al., 2008; Ting & Lean, 2009; Phusavat et al., 2011). In

24

contrast, SCE found not to have significant relationship with firm performance

(Clarke et al., 2011; Ting & Lean, 2009) and the

58

same result towards RCE in Nimtrakoon (2015) and Vishnu and Gupta (2014). Whilst, CEE found to be positively related with firm performance

(Chen et al., 2005; Clarke et al., 2011; Ting & Lean, 2009; Vishnu and Gupta, 2014; Zeghal & Maaloul, 2010).

43

It would be interesting to investigate the different effect of each component to firm performance

25

as the results were mixed. Thus the hypotheses are as followings: H1a : ICE

is positively related with firm performance H1b : CEE is positively related with firm performance H1c

57

:

HCE is positively related with firm performance H1d : SCE is positively related with firm performance H1e : RCE is positively related with firm performance

8

IC is not only affecting the firm performance but also the

market value of the company, the

8

higher the IC the higher the

market value of respective company compared to the book value

86

(Celenza & Rossi, 2014; Firer & Williams, 2003; Goh, 2005;

Riahi-Belkaoui, 2003; Shiu, 2006; Wang, 2011; Zeghal & Maaloul, 2010).

34

Drawing from the previous researches, then second hypothesis would be as followings: H2 : MVAIC is positively related with market value The relationship between the IC components towards market value also being looked up in this study. Following the previous researches that also lead to different results, H2a : ICE

is positively related with market value H2b : CEE is positively related with market value H2c

32

:

HCE is positively related with market value H2d : SCE is positively related with market value H2e : RCE is positively related with market

7

value Furthermore, the stakeholder theory mentioned if technology-based or knowledge-intensive industry will employ more IC to achieve higher profit compared to traditional or low-level of knowledge industry (Guthrie, Petty, & Yongvanich, 2004).

In other words, the influence of IC on firm performance and

64

market value is significantly higher in high-level of knowledge industry then the one in low-level of knowledge industry

(Chen et al., 2005; Maji & Goswami, 2016; Tan et al., 2007). Accordingly, this

62

research posits the following hypothesis : H3a : The influence of

IC on firm performance is higher in high-

89

level knowledge industry than the low- level industry H3b : The influence of IC on market value is higher in high-level knowledge industry than the low-level industry Research Design Sample Data of the research is taken from database of Indonesian Stock Exchange (IDX) and Bloomberg for the selected variables in the period of 2010-2014. The sample is taken from all industry listed in the IDX except banking and financial institutions (eg. insurance and investment companies) due to the differences in analyzing the financial statements. Based on the Fact Book 2015 released by IDX, there are 509 listed firms and 97 firms belongs to bank and financial institutions are removed; resulted in 412 firms. There are several criteria of selection being applied to the data: 1. Following (Chu

et al., 2011; Zeghal & Maaloul, 2010),

10

firms experience

with negative book value of equity or negative operating profit, are removed from the

7

samples (..... firms) 2. Firms with

missing data on the selected variables

87

(unavailability of the financial statements, suspension, delisting, doing IPO after year of 2010, no stock trading during the years) are also removed from the samples (.....firms) The firms based on IDX sub sector are categorized per industry group to get more samples based

on the classification of Global Industry Classification Standard (GICS).

27

Two industries are excluded from the samples; household & personal products and consumer durable & apparels, since the number of eligible firms are less than 4 (7 firms being removed) Table 2. Classification of Industry Group and the samples Industry Group (based on GICS) Sub Sector (based on IDX) Available Selected High-level knowledge industry Automotive & Components - 12 11 Capital Goods Building/Non-Building Constructions,Cable/Electronics,Machinery 23 10 Pharmaceuticals,Biotechnology,Life Sciences - 11 7 Property and Real Estate - 45 25 Media Advertising Printing&Media 14 8 Others Telecommunication, Computer, Health Care 14 5 Low-level knowledge Industry Energy Energy, Crude Petroleum&Natural Gas Production,Coal Mining 34 10 Materials Metal&Mineral Mining,Land/Stone,Cement,Ceramic, Chemicals, Plastic&Packaging, Pulp&Paper,Metal& Allied Products,Wood Industries 71 26 Retailing Wholesale and Retail Trade 55 21 Transportation Transportation, Toll Road/Harbor 35 5 Consumer Service Restaurant, Hotels and Leisures 21 9 Food, Beverage and Tobacco Plantation/Fishery,Tobacco manufacturers,Packaged Food,Food& Beverage 43 17 TOTAL 378 154 Measurement of Variables Independent Variables Based on Tan et.al (2007), VAIC measures the

value creation efficiency from both intangible and tangible assets of the

70

firms. Following previous researches (Nimtrakoon, 2015; Ulum et al., 2014), the elements of modified VAIC (MVAIC) are summed up of the

Human Capital Efficiency (HCE) + Structural Capital Efficiency (SCE) +
Capital Employed Efficiency (CEE) + Relational Capital Efficiency

19

(RCE). The model starts with calculating the Value Added (VA) which is deriving from $VA = \text{Total Revenues} - \text{Total Expenses}$ Where Total Revenues are all revenues from providing products and services and Total Expenses are all expenses (includes depreciation and amortization) except employees costs, interests, taxes, dividends

(Chen et al., 2005; Clarke et al., 2011; Gan & Saleh, 2008;

45

Nimtrakoon, 2015) and this is called

as the Gross Value Added Approach.

4

Employees cost are being treated as investment or a value creation entity

(Chen et al., 2005; Clarke et al., 2011; Joshi et al., 2013; Tan et al.,

15

2008)

Human Capital Efficiency (HCE) shows of how much VA is created by a
dollar spent on paying the

33

employees' skills, experiences, knowledge and productivity or human capital in the working place. The higher the HCE is showing the effective utilization of human

capital in creation of value added by operating income and is calculated
as

56

: $HCE = VA / HC$ Where HC is employees cost including the salaries, wages, benefit and the training/development expenses

Structural Capital Efficiency (SCE) shows how much the value creation
is generated by structural capital

40

(SC) which covers strategy, cultures/values, databases, patents, organizational networks or the procedures/processes within organization

(Clarke et al., 2011; Joshi et al., 2013)

15

and defined

as $SCE = SC/VA$ Where $SC = VA - HC$ Capital Employed Efficiency

50

(CEE) measures the ability of company's asset to create revenue or can be called as operating assets (Kamal, Mat, Rahim, Husin, & Ismail, 2012).

Pulic (1998) mentioned that IC cannot produce the value

4

by itself and require other capitals, both

physical and financial capital or known as capital employed

23

(CE)

(Chen et al., 2005; Clarke et al., 2011) (Pulic, 1998) and

25

calculated as

$CE = \text{Total Assets} - \text{Intangible Assets}$ $CEE = VA/CE$

15

Relational Capital Efficiency (RCE) represents the ability of the company in developing the relationship with customers, suppliers or other external parties stakeholders such as suppliers, customers, creditors, trade associations, government bodies (Bontis, 2001; Nazari et al., 2007; Nimtrakoon, 2015; Sharabati, Jawad, Bontis, Naji Jawad, & Bontis, 2010; Ulum et al., 2014; Vishnu & Gupta, 2014). The proxy of relational capital (RC) is marketing, selling, and advertising cost and RCE is being calculated as $RCE = RC/VA$

$ICE = HCE + SCE + RCE$ Where ICE is Intellectual Capital Efficiency that measures the human capital, structural capital and relational capital efficiency

39

of the company aside from capital employed (physical and financial capital)(Nimtrakoon, 2015; Ulum et al., 2014). Then the complete formula of MVAIC (Nimtrakoon, 2015; Ulum et al., 2014) is defined as follows :
 $MVAIC = ICE + CEE$ $MVAIC = HCE + SCE + RCE + CEE$

Dependent Variables Dependent Variables used in the current study consist of firms' market value and financial performance, which are the followings: (1) Market Value Market Value

2

signify

the total values of shares being issued by the firm

18

and also determines how much payment needed to acquire the firm in the particular time.

Market to Book value (MBV) ratio of equity is being used as a proxy of market value in the

23

current study, following previous studies (Chen

et al., 2005; Gan & Saleh, 2008; Maditinos et al., 2011;

19

Nimtrakoon, 2015) It

is simply calculated by dividing market value (MV) with the book value (BV) of common stocks: Which $MV = \text{Number of shares} \times \text{Stock price at the end of the year}$ $BV = \text{Stockholders' equity} - \text{Paid in capital of preferred stocks}$ (2) Financial Performance The

9

financial performance indicator being used in this study is Return on Asset (ROA). ROA is traditional accounting measurement to know the firm financial performance and widely used to determine the profitability of companies

(Chang & Hsieh, 2011; Chen et al., 2005; Clarke et al., 2011;

5

Saleh, 2008; Joshi et al., 2013; Maditinos et al., 2011;

6

Maji & Goswami, 2016; Nimtrakoon, 2015; Stahle, Stahle, & Aho, 2011; Zeghal & Maaloul, 2010) ROA = Operating Income/ Total assets Control Variables Size – There is an effect of how much resources that companies have will determine the value of market to book and how good these companies can perform. The bigger the companies, the higher the

market to book value and able to reach better financial performance

11

(Maji & Goswami, 2016; Nimtrakoon, 2015; Tan et al., 2007). Then

logarithm of assets at year-end will be the proxy of Size

2

to control such effect. Industry - Based on the previous researches

(Chen et al., 2005; Clarke et al., 2011; Kujansivu & Lonnqvist, 2007; Tan et al., 2007)

5

that there are significant differences between industries related to IC

26

efficiency and the relationship of IC elements and performance of the industry samples. Using a dummy control variable represents the effects of 12 Industry categories by Global Industry Classification Standard (GICS) per February 28th, 2014 and denoted by variable, Industryit. Being coded as

1 if the observation belongs to the industry represented by that variable.

3

Besides, it is also classified further into high-level or low-level knowledge industry, using binary dummy variable, dit that is equal with 0

if the company is in the low-level knowledge industry and otherwise.
Table

53

2 is showing further details about the industry data. Empirical Models The hypotheses mentioned in the previous section are tested empirically using the panel data regression model.

Model 1 examines the relationship between MVAIC and the dependent variables while Model 2 and 3 examine the

49

relationship between elements of MVAIC and the dependent variables. . . = $\alpha + 1.$ + 2 + 3. + (Model 1). = $\alpha + 1.$ + 2 + 3. + 4. + (Model 2). = $\alpha + 1.$ + 2. + 3. + 4. + 5. + 6. + (Model 3) Which DV is

Market to Book Value (MBV), Return on Assets (ROA)

69

MVAIC is Modified

value added intellectual capital; ICE is Intellectual capital efficiency; SCE is Structural capital efficiency; HCE is human capital efficiency; RCE is relational capital efficiency $\alpha =$

8

constant parameter that varies across firms, but not over time 1 – 6 = coefficients it = error terms ~ i.i.d.N (0, 2)

$i = 1, \dots, N$ identifies each firm in the panel data $t = 1, \dots, T$ identifies the

41

year Control Variables Size = Logarithm of Total Assets Industry = 0 or 1, it is coded 1 if the company belongs to the respective industry (Industry of Transportation, Materials, Capital Goods, Automotive&Components, Pharmaceuticals Biotechnology&Life Science, Property&Real Estate, Media, Retailing, Consumer Service, Food Beverage&Tobacco, Energy, Others) Meanwhile, $\beta = \alpha + 1$.
+ 2 + 3 + (Model 4) The panel data regression model could either use the

fixed effect model or random effect model. In the

38

opposite

of the fixed effect model, the intercept term in the random effect model

38

is a random parameter which is a function of mean value plus error. To determine the appropriate panel data regression model will be used, Robust Hausman test (Arrelano, 1993 and Woolridge, 2002) is being conducted. Random effect model is efficient and consistent if the null hypothesis cannot be rejected or else, the fixed effect model would be preferred. Additionally, Lagrange Multiplier proposed by Breusch- Pagan (1980) is being applied to decide over the use of random effect model. RE estimator is GLS estimator of Beta, and the advantage of RE over FE is the effects of time invariant and individual invariant variables could be estimated (Baltagi, 2013). However, there are several assumptions in applying the RE model, such as the unobserved individual effects are random and the error terms are uncorrelated with the predictors, which are difficult to be fulfilled then Mundlak Approach (1978) was proposed to relax the assumptions (Cheng Hsiao, 2014). Further, the presence of heteroscedasticity and serial correlations could lead to invalidity of the variances of FE and RE estimators, such as underestimated standard errors and over-estimated t- statistics (Baltagi, 2013; Cameron and Trivedi, 2005). Consequently, Cluster-robust standard errors command are being used to ensure in obtaining panel-robust estimators (Cameron and Trivedi, 2005). Results and Discussion For

the empirical analysis, a balanced panel data set of

71

5 years is used for the 158 firms from 12 industries in Indonesia. The sample size of the study is 790 ($n = 5 \times 158$). The

Table 3 shows the descriptive statistics of the variables. Table 3.
Descriptive Statistics of Variables

47

The result of Pearson pairwise correlation for the initial phase of knowing the relationship among variables

(Table 4) shows there is significant and positive correlation between
MVAIC and ROA. When the

48

MVAIC is separated into its elements ($p < 0.05$), all of them are having the same result except RCE. Likewise, MVAIC is also showing significant and positive association with MBV ($p < 0.05$). Despite of less of strength relation compared towards ROA, the elements of MVAIC except RCE are also having similar result. It implies that the higher intellectual capital efficiency (except relational capital) and physical capital of the firm will lead to higher market value. Besides, no variables have correlation coefficient (r) more than 0.8 (Gujarati et al., 2012) and that indicates there is no evident of serious multicollinearity problem.

Table 4. Correlation Matrix of Variables HCE SCE RCE CEE ICE MVAIC
MBV ROA

29

SCE 0.6278* RCE 0.1652* 0.2420* CEE 0.0617 0.0512 0.0131 MBV 0.1356* 0.1048* -0.0044 0.0966*
0.1373* 0.1449* ROA Size 0.3860* 0.2304* 0.4055* 0.2752* -0.0322 -0.1124* 0.2972* -0.0021 0.3918*
0.2294* 0.4154* 0.2290* 0.3351* 0.1853* -0.024 Note : ** and * indicate

significant at 1% and 5% levels, respectively by two-tailed test

55

Panel regression results : direct relationship with firm's performance Based on the result of Robust Hausman test, it is suggested that Model 1-4 with ROA as dependent variable will be using fixed effect (FE).

There is no significant difference in the parameter estimation results

22

of random effect (RE) and fixed effect (FE) and both of them can reveal the association

between the independent variables and dependent variable as can be seen in Table 5. Table 5 presents the results of

12

regression coefficients for all independent variables MVAIC and its components

3

(Model 1-4) on dependent variable ROA. In Model 1, MVAIC

coefficient is positive and significant at 1 percent level

4

towards ROA, after controlling the influence of firm size and type of industry. It is also denoting an explanatory power of 0.7638 (adjusted R²). These results are indicating that there is relationship between overall

IC and firm performance (Celenza & Rossi, 2014; Chen et al., 2005; Chu et al., 2011; Clarke et al., 2011; Gan & Saleh, 2008; Nimtrakoon, 2015; Phusavat et al.,

35

2011; Rahman, 2012;

Tan et al., 2007; Ting & Lean, 2009;

4

Vishnu & Gupta, 2014; Wang, 2011; Zeghal & Maaloul, 2010), thus supporting H1.

In model 2 (Table 5), the coefficients of

3

ICE is

significant at the 1 percent level towards ROA, but it is not the

4

case with CEE. It implies that firms who can utilize IC more efficiently will lead to a performance increase, thus supporting H1a. Noticeable the adjusted R²

substantially increases from 0.7638 (Model 1) to 0.7729 (Model 2), suggesting the firms may place different value

36

to intangible and tangible resources of VA efficiency. Further in model 3, all ICE elements are having significant relationship with ROA ($p < 0.01$). HCE

(Chen et al., 2005; Chu et al., 2011; Clarke et al., 2011;

5

Nimtrakoon, 2015; Ting & Lean, 2009; Vishnu & Gupta, 2014) and SCE

(Chen et al., 2005; Chu et al., 2011; Firer & Williams, 2003)

5

are having positive coefficients. SCE is having higher coefficient (0.1419) compared to HCE (0.0076). That means the firms in Indonesia use internal capital more efficiently than human resources in creating higher

profitability. These support H1(c) and H1(d). RCE is found to be negatively related ($p < 0.01$) with ROA and it

is generally consistent with Chen et al. (2005).

3

The reason could be due to advertising cost are expensed when incurred based on the accounting standards then it makes the

financial performance decline (Chen et al., 2005).

10

Contrary to theoretical expectations,

CEE is not having any significant relationship with

10

ROA in the model 2 and 3. That means companies in the sample do not manage the capital assets well to generate profit, accordingly H1(b) is rejected. Likewise, the model 4 is also revealing that CEE does not significantly affect profitability while ICE displays positive and significant association at 1 percent level towards ROA. The explanatory power of the model 4 is 71.37% which could be considered high in explaining the dependent variable. It indicates that intellectual capital efficiency significantly higher in value contribution for the firms in the high-level knowledge industry compared to the low-level one, then H3(a) is supported. Table 5. Result of Panel Regression of MVAIC towards ROA Model Variables FE Coefficient Robust SE RE Coefficient Robust SE 1 Size MVAIC Constant Adjusted R2 F Stat/Wald Chi2 Sargan-Hansen -0.1788** 0.0121** 2.2702** 0.7638 20.09** 116.451** 0.0421 0.0026 0.5245 -0.0591** 0.0116** 0.7651** 0.2384 59.03** 0.0164 0.0026 0.2045 2 Size ICE CEE Constant Adjusted R2 F Stat/Wald Chi2 Sargan-Hansen -0.1716** 0.0116** 0.0434 2.1766** 0.7729 14.42** 114.950** 0.0402 0.0026 0.0297 0.5004 -0.0546** 0.0109** 0.0536 0.7067** 0.2887 65.18** 0.0150 0.0024 0.0390 0.1878 3 Size HCE SCE RCE CEE Constant Adjusted R2 F Stat/Wald Chi2 Sargan-Hansen -0.1751** 0.0076** 0.1419** -0.1885** 0.0297 2.1748** 0.7929 19.59** 132.030** 0.0396 0.0023 0.0284 0.0691 0.0285 0.4936 -0.0579** 0.0065** 0.1665** -0.1116** 0.0408 0.6669** 0.3453 160.69** 0.0148 0.0023 0.0275 0.0314 0.0384 0.1823 4 Size ICExd CEE Constant Adjusted R2 F Stat/Wald Chi2 Sargan-Hansen -0.1835** 0.0123** 0.0415 2.3616** 0.7137 12** 124.136** 0.0402 0.0034 0.0358 0.5007 -0.0408** 0.0038** 0.0545 0.6049** 0.0400 15.30** 0.0149 0.0013 0.0247 0.1858 ** 1%

level of significance level, * 5% level of significance level

17

FE: Fixed Effect, RE: Random Effect, Robust SE : Robust Standard Errors Panel regression results : direct relationship with firm's market value The result of panel regression between MVAIC and MBV as dependent variable is depicted in the Table 6. Robust Hausman test suggested to use the RE model instead of FE, however to relax the assumptions required in applying RE, then the Mundlak approach is being applied. Overall influence of MVAIC on market value (MBV) after controlling the influence of firm size and type of industry is corroborated to be significant at 1 percent level and the estimated coefficient of MVAIC is positive. This finding is in line with theoretical expectation stated by Riahi-Belkaoui (2003) that a firm with higher degree of IC will be able to generate competitive advantage then it should contribute to higher firm's market value. Likewise, it is also empirically proven by previous researches (Celenza & Rossi, 2014; Shiu, 2006; Zeghal & Maaloul, 2010) and H2(a) is failed to be rejected. Referring to model 2 which MVAIC is separated into 2 elements, only ICE is able to show significant and positive relationship with MBV ($p < 0.01$). On the contrary with the results of

Firer and Williams (2003) and Chu et.al (2011), the model

30

is failed to show a significant influence between CEE towards market value and H2(b) is rejected. Assessing the elements of MVAIC towards market value (Model 3), unexpectedly none of them established the significant results except HCE (Chu

et al., 2011). It implies that human capital is the

5

only factor in establishing MBV and the investors perceive the firms that occur high employee-related expense as the investment that may bring future advantage, thus it supports H2(c) Despite the fact that the adjusted R2 in model 4 was too small (adjusted R2 =), it was able to demonstrate that intellectual capital efficiency as higher factor in shaping the market value in high-level knowledge industry rather than the low-level one. Table 6. Result of Panel Regression of MVAIC towards MBV Model Variables RE Coefficient Robust SE RE Mundlak Model Coefficient Robust SE 1 Size MVAIC Constant R2 Wald Chi2/F Stat Sargan-Hansen BR - LM (Chi2) 0.7004** 0.0965** -6.5488 0.1694 39.64** 0.131 566.62** 0.3206 0.0425 4.0084

0.7848* 0.0939** -5.9486 0.1697 58.83** 0.3945 0.0247 3.6232 2 Size ICE CEE Constant R2 Wald Chi2/F
 Stat Sargan-Hansen BR - LM (Chi2) 0.7097* 0.0945* 0.2389 -6.6752 0.1717 40.16** 2.139 556.77** 0.3210
 0.4250 0.1733 4.0146 0.8036* 0.0926** 0.1736 -5.7813 0.1797 61.84** 0.3972 0.0249 0.1926 3.6061 3 Size
 HCE SCE RCE CEE Constant R2 Wald Chi2/F Stat Sargan-Hansen BR - LM (Chi2) 0.6970* 0.0780* 0.3946
 -2.0029* 0.1312 -6.6155* 0.175 46.50** 2.385 556.93** 0.3165 0.0504 0.5447 0.8770 0.1642 3.9442 0.7620
 0.0772** 0.2528 -2.3881 0.0665 -5.9435 0.1837 65.67** 0.3972 0.0288 0.6949 1.3128 0.1940 3.6367 4 Size
 ICExd CEE Constant R2 Wald Chi2/F Stat Sargan-Hansen BR - LM (Chi2) 0.7042** 0.0694 0.2452 -5.9088*
 0.0379 16.13** 4.867 644.56** 0.2262 0.0408 0.1870 2.8080 0.6504 0.1323* 0.1548 -5.8611 0.0543 21.04**
 0.4130 0.0605 0.1941 3.3543 ** 1%

level of significance level, * 5% level of significance level

17

BR – LM : Breusch Pagan – Lagrange Multiplier, FE: Fixed Effect, RE: Random Effect, Robust SE : Robust Standard Errors Conclusion With regards to the empirical findings, early examination to know about the relationship between MVAIC towards firm performance and also market value by Pearson pairwise correlation showed that there is significant and positive correlation. Being separated into its elements, all of the variables also displayed the same result except RCE. Further examination by panel regression identified that MVAIC

coefficient is positive and significant at 1 percent level

4

towards ROA, after controlling the influence of firm size and type of industry. Respective to ICE and CEE, the coefficients of ICE is

significant at the 1 percent level towards ROA, but it is not the

4

case with CEE. In addition, all ICE elements are having significant relationship ($p < 0.01$) and RCE is found to be negatively related with ROA. Overall influence of MVAIC on market value after controlling the influence of firm size and type of industry is corroborated to be significant at 1 percent level and the estimated coefficient of MVAIC is positive. On the contrary with previous researches, only ICE is able to show

significant and positive relationship with MBV. Surprisingly, none the

10

elements of MVAIC towards market value established the significant results except HCE. REFERENCE
 Bollen, L., Vergauwen, P., & Schnieders, S. (2005). Linking intellectual capital and intellectual property to company performance. *Management Decision*, 43(9), 1161–1185.
<http://doi.org/10.1108/00251740510626254> Celenza, D., & Rossi, F. (2014). Intellectual capital and performance of listed companies : empirical evidence from Italy. *Measuring Business Excellence*, 18(1), 22–35. <http://doi.org/10.1108/MBE-10-2013-0054> Chan, K. H. (2009). Impact of intellectual capital on organisational performance An empirical study of companies in the Hang Seng Index (Part 2). *The Learning Organization*, 16(Part 2), 22–39. <http://doi.org/10.1108/09696470910927650> Chang, W. S., & Hsieh, J. J. (2011). Intellectual Capital and Value Creation- Is Innovation Capital a Missing Link? *International Journal of Business and Management*, 6(2), 3–13. Retrieved from www.ccsenet.org/ijbm 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. <http://doi.org/10.1108/14691930510592771> Chu, S. K. ., Chan, K. H., & Wu, W. W. . (2011). Charting intellectual capital performance of the gateway to China. *Journal of Intellectual Capital*, 12(No.2), 249–276. <http://doi.org/10.1108/14691931111123412> Clarke, M., Seng, D., & Whiting, R. H. (2011). Intellectual capital and firm performance in Australia. *Journal of Intellectual Capital*, 12(4), 505–530. <http://doi.org/10.1108/14691931111181706> Firer, S., & Williams, S. M. (2003). Intellectual capital and traditional measures of corporate performance. *Journal of Intellectual Capital*, 4(3), 348–360. <http://doi.org/10.1108/14691930310487806> Gan, K., & Saleh, Z. (2008). Intellectual capital and corporate performance of technology-intensive companies: Malaysia evidence. *Asian Journal of Business and Accounting*, 1(1), 113–130. Goh, P. C. (2005). Intellectual capital performance of commercial banks in Malaysia. *Journal of Intellectual Capital*, 6(3), 385–396. <http://doi.org/10.1108/14691930510611120> Herremans, I. M., & Isaac, R. G. (2004). Herremans and Isaac 2004_Dummy. *Leadership and Organization Development Journal*, 25(142). Joshi, M., Cahill, D., Sidhu, J., & Kansal, M. (2013). sector Intellectual capital and financial performance : an evaluation of the Australian financial sector. *Journal of Intellectual Capital*, 14 (2), 264–285. <http://doi.org/10.1108/14691931311323887> Kamal, M. H. M., Mat, R. C., Rahim, N. a., Husin, N., & Ismail, I. (2012). Intellectual Capital And Firm Performance Of Commercial Banks In Malaysia. *Asian Economic and Financial Review*, 2(4), 504– 517. Retrieved from <http://aessweb.com/pdf-files/504-517.pdf> Kujansivu, P., & Lonnqvist, A. (2007). Investigating the value and efficiency of intellectual capital. *Journal of Intellectual Capital*, 8(2), 272–287. <http://doi.org/10.1108/14691930710742844> 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. <http://doi.org/10.1108/1469193111097944>

Maji, S. G., & Goswami, M. (2016). Intellectual Capital and Firm Performance in Emerging Economies : the case of India. *Review of International Business and Strategy*, 26(3), 410–430. Mondal, A., & Ghosh, S. K. (2012). Intellectual capital and financial performance of Indian banks. *Journal of Intellectual Capital*, 13(4), 515–530. <http://doi.org/10.1108/14691931211276115>

Nazari, J. A., Herremans, I. M., Nazari, J. A., & Herremans, I. M. (2007). Extended VAIC model : measuring intellectual capital components. *Journal of Intellectual Capital*, 8(4), 595–609. <http://doi.org/10.1108/14691930710830774>

Nimtrakoon, S. (2015). The relationship between intellectual capital, firms' market value and financial performance. *Journal of Intellectual Capital*, 16(3), 587–618. <http://doi.org/10.1108/JIC-09-2014-0104>

Petty, R., & Guthrie, J. (2000). Intellectual capital literature review: Measurement, reporting and management. *Journal of Intellectual Capital*, 1(2), 155–176. <http://doi.org/10.1108/14691930010348731>

Phusavat, K., Comepa, N., Sitko-Lutek, A., & Ooi, K.-B. (2011). Interrelationships between intellectual capital and Empirical examination. *Industrial Management & Data Systems*, 111(6), 810–829. <http://doi.org/10.1108/0263557111144928>

Shakina, E., & Barajas, A. (2014). Value creation through intellectual capital in developed European markets. *Journal of Economic Studies*, 41(2), 272–291. <http://doi.org/10.1108/JES-08-2012-0122>

Sharabati, A.-A. A., Jawad, S. N., Bontis, N., Naji Jawad, S., & Bontis, N. (2010). Intellectual capital and business performance in the pharmaceutical sector of Jordan. *Management Decision*, 48(1), 105– 131. <http://doi.org/10.1108/00251741011014481>

Stahle, P., Stahle, S., & Aho, S. (2011). Value added intellectual coefficient (VAIC) : a critical analysis. *Journal of Intellectual Capital*, 12(4), 531–551. <http://doi.org/10.1108/14691931111181715>

Sullivan Jr, P. H., & Sullivan Sr, P. H. (2000). Valuing intangibles companies An intellectual capital approach. *Journal of Intellectual Capital*, 1(No.4), 328–340.

Tan, H. P., Plowman, D., & Hancock, P. (2007). Intellectual capital and financial returns of companies. *Journal of Intellectual Capital*, 8(1), 76–95. <http://doi.org/10.1108/14691930710715079>

Tan, H. P., Plowman, D., & Hancock, P. (2008). The evolving research on intellectual capital. *Journal of Intellectual Capital*, 9(4), 585–608. <http://doi.org/10.1108/14691930810913177>

Ting, I. W. K., & Lean, H. H. (2009). Intellectual capital performance of financial institutions in Malaysia. *Journal of Intellectual Capital*, 10(4), 588–599. <http://doi.org/10.1108/14691930910996661>

Ulum, I., Ghozali, I., & Purwanto, A. (2014). Intellectual Capital Performance of Indonesian Banking Sector : A Modified VAIC (M-VAIC) Perspective. *Asian Journal of Finance & Accounting*, 6(2), 103– 123. <http://doi.org/10.5296/ajfa.v6i2.5246>

Vishnu, S., & Gupta, V. K. (2014). Intellectual capital and performance of pharmaceutical firms in India. *Journal of Intellectual Capital*, 15(1), 83–99. <http://doi.org/10.1108/JIC-04-2013-0049>

Wang, M. (2011). Measuring Intellectual Capital and Its Effect on Financial Performance : Evidence from the Capital Market in Taiwan. *Frontier Business Research China*, 5(2), 243–265. <http://doi.org/10.1007/s11782-011-0130-7>

Zeghal, D., & Maaloul, A. (2010). Analysing value added as an Analysing indicator of intellectual capital and its consequences on company. *Journal of Intellectual Capital*, 11(1), 39–60. <http://doi.org/10.1108/14691931011013325>

Andriessen, D. (2004), "IC valuation and measurement: classifying the state of the art", *Journal of Intellectual Capital*, Vol. 5 No. 2, pp. 230-42.

Bukh, P.N., Nielsen, C., Gormsen, P. and Mouritsen, J. (2005), "Disclosure of information on intellectual capital in Danish IPO prospectuses", *Accounting, Auditing and Accountability Journal*, Vol. 18 No. 6, pp. 713-732

Edvinsson, L. and Malone, M.S. (1997), *Intellectual Capital: Realizing Your Company's True Value by Finding its Hidden Brainpower*, HarperBusiness, New York, NY

Lev, B. (2001), *Intangibles Management, Measurement, and Reporting*, Brookings Institution Press, Washington, DC

Stewart, T.A. (2001), *TheWealth of Knowledge: Intellectual Capital and the Twenty-First Century Organization*, Doubleday, New York, NY

Sveiby, K.E. (2010), "Methods for measuring intangible assets", available at: www.sveiby.com/articles/IntangibleMethods.htm (accessed 27 June 2013)

Wang, J.C. (2008), "Investigating market value and intellectual capital for S&P 500", *Journal of Intellectual Capital*, Vol. 9 No. 4, pp. 546-563

Wood, J. (2003), "Australia: an under performing knowledge nation?", *Journal of Intellectual Capital*, Vol. 4 No. 2, pp. 144-164

Roos, G., Roos, J., Edvinsson, L. and Dragonetti, N.C. (1997), *Intellectual Capital Navigating in the New Business Landscape*, New York University Press, New York, NY.

Olunfesi Adekunle Suraj Nick Bontis, (2012), "Managing intellectual capital in Nigerian telecommunications companies", *Journal of Intellectual Capital*, Vol. 13 Iss 2 pp. 262 – 282

Morariu, C.M. (2014), "Intellectual capital performance in the case of Romanian public companies", *Journal of Intellectual Capital*, Vol. 15 No. 3, pp. 392-410