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Competitive Advantage as Mediating Role of Intellectual Capital and University 2 Performance: An Empirical Study in Indonesia 3 4 ABSTRACT 5 One of important elements that can be used by a university in order to be sustained in 6 the global high learning challenges is optimization of its competitive advantage to 7 increase its performances. This study aims to determine the effects of competitive 8 advantage in mediating the relationship between intellectual capital and the 9 performance of public universities in Indonesia. A questionnaires survey was used to 10 collect the data via online manner from 177 respondents of 8 public universities in 11 Indonesia that are listed in the QS World University Rankings. The Wrap Partial Least 12 Square (PLS) program was used to analyse the data and test the hypotheses. The 13 findings had confirmed a significant a partial type of mediation relationship between 14 intellectual capital and university performance through the competitive advantage in 15 Indonesia. The confirmation value of a partial type of mediation relationship between 16 intellectual capital and university performance was 24.8 percent. This study had 17 successfully proved that competitive advantage plays a crucial role to mediate the 18 relationships between intellectual capitals and the performance of public universities 19 in Indonesia. Conclusively, the implication of study has suggested universities to 20 allocate more investment on their intellectual capital development in an effort to 21 improve their performances. 22 23 Keywords: intellectual capital, competitive advantage, university performance, 24 academic performance, management performance, Indonesia. 25 INTRODUCTION 2 Higher education has a very big role in nation building. Through transformation of 3 human resources functions, social science and technology, higher education occupies 4 a strategic

position in a shaping and changing a society. In relation to these conditions, 5 education has an important role in generating qualified human resources and also the 6 cornerstone of a nation for a systematic, programmatic and tiered development of 7 resources. The Ministry of National Education of the Republic of Indonesia (2012) 8 reported that the number of higher education institutions in Indonesia increased by 9 18% and 5. 39% for public and private higher education institutions respectively from 10 2005 to 2011. The increment of higher education institutions in Indonesia has created 11 a tough competition amongst them. The competition is also triggered by the changes 12 of global business which lead the higher education institutions to put a priority on a 13 high quality of service for their customers. This new paradigm has led the university' s 14 orientation, i.e. not only have to be able to compete in the national level, but in the 15 global level as well. Orientations of international competition among universities for 16 the last few years have raised the concept of World Class University (WCU). 17 18 Universities in Indonesia should put their institutions into the WCU's category. 19 Therefore, universities must be pushed to participate globally to develop an 20 international standard of academic quality. In other words, efforts of building the 21 competitiveness for a university are an absolute must in order to maintain its existence. 22 In fact, very few public universities in Indonesia were listed in the universities world's 23 universities ranking list. The QS World University Rankings (2015) revealed the latest 24 top 100 university ranking in Asia region for 2013/2014 and 2014/2015, however, results indicated that only one university from Indonesia has managed to enter the top 2 100 Asia rank. 3 4 Measuring university performance is made on the basis of achievements in academic 5 excellence globally. This is in line with Hughes (2013), who states that the paradigm 6 shift of higher education in the globalization era should be changed from a "national, 7 analogue, industrial economy" orientation to a "global, digital and information-based" 8 one. Facing these challenges, the universities should enhance their performances both 9 in academics and management. Performances measurement has increasingly pushed 10 a call for accountability in higher education. If the national universities are not able to 11 face the challenges effectively, this institution might not able to maintain their 12 existence in the community and slowly but surely their will lose their role. In response 13 to these challenges, universities in Indonesia have immersed in the process of changes 14 to increase their effectiveness, efficiency and transparency with the purpose to 15 contribute to the growing and improvement of competitiveness. 16 17 Few researchers have attempted to examine the relations between intellectual capital 18 and university performance. Lu (2012) uses two-stages structure including cost 19 efficiency and teaching research efficiency' by a two-stage DEA model based on the 20 additive efficiency decomposition approach for assessing the operating performance 21 of universities. Meihami and Karimi (2014) reported a similar study but the indicators 22 for the university performance are undetailed which are only mentioned terms of 23 financial performance, educational performance and research function for the 24 university performance. Anggraini, et.al. (2016) mentioned that intellectual capital 25 has a significant relationship with universities performance. Besides, Meihami and Karimi (2014) also studied the effect of intellectual capital to the success of current 2 and future companies. They confirmed that intellectual capital directly affects the 3 success of companies, and it also provide competitive advantage to the whole company 4 of intangible asset acknowledged by organisation. Several other studies were also 5 conducted to explore the effect of intellectual capital and competitive advantage (Taie, 6 2014; Kamukama, 2013; Ahmadi, et.al. 2012; Jaradate, et.al. 2012; Kangarlouei, et.al. 7 2012; Kong and Prior, 2008). Other related studies demonstrated the effects of the 8 competitive advantage of such organisations' performance (Maa, 2000; Raduan, et.al.

9 2009, 2010; Majeed, 2011). 10 11 Reviewing all these above-mentioned studies, it can be summarised that previous 12 studies lack of looking comprehensively at the education environment; hence, there 13 is a gap that should be filled-up as a further study for that matter. The previous studies 14 were only limited to examine the direct effect of intellectual capital and university 15 performance without considering the role of potential mediating variable. Specifically 16 under local condition, the effects of competitive advantage in mediating the 17 relationships between intellectual capital and the performance of public universities in 18 Indonesia are still questionable since no such comprehensive study for this country has 19 been appeared in the research literatures. 20 21 Therefore, it is urgently need to accomplish the previous studies by conducting a 22 complement further study. The objective of this study is to examine the competitive 23 advantage as mediation between intellectual capital and public universities 24 performance in Indonesia. It is believed that competitive advantage being a mediating 25 variable may affect the pattern of relationship between intellectual capital and university performance and this should be looked into seriously. It is hoped that the 2 findings of this study will be able to promote the importance of intellectual capital 3 disclosure as one of the factors contributing to the improvement of universities' 4 performances in Indonesia. 5 6 REVIEW OF LITERATURE 7 Intellectual capital (IC) represents knowledge-related intangible assets embedded in 8 an organisation. Intellectual capital approaches have become of key significance in 9 organisations of universities because knowledge is their main output and input. 10 Universities provide knowledge and also scientific technical research such as the 11 results of investigation, publication, or across teaching e.g. students trained and 12 productive relationships with the stakeholders (Ramirez and Gordillo, 2014). 13 Intellectual capital propels organisational performance and creates value for it (Roos 14 et al.1997). According to Sharabati et al. (2010), Khalique et.al. (2011), and Wang 15 (2010), intellectual capital is playing a significant contribution to enhance the 16 innovation, creativity and organisational performance, which indicates the causative 17 relationship between capability and organisational intellectual capital (Marr and Roos, 18 2005). Ramirez et al. (2011) showed the intangible elements about universities should 19 provide information in order to satisfy their user's new information demands. Several 20 studies on the effect of intellectual capital on universities have revealed in the research 21 literatures (Jones et al. 2009; Martínez-Torres, 2006; Ramirez et al. 2011; Lu, 2012; 22 Meihami and Karami, 2014. All these studies suggested that there is a need to develop 23 a new measurement model for university or higher education institution, so that it can 24 be a value added for the institutions. As the university is one type of organisation, it 25 is clear that intellectual capital with its consistent elements i.e. human capital, structural capital and relational capital is a major asset for universities. Intellectual 2 capital is being formed by the following three basics and closely interrelated 3 components, human capital is defined as summation of the explicit and tacit 4 knowledge of the university staff acquired through formal and non-formal education 5 and refresher processes included in their activities, structural capital is defined as 6 explicit knowledge relating to the internal process of dissemination, communication 7 and management of the scientific and technical knowledge at the university and 8 relational capital is defined as extensive collection of economic, political and 9 institutional relations developed and upheld between the university and its non- 10 academic partners such as enterprises, non-profit organisations, local government and 11 society in general, (Ramirez et al. 2011). 12 13 According to Bontis et al. (2007), intellectual capital (IC) is a key driver of innovation 14 and competitive advantage in today's knowledge based economy. Kong and Prior 15 (2008) added intellectual capital has been recognised as an important resource that 16 organisations need to develop to gain sustained competitive

advantages. Competitive 17 advantage is conventionally imagined on sources for example natural resources, 18 technology or economies of scale, since these are increasingly easy to duplicate 19 (Kamukama et al. 2011; Balaji and Makhija, 2011). They said that maintainable 20 competitive advantage is not anymore imbedded in physical assets and financial 21 capital, but in effective focusing of unique intellectual resources. Meso and Smith 22 (2000) argued that continued competitive advantage is attributable to strategic assets. 23 24 Many researchers realised that intellectual capital is a hidden important asset and the 25 most forceful competitive armament in affecting an organisation's performance (Stewart, 1997, 1998). Other scholars like F-Jardon and Martos (2009) and Kiong and 2 Lean (2009) shared similar opinion and discuss that the drivers of organisation's value 3 in modern competitive atmospheres stay in an organisation's intellectual resources 4 rather than in its physical and financial capital. 5 6 Intellectual capital has a powerful role in building competitive advantage of an 7 organisation. This statement is similar with, Hazline and Zubaidah (2009) and Jaradate 8 et al. (2012), who noticed that intellectual capital is a source of competitive advantage, 9 which affects an organisation's performance. Numerous researchers have defined 10 competitive advantage of an organisation. Barney (1991) describes competitive 11 advantage of an organisation as a condition under which competitors are incapable to 12 duplicate its competitive strategies implemented by the company, nor are competitors 13 able to obtain the benefit that the company acquired by means of its competitive 14 strategies. Lindong (2007) states that competitive advantage is a superior market 15 position to achieve in the higher education that carries long-term market success. 16 Higher education experiences competitive advantage when its actions in the higher 17 education create economic value and when only a few competitors engage in similar 18 actions. Lindong (2007) defines competitive advantage in higher education in three 19 based on Porter (1985) dimensions: first, cost leadership as a generic positioning 20 strategy whereby a higher education works hard to accomplish the smallest production 21 and extending costs of their service. Low tuition fees, for instance, could indicate that 22 the institution is able to draw bigger amount of students than competitors. Secondly, 23 differentiation is a type of generic positioning strategy whereby a higher education 24 pursues to be special in the higher education through some dimensions appreciated by 25 students, such as academic pathways, staggered fee payment, unique features of a course and study incentives. Third, focus refers to a generic positioning strategy where 2 higher education concentrates its attempts on helping a less market fragments well 3 rather than going after the entire market. Several authors have attempted a significant 4 relationship between competitive advantage and performance (Maa, 2000; Newbert, 5 2008; Tuan and Yoshi, 2010) concluded that assets of organisations that are valuable, 6 scarce, imperfectly imitable and imperfectly substitutable are the main sources of 7 sustainable competitive advantage for continued superior performance. Resource 8 Based View (RBV) examines and recognizes resources of the organisations to respect 9 how organisations attain maintainable competitive advantage. RBV concentrates on 10 the concept of difficult-to-copy features of the organisation as sources of superior 11 performance and competitive advantage (Barney, 1991) 12 13 Competitive advantage and organisational performance are two different constructs 14 with an apparently complex relationship (Ma, 2000). Overall, though, studies have 15 shown a significant relationship between competitive advantage and performance (Ma, 16 2000; Fahy, 2000; Wang and Lo, 2003; Wiklund and Shepherd, 2003; Morgan et al. 17 2004). As mentioned earlier, despite competitive advantage and performance 18 constructs are often used interchangeably (Porter, 1985), they have real conceptual 19 differences from one to another and have a causal relationship that leads the former to 20 the latter. According to Newbert (2008), competitive advantage is

generally 21 conceptualised as the implementation of a strategy not currently being implemented 22 by other firms that facilitates the reduction of costs, the exploitation of market 23 opportunities and neutralisation of competitive threats (Barney, 1991). Performance is 24 generally conceptualised as the rents a firm accrues as a result of the implementation 25 of its strategies (Rumelt, Schendel, and Teece, 1994). 2 Competitive advantage is conventionally imagined on sources for example natural 3 resources, technology or economies of scale, since these are increasingly easy to 4 duplicate (Kamukama et al. 2011). Seubert et al. (2001) said that maintainable 5 competitive advantage is not anymore imbedded in physical assets and financial 6 capital, but in effective focusing of unique intellectual resources. Meso and Smith 7 (2000) have been proved that continued competitive advantage is attributable to 8 strategic assets. 9 10 From the theoretical perspective, it has proven that theory resource-based view and 11 knowledge based-literature have the relationships between intellectual capital, 12 competitive advantage and university's performance within the university setting 13 (Barney, 1999; Decarolis and Deeds, 2006; Teece, Pison, and Shuen, 1997). Through 14 an empirical study Secundo et al. (2010) found that the universities that adopt a 15 strategic approach to the management of intellectual capital have found this as an 16 opportunity to enhance their market position. 18 Theory resource-based view has expressed internal resources as becoming more 19 important to a company than its external resources to achieve and maintain a 20 competitive advantage. Barney (1991) has outlined a framework to determine the 21 possibility if a resource can be considered a source of sustained competitive 22 advantage. The key elements of this framework require resources to be valuable, rare, 23 inimitable and non-substitutable. 24 The resource-based view discovered a company's resources as the main drivers of 2 competition and performance. These resources include both tangible and intangible 3 assets which have been internalised and used effectively by the company that 4 implements competitive strategies. Related to the resource-based view is the 5 knowledge-based theory, which states that heterogeneous knowledge bases among 6 firms and the ability to create and apply knowledge are the main determinants of 7 competitive advantage (Grant, 1996; Spender, 1996; Decarolis and Deeds, 2006). 8 Blending different knowledge bases, according to the theory gives organisation a better 9 competitive position in an environment (Ahmadi et al. 2012). 10 11 The existing literature has further confirmed that a firm's competitive advantage and 12 performance are largely affected by its intellectual capital (Tovstiga and Tulugurova, 13 2009; Barney, 1991). Most past literatures focusing intellectual capital has overlooked 14 the significance of competitive advantage on the relationship between intellectual 15 capital and organisational performance (Chang and Lai, 2008; Ho, 2009; Bontis et al. 16 2002; Stewart, 1997, 1999). 17 18 Kamukama et al. (2011) examined the mediation effects of competitive advantage in 19 the relationship between intellectual capital and financial performance in microfinance 20 industry in Uganda. The findings indicated that the mediation effect of competitive 21 advantage on the relationship between intellectual capital and firm performance 22 satisfies the conditions of mediation, as pointed out by Baron and Kenny (1986) and 23 Jose (2008). Furthermore, the results of Kamukama (2013) reported that the three 24 intellectual capital elements such human capital, structural capital and relational 25 capital are strong predictors of competitive advantage. 26 According to the resource-based view, continued competitive advantage is affected by 2 resources that are beneficial, scarce, non- similar and hard-to- duplicate and exist within 3 an organisation (Barney, 1991; Stiles and Kulvisaechana, 2004). From the above- 4 elaboration, it is can be noticed that RBV theory said that competitive advantage plays 5 important role in enhancing the organisation performance. Based on the above- 6 mentioned statements,

hypothesis 1 states that: 7 8 H1. Competitive advantage mediates the relationship between intellectual 9 capital and the performance of public universities 10 11 RESEARCH METHODOLOGY 12 The population of this study includes all academicians in public universities in 13 Indonesia. The major rationales in choosing the public universities in this study is just 14 simply because these higher learning institutions are totally run under the 15 government's control, and hence, they are considered as representing good and ideal 16 universities for the stakeholders in the country. In fact, the public universities in 17 Indonesian are purposely focused in the study since these objects are similar with 18 previous studies conducted by Ramirez et al. (2011), Lu (2012) and Siboni et al. 19 (2013). They also focused their studies on IC in their respective public universities i.e. 20 Spain, Taiwan and Italia. 22 This study used a non-probability sampling technique. This technique does not provide 23 opportunities or equal opportunity for each element or member of the population to be 24 selected into the sample. It is purposive sampling used for sampling the elements that 25 meet the chosen study criteria as sample (Cooper and Emory, 1995). The sample derived from the population of Indonesian public universities that are listed under the 2 QS (Quacquarelli Symond) World University Rankings in between the year 2013/2014 3 and 2014/2015. 4 5 Table 1 Rank of Indonesian Public Universities in the QS World University 6 Rank Public universities Source: website QS World University 2013/2014 and 2014/2015 8 9 Table 1 shows that only 8 (eight) Indonesian public universities were displayed at QS 10 the World University Rankings from 2013/2014 and 2014/2015. The respondents 11 focused are the universities' and faculty administrators, included the Rector, Vice 12 rector, faculty members such as Dean, Vice Dean and Head and Secretary of 13 Departments and lecturers. Such respondents are purposely chosen as they know much 14 about their institutions. During data collection, respondents were given a set of 15 questionnaire regarding to the academic and research matters, which available online 16 via Google website at the following URL address; http://goo.gl/forms/EKlrV6uoCY. 17 The available questionnaire forms were then disseminated to the respondents through 18 their email addresses. The questionnaires were sent to the selected universities and 177 19 respondents representing eight public universities in Indonesia took part in the study. 20 The pattern of questionnaire response rate is presented in Table 2. As shown in Table 21 2 the results of the study shows that usable respondent's rate was 22% of total 22 respondents. The response can be categorised as a very high response rate since 7 310 Universitas Indonesia (UI), Jakarta 461 Institut Teknologi Bandung (ITB), Bandung 551 Universitas Gadjah Mada (UGM), Yogyakarta 703 Universitas Airlangga (UNAIR), Surabaya 719 Institut Pertanian Bogor (IPB), Bogor 725 Universitas Diponegoro (UNDIP), Semarang 767 Institut Teknologi Surabaya (ITS), Surabaya 826 Universitas Brawijaya (UNIBRAW), Malang according to Mardiah and Gudono (2001), normally the response rate in Indonesia is 2 within the range of 10% to 16% of the total respondents. 3 4 Based on the profile of the respondents, it can be explained that the respondents in this 5 study have represented the populations. A total of 122 respondent or 68.9% who gave 6 the response were the male, while the rest were female. Majority of the respondents 7 have the profile ages between 40-49 years old or with a number of 65 or 36.7% of total 8 respondents. About 61.5% or 109 respondents were Ph.D. degree holders. Based the 9 position held, the respondents who had lecturers position were 110 or 62.1% of total 10 respondents. All the respondents were expected early knowing his job as head of the 11 university as well as a lecturer. 12 13 Table 2. The pattern of questionnaire response rate Questionnaire Response Quantity Response Rate (%) Questionnaire distributed to email addresses 1,210 (-) Unanswered questionnaire returned or invalid email addresses (404) Potential respondents 806 Questionnaires received in stage one up to 5 May 2015 Questionnaire

received in stage two up to 5 July 2015 Total number of questionnaires received 143 45 188 23.3% Incomplete responses (stage one, 9; stage two, 2) (11) Usable response rate 177 22% 14 Research Instrument 15 Intellectual capital, in university, is a term used to cover all the institution's non- 16 tangible or non-physical assets, including processes, capacity for innovation, patents, 17 the tacit knowledge of its members and their capacities, talents and skills, the recognition of society, its network of collaborators and contacts, etc. The instrument 2 to measure intellectual capital adopted from Ramirez et al. (2011). Three dimensions 3 of intellectual capital are considered for analysis purpose including human capital, 4 structural capital and relational capital. The instrument consisted of 1 to 5 Likert 5 scales, where 1-scale is for "not at all important" and 5-scale says that "it is very 6 important". 7 8 University performance is performance of universities can be measured by the extent 9 to which each of university functions is maintained toward the university goals. This 10 study uses the university organisational performance measurement by Wang (2010). 11 The academic performance dimension can be further divided into research and 12 educational dimensions. The respondents were asked to evaluate their universities 13 performances based on the given Likert Scale. It begins with the very low scale (1- 14 scale) showing that the performances the university is very low up to very high 15 performances presented by 5-scale. Higher scores indicate high performances of the 16 university. 17 18 Competitive advantage is an advantage over competitors gained by offering 19 consumers greater value, either by means of lower princes or providing greater benefits 20 and services that justify a higher price (Porter, 1985). Chowdhury (2011) describes 21 competitive advantage as the results of differentiation. This study uses six items of 22 innovation differentiation scales from Chandler and Hanks (1994) to fit the universities 23 context. The respondent to the items were made using a 5 point Likert scale, ranging 24 from1 strongly disagree to 5 strongly agree. Techniques of analysis 2 Analytical techniques are used to interpret and analyses the data. The Partial Least 3 Square (PLS) approach with WarpPLS program version 3.0 was used to test the 4 hypothesis. This approach has several advantages as stated by Hair et al. (2013) and 5 Kock (2013). Firstly, SEM-PLS is suitable for this research model that uses variables 6 that cannot be measured directly (latent variables) and has predicted measurement 7 error. Secondly, analysis of SEM-PLS can simultaneously test multiple dependence 8 and independence variables as used in this research model. Thirdly, component-based 9 SEM-PLS can overcome complexity models with small sample sizes. 10 11 Validity and reliability tests 12 The first step in data analysis with SEM-PLS approach is validity and reliability tests. 13 Testing the validity with the reflective indicators was carried out through convergent 14 validity and validity discriminant. The output of testing reliability for reflective 15 construct was measured by Cronbach alpha, and composite reliability was measured 16 based on Kock (2013). Meanwhile, testing construct validity and reliability are not 17 required for the formative indicators. This can be done by looking at the weight 18 indicator only. This indicator should be statistically significant and multicolinearity of 19 variance inflation factor (VIF) should be smaller than 3.3. The second stage in the 20 analysis of SEM-PLS is evaluation of structural models also called hypothesis testing 21 of inner model. 22 23 RESULTS AND DISCUSSION 24 Table 3 summarised the results of validity and reliability testing for reflective 25 constructs. The results of measurement models (outer model) reflective construct have fulfilled the criteria so that it can proceed to the structural model (inner model) for 2 testing the model. One of the advantages of the WarpPLS 3.0 software that does not 3 exist in other software is it has full output collinearity VIF (Kock, 2013). The output 4 shows the software is free from the problems of vertical and lateral collinearity and 5 also prevent the common method bias occurred. 6 7 8 Table 3 Conclusion from the Results of the Validity

and Reliability (Outer /Measurement Model) Testing Construct Loading Range Validity AVE Reliability Composite Cronbach Reliability Alpha Full Collinearity VIF Rule of thumb > 0.5 > 0.5 > 0.7 > 0.7 < 3.3 Intellectual Capital (IC) Competitive Advantage (CA) University Performance (UP) 0.599-0.857 0.619-0.807 0.583-0.861 0.734 0.548 0.639 0.892 0.818 0.878 0.833 0.875 0.809 1.159 1.426 1.841 9 10 11 Table 4 Results of Formative Construct Testing Constructs P value VIF Rule of thumb < 0.05 < 3.3 12 13 14 15 16 17 18 19 20 Intellectual Capital Iv_HC Iv_SC Iv_RC University Performance Iv_PR Iv_PE Iv_PF Iv_PH <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 2.052 1.921 1.639 1.658 1.336 2.200 1.976 The formative construct of the WarpPLS program just looked at the significance of weight indicators with criteria p value less than 0.05 and VIF (variance inflation factor) of less than 3.3 (Kock, 2013) are presented in Table 4. The output of weight indicator also shows three dimensions of intellectual capital and the fourth dimension of university performance have qualified for the construct validity formative. Once the requirements have met the formative construct, then, further step of hypothesis testing was commenced. 1 2 Figure 1 Results of the Structural Model for hypothesis 1 3 4 5 Figure 1 shows the results of structural models for hypothesis 1 testing. The value of 6 the R2 (R-Square) for the variance of university performance (PU) can be explained 7 by the variance of intellectual capital (IC) and competitive advantage (CA) of 0.342 8 (the output results are rounded picture of 0.34). These results indicate that the effect 9 of mediation on competitive advantage is significant. 10 11 12 13 14 15 16 17 18 19 20 21 Path coefficients IC ? CA CA ? PU IC ? PU Table 5 Output Path Coefficients for Hypothesis 1 Standard Effect Path p-values Errors Sizes coefficients 0.082 0.059 0.072 0.251 0.078 0.091 values 0.242 0.002 0.477 <0.001 0.259 <0.001 Table 5 shows the obtained path coefficient value is the relationship intellectual capital (IC) and competitive advantage (CA) is equal to 0.242 and it is significant at 0.002. The result also demonstrates that emphasis of the management should be vested on intellectual capital resources because a sustainable competitive advantage is no longer rooted in physical assets and financial capital, but in effective channelling of intellectual capital. The result for the effect size estimates of the value of intellectual capital for competitive advantage is 0.059. According to Cohen (1988), this value of effect size is relatively small from views point of practical significance. Small value of effect size means the role of intellectual capital is small to the competitive advantage, even though the P-value is significant at 0.002. The result also 17 demonstrates that emphasis of the management should be vested on intellectual capital 2 resources because a sustainable competitive advantage is no longer rooted in physical 3 assets and financial capital, but in effective channelling of intellectual capital. 4 Furthermore, shows the value obtained for the correlation coefficient competitive 5 advantage (CA) to the university' s performance (PU) is approximately 0. 477 and it is 6 significant at 0.001. Thus, competitive advantage (CA) significantly influences the 7 university's performance. In other words, the higher an organisation's competitive 8 advantage, and the better the university's performance will be. The value of 9 standardized path coefficient of intellectual capital to university performance is 0. 262 10 and is significant at p-value less than 0.001 and the indirect one through a competitive 11 advantage with a value of 0.259. 12 13 Evaluation of the PLS model with WarpPLS can give effect size, in which the f- 14 squared effect size was conducted to determine the model goodness (Cohen, 1988). 15 Effect size is calculated as the absolute value of the individual contribution of each 16 predictor on the latent variables R-Squared value criterion variables. According to 17 Cohen (1988), effect size can be grouped into three categories of weak (0.02), medium 18 (0.15) and large (0.35). The output of WarpPLS also shows that the effect size value 19 of competitive advantage against university's performance is 0.251, as presented in 20 Table 3. Referring to Cohen (1988), value of 0.251 is

closer to 0.35 (large). It means 21 that this value is correlatively large to mediate the significance effect of competitive 22 advantage to the university's performance. This finding proves that it is necessary for 23 an organisation to manage its competitive advantage to drive the university to superior 24 performance. In fact, competitive advantage can improve the relationship between 25 intellectual capital and universities' performance based on the effect size of 0.251. Hence, H1 is supported. 18 2 The relationship between intellectual capital and universities' performance has 3 satisfied the conditions of mediation as pointed out by Jose (2008), Tovstiga and 4 Tulugurova (2009) and Kamukama et al. (2011, 2013). The results of this study are in 5 line with the opinion of the Organisation for Economic Cooperation and Development 6 (OECD, 2001), which stated that the intellectual capital perspective of the universities 7 has a significant role in an effort to increase a country's competitiveness. Later, 8 intellectual capital can advance universities' performance, create value and increase 9 global competitive advantage. 10 11 Furthermore, WarpPLS 3.0 also produces the model fit indices into a useful set of 12 measures related to model quality. The programmed WarpPLS displays model fit 13 indices and p value in general (output general results). Three indicators of model fit 14 consist of average path coefficient (APC), average R-squared (ARS) and average 15 variance inflation factor (AVIF). They are used to evaluate whether the model fit (fit 16 or supported) by the data. Based on the criteria of the p-value for the APC and the 17 ARS, the value must be smaller than that of 0.005 or a significant meaning. In addition, 18 as an indicator, the value of AVIF multicolinearity should be smaller than 5 (Kock, 19 2013). 20 21 Table 6 also shows that the model fit indices of model have met the criteria. Model fit 22 indices output shows the APC values are 0.326 or it is significant with p-value less 23 than 0.001 and the value of ARS is 0.200 with p-value of less than 0.001 respectively, 24 which are also significant. The AVIF value of 1.037 also met the criteria. It can be 25 concluded that model is generally a good model that is supported by data. 26 Table 6 Good of Fit to Test the Hypothesis 1 19 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 Model fit indices Coefficient p value APC (average path coefficient) ARS (average R-squared) AVIF (average variance inflation factor) 0.326 0.200 1.037 < 0.001 < 0.001 Mediation Testing Methods SEM-PLS with VAF (Variance Accounted For) Mediation testing methods SEM-PLS is aimed to statistically test whether significant competitive advantage is a mediating factor or not. This study used procedure analysis mediation by using the method accounted variance for (VAF) in the SEM-PLS programmed, as suggested by Hair et al. (2013). VAF is categorized into three-stage mediation. If VAF is greater than 80%, it is called full mediation, if value of VAF is in the range of 20% to 80%, is called partial mediation, and if the value of VAF is less than 20%, there is no mediating effect. The computed results for the mediation models VAF are presented in Table 7 below. Table 7 Mediation Calculation Method VAF (Variance Accounted For) Calculation Total Indirect Effect = 0.242 * 0.477 0.115 IC? CA = 0.242; CA?PU = 0.477 Direct Effect 0.349 IC?PU; without entering competitive advantage as the mediation Total effect 0.464 VAF = Indirect Effect/Total Effect = 0.115 / 0.464 0.248 The results from the analysis procedure of mediation in VAF can be explained by the first calculation of indirect influence. The estimation results indicate that the effect of intellectual capital on the performance of the university indirectly and through the competitive advantage is equal to 0.115. The value of 0.115 was calculated by multiplication coefficient direct effect of intellectual capital (IC) for competitive advantage (CA) for 0.242, with a competitive advantage of university's performance 20 of 0.477. The second calculation of direct influence was calculated by the result from 2 the hypothesis 1 testing with a coefficient value of 0.349. The total effect is the sum 3 of the coefficient value indirect effect with immediate effect. 4 5 VAF is calculated by dividing the indirect effect with the total effect. The

calculated 6 VAF is 0.248 or 24.8, which is between 20%-80%. Mediation calculation results of 7 this study support the research conducted by Kamukama (2011), who found only the 8 VAF of 22.4%. This value is categorized as partial mediation (Hair et al, 2013). The 9 result of the mediation with a model calculation of this VAF supports the opinion of 10 Baron & Kenny (1986), who stated that there is a partial mediation effect. This form 11 of partial mediation shows that competitive advantage is not the only variable mediates 12 the relationship between intellectual capital and universities performance but there are 13 other mediating factors. 14 15 CONCLUSION 16 This study confirmed the importance effect of competitive advantage in mediating the 17 relationship between intellectual capital and public universities the performance. 18 Inline growing awareness of higher education in Indonesia, hence, it is believed that 19 intellectual capital play an important role in improving the competitive advantage and 20 performance of university in the country through creating value from the asset 21 management of the organization. 23 In addition, this study also showed that stakeholders have given higher ratings to the 24 universities that have better performance because the universities had proved to be 25 able to manage its intellectual resources effectively and efficiently. The results is 21 consistent with the resourced based view (RBV) theory developed by Barney (1991) 2 and Stewart (1997), which states that the organization, those retains their competitive 3 edge has the ability to create added value for their stakeholders and to manage its 4 strategic assets efficiently. These inventions proved that intellectual capital is a group 5 of intangible assets derived from an organisation and it significantly affects the 6 position of competitive advantage and public universities' performance in Indonesia. 7 8 Based on theory the resource based view (RBV), intellectual capital meets the criterion 9 as a unique resource that is capable of creating competitive advantages which can 10 create value for the company later on. The value is the better performance of the 11 company (Grant, 1996; Spender, 1996; Decarolis and Deeds, 2006). Therefore, the 12 findings are applicable for the presentation of the theory of resource based view to gain 13 competitive advantage in managing universities' resources in accordance with the 14 capability of higher education institutions, especially in public universities in 15 Indonesia. 16 17 The findings also showed a series of issues that need to be seriously considered by 18 university managers and members, government and researchers/ lecturers. Besides, it 19 also suggested the university must quickly change its strategy to be a knowledge-based 20 university in order to win the competition. This is because a resource that has a 21 competitive advantage, in combination with the elements added value, worth, rarely 22 held, intangible, difficult to be imitated, and inimitable, is believed to be able to 23 maintain a sustainable competitiveness of public universities in Indonesia. 22 The inventions of this study have also provided some contributions to knowledge 2 through extending the previous research's contributions on the relationship of 3 intellectual capital performance for diverse business sectors, not only in corporation 4 sector, but also in education sector. In particular, it successfully fills-up the current 5 gap in the research literature showing that there is no comprehensive study examining 6 competitive advantage as mediating role of the relationship between intellectual 7 capital and the public universities' performance in Indonesia. 8 9 However, the study was limited on using single mediating variable, thus further 10 research are recommended to extend the model developed in this study by 11 incorporating other intervening variables to attain a better understanding of the 12 contextual relationships intellectual capital and university's performance as a variable 13 of good corporate governance and corporate responsibility. 14 15 ACKNOWLEDGEMENTS 16 17 The author would like to thank all respondents, who have participated and sacrificed 18 their time to fill-up the questionnaires for this study. 19

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