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Competitive Advantage as Mediating Role of Intellectual Capital and University Performance: an Empirical Study in Indonesia

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Abstract

The increment of higher education institutions in Indonesia has created a tough competition amongst them. The competition is also triggered by the changes of global business, which lead the higher education institutions to put a priority on a high quality of service for their customers. One of important elements that can be used by a university in order to be able facing these challenges is optimization of its competitive advantage to increase its performances. The objective of study is to determine the effects of competitive advantage in mediating the relationship between intellectual capital and the performance of public universities in Indonesia. A questionnaires survey was used to collect the data that distributed via online manner to the public universities in Indonesia, which are listed in the QS World University Rankings. A total of 177 respondents from 8 (eighth) public universities in Indonesian were participated in the survey. The Wrap Partial Least Square (PLS) program was used to analyze the data and test the hypotheses. The findings of study had confirmed a significant a partial type of mediation relationship between intellectual capital and university performance through competitive advantage in Indonesia. The confirmation value of partial type of mediation relationship between intellectual capital and university performance was 24.8 percent. This study had successfully proved that competitive advantage plays a crucial role to mediate the relationships between intellectual capitals and the performance of public universities in Indonesia. Conclusively, the implication of study has suggested universities to allocate more investment on their intellectual capital development in an effort to improve their performances.

Keywords: Intellectual capital, competitive advantage, university performance, academic performance, management performance, Indonesia

1. INTRODUCTION

Higher education has a very big role in nation building. Through transformation of human resources functions, social science and technology, higher education occupies a strategic position in a shaping and changing a society. In relation to these conditions, education has an important role in generating qualified human resources and also the cornerstone of a nation for a systematic, programmatic and tiered development of resources. The Ministry of National Education of the Republic of Indonesia (2012) reported that the number of higher education institutions in Indonesia increased by 18% and 5.39% for public and private higher education institutions respectively from 2005 to 2011. The increment of higher education institutions in Indonesia has created a tough competition amongst them. The competition is also triggered by the changes of global business which lead the higher education

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institutions to put a priority on a high quality of service for their customers. This new paradigm has led the university's orientation, i.e. not only have to be able to compete in the national level, but in the global level as well. Orientations of international competition among universities for the last few years have raised the concept of World Class University (WCU).

Universities in Indonesia should put their institutions into the WCU's category. Therefore, universities must be forced to participate globally to develop an international standard of academic quality. In other words, efforts of building the competitiveness for a university are an absolute must in order to maintain its existence. In fact, very few public universities in Indonesia were listed in the universities world's universities ranking list. The QS World University Rankings (2015) revealed the latest 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 100 Asia rank.

Measuring university performance is made on the basis of achievements in academic excellence globally. This is in line with Hughes (2013), who states that the paradigm shift of higher education in the globalization era should be changed from a "national, analogue, industrial economy" orientation to a "global, digital and information-based" one. Facing with these challenges, the universities should enhance their performances both in academics and management. Performances measurement has increasingly pushed a call for accountability in higher education. If the national universities are not able to face the challenges effectively, this institution might not able to maintain their existence in the community and would slowly but surely lose their role. In response to these challenges, universities in Indonesia have immersed in the process of changes to increase their effectiveness, efficiency and transparency with the purpose to contribute to the growing and improvement of competitiveness.

Few researchers have attempted to examine the relations between intellectual capital and university performance. Lu (2012) uses two-stages structure including cost efficiency and teaching research efficiency' by a two-stage DEA model based on the additive efficiency decomposition approach for assessing the operating performance of universities. Meihami & Karimi (2014) reported a similar study but the indicators for the university performance are undetailed which are only mentioned terms of financial performance, educational performance and research function for the university performance. Anggraini, Ali, & Aza, (2016) mentioned that intellectual capital has a significant relationship with universities performance.

It can be summarized that the previous works have only been limited to examine the direct effect of intellectual capital and university performance without considering the role of potential mediating variable. Therefore, it is urgently need to accomplish the previous work by conducting a complement further study. This study examines the competitive advantage as mediation between intellectual capital and public universities performance in Indonesia. It is believed that the mediating variable such as competitive advantage may affect the pattern of relationship between intellectual capital and university performance and should be looked into seriously.

2. LITERATURE REVIEW

Intellectual capital (IC) represents knowledge-related intangible assets embedded in an organization. Intellectual capital approaches have become of key significance in organizations of universities because knowledge is their main output and input. Universities yield knowledge, also within scientific technical research such as the results of investigation, publication, or across teaching e.g. students trained and productive relationships with the stakeholders (Ramirez & Gordillo, 2014). Intellectual capital propels organizational performance and creates value for it (Roos, Roos, Dragonetti & Edvinsson, 1997). According to Sharabati, Jawad & Bontis (2010), Khalique, Shaari, Isa & Ageel (2011), and Wang (2010), intellectual capital is playing a significant contribution to enhance the innovation, creativity and organizational performance, which indicates the causative relationship between capability and organizational intellectual capital (Marr & Roos, 2005). Ramirez, Santos & Tejada, (2011) the findings of show the intangible elements about universities should provide information in order to satisfy their user's new information demands. Many studies have been effect of intellectual capital has impact on universities (Jones, Meadow & Sicilia 2009; Martínez-Torres, 2006; Ramirez, et al. 2011; Lu, 2012; Meihami & Karami, 2014). All these research stated that there is a need to develop a new measurement model for university or higher education institution so that it can be a value added for the institutions. As the university is one type of organization, it is clear that intellectual capital its consistent elements namely human capital, structural capital and relational capital is a major asset for universities. Intellectual capital is represented as being formed by the following three basic and closely interrelated components: human capital is defined as summation of the explicit and tacit knowledge of the university staff acquired through formal and non-formal education and refresher processes included in their activities, structural capital is defined as explicit knowledge relating to the internal process of dissemination, communication and management of the scientific and technical knowledge at the

university and relational capital is defined as extensive collection of economic, political and institutional relations developed and upheld between the university and its non-academic partners such as enterprises, non-profit organizations, local government and society in general, (Ramirez et al. 2011).

Barney (1991) describes competitive advantage of an organization as a condition under which competitors are incapable to duplicate its competitive strategies implemented by the company, nor are competitors able to obtain the benefit that the company acquired by means of its competitive strategies. Lindong (2007) states that competitive advantage is a superior market position to achieve in the higher education that carries long-term market success. Higher education experiences competitive advantage when its actions in the higher education create economic value and when only a few competitors engage in similar actions. Lindong (2007) defines competitive advantage in higher education in three based on Porter (1985) dimensions: first, cost leadership as a generic positioning strategy whereby a higher education works hard to accomplish the smallest production and extending costs of their service. Low tuition fees, for instance, could indicate that the institution is able to draw bigger amount of students than competitors. Secondly, differentiation is a type of generic positioning strategy whereby a higher education pursues to be special in the higher education through some dimensions appreciated by 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 higher education concentrates its attempts on helping a less market fragments well rather than going after the entire market. Several authors have attempted a significant relationship between competitive advantage and performance (Maa, 2000; Newbert, 2008; Tuan & Yoshi, 2010) concluded that assets of organizations that are valuable, scarce, imperfectly imitable and imperfectly substitutable are the main sources of sustainable competitive advantage for continued superior performance. Resource Based View (RBV) examines and recognizes resources of the organizations to respect how organizations attain maintainable competitive advantage. RBV concentrates on the concept of difficult-to-copy features of the organization as sources of superior performance and competitive advantage (Barney, 1991)

Competitive advantage is conventionally imagined on sources for example natural resources, technology or economies of scale, since these are increasingly easy to duplicate (Kamukama, Ahiauzu & Ntayi 2011). Balaji & Makhija (2001) said that maintainable competitive advantage is not anymore imbedded in physical assets and financial capital, but in effective focusing of unique intellectual resources. Meso & Smith (2000) have been proved that continued competitive advantage is attributable to strategic assets. According to the resource-based view, continued competitive advantage is affected by resources that are beneficial, scarce, non-similar and hard-to-duplicate and exist within an organization (Barney, 1991; Stiles & Kulvisaechana, 2004). Kamukama et al. (2011) has been widely investigated the mediation effect of competitive advantage on the relationship between intellectual capital and firm performance satisfies the conditions of mediation, in microfinance industry in Uganda. Furthermore, from a theoretical perspective, the resource based theory emphasizes on the concept of hard-to-duplicate attributes of the firm as sources of greater performance and competitive advantage. Based on the above, hypothesis 1 states that:

H1. Competitive advantage mediates the relationship between intellectual capital and the performance of public universities

3. METHODOLOGY

The sample derived from the population included Indonesia public universities listed under the QS (Quacquarelli Symond) World University Rankings in between the year 2013/2014 and 2014/2015. The respondents focused are the universities' administrators, namely, the Rector, Vice rector, faculty administrators such as Dean, Vice Dean and Head and Secretary of Departments and lecturers. The questionnaire forms are also available via Google at the following URL address; <http://goo.gl/forms/EKlrV6uoCY>. The available questionnaire forms were then disseminated to the respondents through their email addresses. The questionnaires were sent to the selected universities and 177 respondents representing eight public universities in Indonesia took part in the study. Based on the profile of the respondents, it can be explained that the respondents in this study have represented the populations. A total of 122 respondent or 68.9% who gave the response were the male, while the rest were female. Majority of the respondents have the profile ages between 40-49 years old or with a number of 65 or 36.7% of total respondents. About 61.5% or 109 respondents were Ph.D. degree holders. Based the position held, the respondents who had lecturers position were 110 or 62.1% of total respondents. All the respondents were expected early knowing his job as head of the university as well as a lecturer.

3.1 Research Instrument

Intellectual capital, in university, is a term used to cover all the institution's non-tangible or non-physical assets, including processes, capacity for innovation, patents, 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 to measure intellectual capital adopted from Ramirez et al., (2011). Three dimensions of intellectual capital are considered for analysis purpose including human capital, structural capital and relational capital. The instrument consisted of 1 to 5 Likert scales, where 1-scale is for "not at all important" and 5-scale says that "it is very important".

University performance is performance of universities can be measured by the extent to which each of university functions is maintained toward the university goals. This study uses the university organizational performance measurement by Wang (2010). The academic performance dimension can be further divided into research and educational dimensions. The respondents were asked to evaluate their universities performances based on the given Likert Scale. It begins with the very low scale (1-scale) showing that the performances the university is very low up to very high performances presented by 5-scale. Higher scores indicate high performances of the university.

Competitive advantage is an advantage over competitors gained by offering consumers greater value, either by means of lower prices or providing greater benefits and services that justify a higher price (Porter, 1985). Chowdhury (2011) describes competitive advantage as the results of differentiation. This study uses the six items of innovation differentiation scales from Chandler & Hanks (1994) to fit the universities context. The respondent to the items were made using a 5 point Likert scale, ranging from 1 strongly disagree to 5 strongly agree.

3.2 Techniques of Analysis

Analytical techniques are used to interpret and analyses the data. The Partial Least Square (PLS) approach with WarpPLS program version 3.0 was used to test the hypothesis. This approach has several advantages as stated by Hair, Hult, Ringle & Sartstedt (2013) and Kock (2013). Firstly, SEM-PLS is suitable for this research model that uses variables that cannot be measured directly (latent variables) and has predicted measurement error. Secondly, analysis of SEM-PLS can simultaneously test multiple dependence and independence variables as used in this research model. Thirdly, component-based SEM-PLS can overcome complexity models with small sample sizes.

3.3 Validity and Reliability Tests

The first step in data analysis with SEM-PLS approach is validity and reliability tests. Testing the validity with the reflective indicators was carried out through convergent validity and validity discriminant. The output of testing reliability for reflective construct was measured by Cronbach alpha, and composite reliability was measured based on Kock (2013). Meanwhile, testing construct validity and reliability are not required for the formative indicators. This can be done by looking at the weight indicator only. This indicator should be statistically significant and multicollinearity of variance inflation factor (VIF) should be smaller than 3.3. The second stage in the analysis of SEM-PLS is evaluation of structural models also called hypothesis testing of inner model.

4. RESULTS

Table 1 summarized the results of validity and reliability testing for reflective 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 testing the model. One of the advantages of the WarpPLS 3.0 software that does not exist other software is full output collinearity VIF (Kock, 2013). The output shows that is free from the problems of vertical and lateral collinearity and common method bias. 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 2. The output of weight indicator is shown. Three dimensions of intellectual capital and the fourth dimension of university performance have qualified for the construct validity formative. Once the requirements has met the formative construct for the further step of hypothesis testing.

Table 1 Conclusion from the Results of the Validity and Reliability (Outer /Measurement Model) Testing

Construct	Validity		Reliability		Full Collinearity VIF
	Loading Range	AVE	Composite Reliability	Cronbach Alpha	
Rule of thumb	> 0.5	> 0.5	> 0.7	> 0.7	< 3.3
Intellectual Capital (IC)	0.599-0.857	0.734	0.892	0.818	1.159
Competitive Advantage (CA)	0.619-0.807	0.548	0.878	0.833	1.426
University Performance (UP)	0.583-0.861	0.639	0.875	0.809	1.841

Table 2 Results of Formative Construct Testing

Constructs	P value	VIF
Rule of thumb	< 0.05	< 3.3
<i>Intellectual Capital</i>		
lv_HC	<0.001	2.052
lv_SC	<0.001	1.921
lv_RC	<0.001	1.639
<i>University Performance</i>		
lv_PR	<0.001	1.658
lv_PE	<0.001	1.336
lv_PF	<0.001	2.200
lv_PH	<0.001	1.976

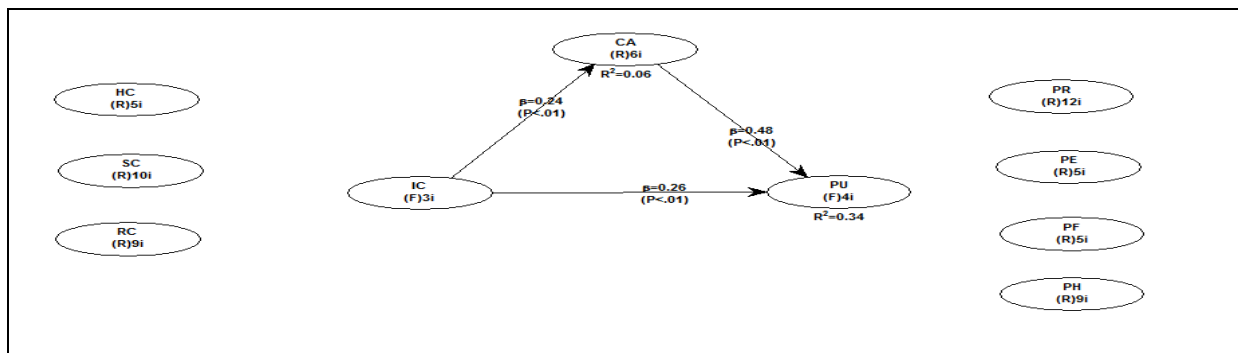


Figure 1 Results of the Structural Model for hypothesis 1

Figure 1 shows the results of structural models for hypothesis 1 testing. The value of the R² (R-Square) for the variance of university performance (PU) can be explained by the variance of intellectual capital (IC) and competitive advantage (CA) of 0.342 (the output results are rounded picture of 0.34). These results indicate that the effect of mediation on competitive advantage is significant.

Table 3 Output Path Coefficients for Hypothesis 1

Path coefficients	Standard Errors	Effect Sizes	Path coefficients values	p-values
IC → CA	0.082	0.059	0.242	0.002
CA → PU	0.072	0.251	0.477	<0.001
IC → PU	0.078	0.091	0.259	<0.001

Table 3 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 channeling 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 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 channeling of intellectual capital. Furthermore, shows the value obtained for

the correlation coefficient competitive advantage (CA) to the university's performance (PU) is approximately 0.477 and it is significant at 0.001. Thus, competitive advantage (CA) significantly influences the university's performance. In other words, the higher an organization's competitive advantage, and the better the university's performance will be. The value of standardized path coefficient of intellectual capital to university performance is 0.262 and is significant at p-value less than 0.001 and the indirect one through a competitive advantage with a value of 0.259.

Evaluation of the PLS model with WarpPLS can give effect size, in which the f-squared effect size was conducted to determine the model goodness (Cohen, 1988). Effect size is calculated as the absolute value of the individual contribution of each predictor on the latent variables R-Squared value criterion variables. According to Cohen (1988), effect size can be grouped into three categories of weak (0.02), medium (0.15) and large (0.35). The output of WarpPLS also shows that the effect size value of competitive advantage against university's performance is 0.251, as presented in Table 3. Referring to Cohen (1988), value of 0.251 is closer to 0.35 (large). It means that this value is correlatively large to mediate the significance effect of competitive advantage to the university's performance. This finding proves that it is necessary for an organization to manage its competitive advantage to drive the university to superior performance. In fact, competitive advantage can improve the relationship between intellectual capital and universities' performance based on the effect size of 0.251. Hence, H1 is supported.

Furthermore, WarpPLS 3.0 also produces the model fit indices into a useful set of measures related to model quality. The programmed WarpPLS displays model fit indices and p value in general (output general results). Three indicators of model fit consist of average path coefficient (APC), average R-squared (ARS) and average variance inflation factor (AVIF). They are used to evaluate whether the model fit (fit or supported) by the data. Based on the criteria of the p-value for the APC and the ARS, the value must be smaller than that of 0.005 or a significant meaning. In addition, as an indicator, the value of AVIF multikolinearitas should be smaller than 5 (Kock, 2013).

Table 4 Good of Fit to Test the Hypothesis 1

Model fit indices	Coefficient	p value
APC (average path coefficient)	0.326	< 0.001
ARS (average R-squared)	0.200	< 0.001
AVIF (average variance inflation factor)	1.037	

Table 4 also shows that the model fit indices of model have met the criteria. The indirect relationship output shows the APC and ARS values are 0.326 and 0.200, respectively, which are also significant. The AVIF value of 1.037 also met the criteria. It can be concluded that model is generally a good model that is supported by data.

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 between 20%-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 5 below.

Table 5 Mediation Calculation Method VAF (Variance Accounted For)

Calculation	Total
Indirect Effect = $0.242 * 0.477$ IC → CA = 0.242; CA → PU = 0.477	0.115
Direct Effect IC → PU; without entering competitive advantage as the mediation	0.349
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 of 0.477. The second calculation of direct influence was

calculated by the result from the hypothesis 1 testing with a coefficient value of 0.349. The total effect is the sum of the coefficient value indirect effect with immediate effect. VAF is calculated by dividing the indirect effect with the total effect. The calculated VAF is 0.248 or 24.8, which is between 20% -80%. This value is categorized as partial mediation (Hair et al, 2013). The result of the mediation with a model calculation of this VAF supports the opinion of Baron & Kenny (1986), who stated that there is a partial mediation effect.

5. DISCUSS AND CONCLUSION

This study proves that intellectual capital has determined the competitiveness the Universities' Indonesia, and it is currently included as one of the Indonesian universities in top 100 universities in Asia as listed in the QS World University Ranking 2013 and 2014 and is expected to keep forging ahead in the future. This shows that competitive advantage that comes from intellectual capital can affect the university performance. In addition, this study also showed that stakeholders have given higher ratings to the universities that have better performance because the universities had proved to be able to manage its intellectual resources effectively and efficiently. The results is consistent with the resourced based developed by Barney (1991) and Stewart (1997), which states that the organization, those retains their competitive edge has the ability to create added value for their stakeholders and to manage its strategic assets efficiently. These inventions prove that intellectual capital is a group of intangible assets derived from an organization and it significantly affects the position of competitive advantage and public universities' performance in Indonesia. This can prove empirically that provide of competitive advantage relates intellectual capital and university's performance. The result of this research is convenient with Prajago & McDernott (2011), Bontis (2002), Chang, Chen & Lai (2008), Tovstiga & Tulugurova (2009), Ho (2009) and Kamukama (2013). The main reason of this research is the important role of competitive advantage and growing awareness of education in Indonesia through managing the intellectual capital. Intellectual capital is believed to play an important role in improving the competitive advantage and performance of the university. Until to date, contribution of intellectual capital in creating competitive advantage and universities performance has not been much explored by Indonesian public universities in particularly, whereas they have ability to manage intellectual capital properly in maintaining their competitive advantages. Universities, those are able to create competitive advantage, can maintain business continuity (going concern) in the long term. This is because the competitive advantage able to create value from the asset management of the organization.

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