

The Impact of Intellectual Capital and Knowledge Management on Competitive Advantage

Rahmika Putri Elda^{1*}, Dina Patrisia², Abror³, Muthia Roza Linda⁴

1,2,3,4 Universitas Negeri Padang, Padang and Indonesia

**Corresponding author. Email: rahmika.putrielda@yahoo.com*

ABSTRACT

The purpose of this study was to examine the impact Intellectual capital and information management with respect to competitive advantage. This study has been conducted in Padang City, West Sumatra, Indonesia. Research respondents are bank employees who have worked for more than 5 years and have structural positions in the company. The data has been collected by using a survey with questionnaires. We got 109 responses out of 135 questionnaires, so the research response rate was 80.7%. Structural Equation Modeling is the data analysis method used in this study (SEM) approach using SmartPLS, This study showed that there was no significant effect on the competitive advantage of intellectual capital. The management of information has a profound effect on competitive advantage. Intellectual capital has a tremendous effect on the management of information. However, the results of the study showed that the simultaneous integration of IC and KM had a 14,1% effect on competitive advantage. Finally, some limitations and future research are discussed.

Keywords: *Intellectual capital, Knowledge management, and Competitive advantage.*

1. INTRODUCTION

Development of Information technology has an impact on the increasing of competition between companies. The rapid development of technology, especially The principal problem in the field of information and communication is which is faced by all industries, both the manufacturing industry and the service industry. Performance is a major concern to ensure the competitiveness and sustainability of the organization so that it can survive in the long term by utilizing existing resources [1].

Financial industry is an industry that is full of risks, ranging from fund raising to channeling funds to productive assets, as well as various other service activities that are fraught with risks, such as online banking which customers can carry out without the interference of bank employees, in addition, banks are engaged in activities. its operations use a very large

amount of cash and other current assets, so this demands the importance of developing intellectual capital in the banking sector so that banks gain the competitive advantage and success in the knowledge-based economy they are today. Competition in the banking industry cannot be avoided, each company is required to be able to face changes in the environment and be responsive so that it can compete with other banking companies. Therefore, companies must be able to understand what and how to manage the various resources that they have to win the competition and create a competitive advantage [2].

The competitive advantage is the potential to provide a better output than other companies in the same sector or market through the characteristics and resources of a company [3]. According to [4], the indicators used to measure competitive advantage are differentiation, cost

leadership, and outreach level. Intellectual Capital (IC) is a key driver for company performance and value creation IC plays an important role in establishing a competitive advantage and preserving it. [5] [6] [7] [8] [9]. IC plays a significant role in adding value to an activity that a company carries out. The company will gain benefits and increase its competitiveness by developing its human resource competencies. Intellectual capital is intellectual content which can be used to build resources (knowledge, information, intellectual property, experience). This is a combined power of reasoning or an efficient knowledge collection. [10]. IC helps to improve competitive advantage by generating value from specific resources and skills. The more efficient the company is in managing IC, the faster it will create the competitive advantage [5] [6] [7] [8] [11] [12]. Intellectual capital is categorized by the International Federation of Accountants (IFAC) into three groups, namely: intellectual capital, institutional capital and relational capital, or consumer capital.

Another factor that affects competitive advantage It is the management of information (KM). Information management is one of the management techniques that can be used to help accomplish organizational goals and to illustrate competitive advantage. in creating a sustainable competitive advantage for an organization, which aims for the organization's SCA (Sustainable Competitive Advantage) and superior managerial performance concerning competitors [13] [14].

Knowledge management is a set of processes that turn information and data into usable knowledge. for various organizational interests [15] [16]. The form and ability of an organization in managing knowledge will affect the quality of the resulting knowledge and ultimately the quality of actions or decisions from using this knowledge. KM has a huge influence on the competitive advantage [17] [18] [19] [20] [21] [22]. If a business correctly conducts information management, the organization will have a competitive advantage in the form of tacit knowledge and uncommon knowledge.

According to [13], indicators of knowledge management are new knowledge, development and process for new ideas, exchange of knowledge between departments, development and processes in creating works. IC and KM need to be integrated because both are proven to be able to increase added value for the company [23] and it assumes will increase the organizational effectiveness [24]. The importance of research on IC and KM carried out in the banking sector because banking is a company that has all the

characteristics of a knowledge-based company in its operational activities. Apart from that, banking companies also do a lot of innovation, use a lot of knowledge, have a lot of interaction between humans and technology, and depend on IC as a source of renewal.

The contribution of this research is to provide input for companies on how to utilize the Intellectual Capital owned and manage the Knowledge Management contained in the company in order to create competitive advantages for banking companies. Hence, the company can manage all its resources to create value-added. Intellectual capital is one of the important resources for a company that can assist the company in creating knowledge and its management and having sustainable competitiveness. Based on the above thought, this study aims to examine the effect of IC and KM on the competitive advantage of banking companies in Padang City. The tools in Knowledge Management, which are company assets that can be used to achieve company goals, form intellectual capital materials. KM is to optimize the efficacy of organizational and information-related knowledge in a systematic, transparent and knowledge-building, updating and implementation process.

2. METHOD

This study uses an explanatory research approach Since it attempts to analyze the interaction between variables and explain the influence between IC and KM variables on the competitive advantage of banking companies in Padang City. A survey using a questionnaire is the data collection technique in this analysis. The population of this research is banking employees who have worked for more than 5 years and have structural positions in the company. Thus, the number of samples in this study is unknown. From 135 questionnaires distributed, 109 questionnaires were returned, so the research response rate was 80.7%. Structural Equation Modeling is the data analysis method used in this study (SEM) using SmartPLS. SEM can also be to examine the relationship pattern between latent constructs and indicators, latent constructs with each other, and direct mistakes in measurement To answer the research hypothesis, the analytical tool used is SmartPLS. SmartPLS is the best choice when estimating data from an unknown population.

3. RESEARCH RESULT

Before answering the research hypothesis, first testing the measurement model to verify the validity and reliability of each indicator used.

Table 1. Scale reliability and convergent validity

	AVE	Composite Reliability	Cronbach's Alpha
Competitive Advantage	0.767	0.908	0.849
Intellectual Capital	0.702	0.876	0.789
Knowledge Management	0.642	0.877	0.815

Table 1 it shows that all the alpha values of CR and Cronbach have exceeded the minimum requirement of 0.70. Therefore, it can be concluded that there is a high degree of reliability in the calculation of the instrument. As far as convergent validity is concerned, Average Variance Extracted (AVE) above the recommended threshold of 0.50 indicates a sufficient degree of validity. Convergence [31]

Table 2. Fornell-Larcker Criterion

	Competitive Advantage	Intellectual Capital	Knowledge Management
Competitive Advantage	0.876		
Intellectual Capital	0.287	0.838	
Knowledge Management	0.346	0.460	0.801

From table 2, it can be shown above that the diagonal value is the value of AVE's square root and that the connection between constructs is the value below. So it can be shown that AVE's square root value is greater than AVE's square root value.

Table 3. Cross-Loading

	Competitive Advantage	Intellectual Capital	Knowledge Management
CA1	0.938	0.289	0.348
CA2	0.828	0.205	0.214
CA3	0.858	0.248	0.323
IC1	0.263	0.826	0.300
IC2	0.176	0.772	0.331
IC3	0.274	0.910	0.491
KM1	0.242	0.198	0.684
KM2	0.279	0.387	0.833
KM3	0.323	0.428	0.857
KM4	0.261	0.410	0.822

From table 3 above, It can be inferred that since it has the estimated model is correct met the criteria for discriminant validity where the cross-loading value of each indicator is greater than 0.7.

3.1. Convergent Validity Test

To evaluate the validity and reliability of the measurement instruments, To verify scale reliability, Composite Reliability (CR) and Cronbach's alpha.

3.2. Discriminant Validity Test

To evaluate discriminant validity, we examined the Fornell-Larcker criterion with a higher square root AVE than the corresponding correlation criterion coefficient [30] [32].

correlation value. It can be The measurement instrument was concluded to have a high degree of discriminant validity. In order to further confirm discriminant validity, the following is attached to the cross-loading value of each indicator.

3.3. Hypothesis Testing

The results of the structural model test can be seen in the Table 4.

Table 4. Hypothesis Testing

		Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O / STDEV)	P Values
H1	Intellectual Capital -> Competitive Advantage	0.162	0.166	0.109	1,490	0.136
H2	Knowledge Management -> Competitive Advantage	0.272	0.280	0.096	2,845	0.004
H3	Intellectual Capital -> Knowledge Management	0.460	0.476	0.069	6,696	0.000

Based on Table 4, this study found that intellectual capital has no significant effect on the competitive advantage of banking companies (P value = 0.136). The second hypothesis of the study was accepted because the p-value of 0.004 was smaller than the sig value. 0.05, so it means That knowledge management has a large level of knowledge management effect on the competitive advantage of banking companies. The third hypothesis of the study was also accepted with a p-value of 0.000 smaller than the sig value. 0.05, which means that intellectual capital has a significant effect on knowledge management. Therefore, the research model can be seen below.

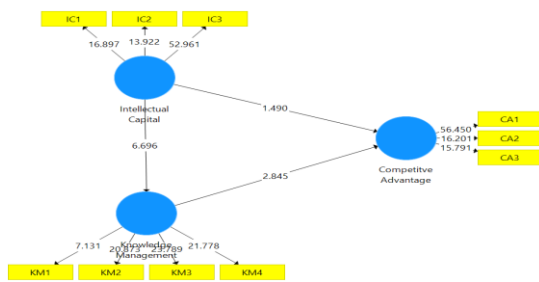


Figure 1. Structural Model

4. DISCUSSION

4.1. The Intellectual Capital 'influence on Competitive Advantage

The intense competition in the current era of information technology forces anyone who wants to get a competitive advantage to change the way they think in business. Companies that can excel in the market are companies that have truly unique advantages and are difficult to imitate by their competitors, and this can be seen from the existence of innovation and quality of resources in anticipating rapid changes. The company must be able to continuously create innovations and take appropriate actions to move the company towards the desired goals, this capability is only possible if the company uses its resources of knowledge or intellectual capital effectively. However, based on the results of the

research in Table 4 which is the result of the relationship between constructs, it is known that intellectual capital has no significant effect on the competitive advantage. Thus the first hypothesis in this study is rejected.

The rejection of this first hypothesis might have a plausible reason. In the banking companies, the intellectual capital is still in the form of knowledge contained in each employee, there is still a lot of tacit knowledge. So that a job relies on employees in that section, if the employee is unable to attend, then the work will be affected in its completion. The characteristics of a knowledge-based economy are more about applying knowledge management, where the success of a company will depend on a transformation creation and capitalization of the knowledge itself [33]. Even though the company has high intellectual capital, it has not been integrated and managed comprehensively within the company yet so that it can have a direct impact on the creation of the company's competitive advantage. Because companies that apply knowledge-based business will be able to create a way by managing knowledge as a means to create creations, innovations and foster ideas in gaining competitive advantage.

4.2. Information management's effect on competitive advantage

KM is very necessary for an organization because it will help to create new knowledge and can transmit it to all individuals and it can be quickly utilized in the organization [34]. KM as the management of company knowledge and Intellectual assets can increase the range of characteristics of organizational success and added value by allowing a business to be smart [35]. Knowledge is seen as the most important resource in a company [36]. Effective useKnowledge will not only create a competitive advantage, but also improve the performance of organizations [37]. To get the maximum benefit from the knowledge they have and to find out

what knowledge they must have, Companies must use knowledge management to control their knowledge [38].

Based on the hypothesis testing, it found Knowledge management has a positive and substantial impact on the competitive edge. Thus the second hypothesis in this study is accepted. So, it can be concluded that in order to gain a competitive advantage for banks, it is necessary for banks to apply and manage knowledge management properly. Knowledge management as a driving factor for the creation of competitive advantage in the results of this study is in accordance with research conducted by [21]. The results of this study are also in line with [39], who found that knowledge management has a positive effect on competitive advantage.

4.3. The Influence of Intellectual Capital on Knowledge Management

Knowledge has been identified as a source of competitive advantage in companies compared to capital and labor as key economic resources in the form of intangible assets in developed countries [26]. Therefore, Knowledge Management in the company must be carried out effectively and efficiently in order to give influence to the company in identifying precisely which intellectual capital needs to be improved and applied to gain a sustainable competitive advantage [40]. Previous KM research discussed IC on firm performance [41] [42]. Relatively little research has been done on the relationship between knowledge management and IC. Competition in the banking industry relies heavily on the ability of the management team to systematically manage knowledge and experience. However, it also depends on whether the company is able to create IC-compliant skills to effectively manage risk and create profit. IC and knowledge management are closely related [43] [44].

Based on hypothesis testing, it found that intellectual capital has a positive and significant effect on banking knowledge management. Thus the third hypothesis in this study is accepted, it can be concluded that intellectual capital will be able to influence the knowledge management of banking companies in the city of Padang. This finding supports the previous studies such as [45], who posit a significant relationship between intellectual capital and knowledge management. Their research results indicate that There is an essential link between human capital and knowledge management. The results of this study are also in line with research conducted by [25] [46] [26].

5. CONCLUSION

Based on the results of the research and discussion presented in the previous chapter, several conclusions can be drawn in this study, including:

- a. Intellectual capital has no significant effect on competitive advantage with the parameter coefficient of 0.136 at alpha 0.05 and alpha 0.1. This shows that intellectual capital in banking does not have a direct effect in creating competitive advantage, however, whether the company can utilize and manage the intellectual capital it has in creating an innovation or renewal for the company, which then has an impact on its competitive advantage.
- b. Knowledge management has a significant effect on competitive advantage with a parameter coefficient of 0.004 at alpha 0.05. These results illustrate that if the banking company can properly manage the knowledge possessed by employees or the company, the knowledge management will have a positive impact in increasing the company's competitive advantage.
- c. Intellectual capital has a significant effect on knowledge management with a parameter coefficient of 0.000 at alpha 0.05. These results illustrate that the intellectual capital owned by banking companies can improve knowledge management in the company.

This study also has the implications for the company, including:

- a. Banking companies need to manage their intellectual capital well so that this IC can become the basis for companies to increase CA. Even though the company has a good dimension of IC, it cannot have a direct impact on the CA, if the IC can create innovation and help companies in managing business processes, then the IC will have an impact on competitive advantage indirectly.
- b. The company must be able to manage the knowledge that the company has, whether that knowledge is still contained in the individual employee itself, or the knowledge stored in the company.

REFERENCES

- [1] R. Muthuveloo, N. Shanmugam, & A.P. Teoh, The impact of tacit manajemen pengetahuan on organizational performance: Evidence from

- Malaysia. *Asia Pacific Management Review*, Vol. 22(4), 2017, pp. 192–201.
- [2] W. Kuncoro, & W.O. Suriani, Achieving sustainable Keunggulan Bersaing through product innovation and market driving. *Asia Pacific Management Review*. 2017, pp. 1–7.
- [3] A. Mooney, Core Competence, Distinctive Competence, and Competitive Advantage: What Is the Difference? *Journal of Education Business*. Vol. 83, Issue 2, 2007.
- [4] N. Kamukama, Intellectual capital: Company's invisible source of Keunggulan Bersaing. *Competitiveness Review*. Vol. 23(3), 2013, pp.260–283.
- [5] S. Firer, and S.M. Williams, Intellectual Capital and Traditional Measures of Corporate Performance. *Journal of Intellectual Capital*. Vol. 4 (3), 2003, 348-360
- [6] H. Shiu, The Application of The Value Added Intellectual Coefficient to Measure Corporate Performance: Evidence from Technological Firms. *International Journal of Management*, Vol. 23(2), 2006, pp. 356-365.
- [7] J. Choudhury, Performance Impact of Intellectual Capital: A Study of Indian IT Sector. *International Journal of Business and Management*. Vol. 5 (9), 2010, 72-80.
- [8] A. Khani, F. Ahmadi, and G. Homayouni, The Impact of Intellectual Capital on Performance of Iranian Food Firms. *Interdisciplinary Journal of Contemporary Research in Business*, Vol. 2(10), 2011, pp.315-326.
- [9] M. Cheng, J. Lin, T. Hsiao, and T.W. Lin, Invested Resource, Competitive Intellectual Capital, and Corporate Performance. *Journal of Intellectual Capital*. 11(4), 2010, 433-450.
- [10] N. Bontis, W.C.C. Keow, & S. Richardson, Intellectual capital and business performance in Malaysian industries. *Journal of Intellectual Capital*. Vol. 1 (1), 2000, pp.85–100.
- [11] C. Gunawan, dan T. Yulawati, Pengaruh Intellectual Capital Terhadap Traditional Measures of Corporate Performance dari Badan Usaha Manufaktur yang Go Public di BEI. *Calyptra*. Vol. 2, No. 2, 2013.
- [12] T.A. Stewart, *Intellectual Capital: The New Wealth of Organizations*. Doubleday/Currency, New York, United States of America, 2010.
- [13] J.C.F. de Guimarães, E.A. Severo, & C.R.M. de Vasconcelos, The influence of entrepreneurial, market, knowledge management orientations on cleaner production and the sustainable competitive advantage. *Journal of Cleaner Production*. Vol. 174, 2018, pp.1653–1663
- [14] M.T. Kanya, J.M. Ntayi, A. Ahiauzu, Knowledge Management and Competitive Advantage: The Interaction Effect of Market Orientation. *African Journal of Business Management*. Vol. 4 (14), 2010, pp. 2971-2980
- [15] O. Serrat, *The Five Whys Technique: Knowledge Solution by Asian Development Bank*. *Statistikal dalam Manajemen Bisnis Total*. PT. Gramedia Pustaka Utama. Jakarta, 2009.
- [16] D. Suparto, dan S. Kevin, Knowledge Management: Konsep dan Metodologi. *ULTIMA InfoSys*. Vol. IV No. 1, 2013.
- [17] J.A. Johannessen, & O. Bjorn, Knowledge Management and Sustainable Competitive Advantages: The impact of dynamic contextual training. *International Journal of Information Management*. Vol. 23. 2003, pp.277–289.
- [18] S.H. Chuang, A resource-based perspective on knowledge management capability and competitive advantage: An empirical investigation. *Expert Systems with Applications*. Vol. 27, 2004, pp. 459-465.
- [19] S. Massa, & S.Testa, A knowledge management approach to organizational competitive advantage: Evidence from the food sector. *European Management Journal*. Vol. 27(2), 2009, pp. 129-141
- [20] Q. Nguyen, P. Neck & T. Nguyen, The Critical Role of Knowledge Management in Achieving and Sustaining Organizational Competitive Advantage. *International Business Research*. Vol. 2 (3), 2008, pp. 3-16.
- [21] F.S.D. Kusuma dan Devie, Analisa Pengaruh Knowledge Management Terhadap Keunggulan

- Bersaing dan Kinerja Perusahaan. *Business Accounting Review*, 1 (2), 2013
- [22] O.R. Mahdi, Knowledge management processes and sustainable competitive advantage: An empirical examination in private universities. *Journal of Business Research*, 20018, <https://doi.org/10.1016/j.jbusres.2018.02.013>
- [23] A.Z. Zhou, & D. Fink, Knowledge Management and Intellectual Capital: an Empirical Examination of Current Practice in Australia. *Knowledge Management Research & Practice*, Vol.1, No. 2, pp. 2003, pp. 86-94.
- [24] H. Sigit, H. Wiwit, dan Sumartik, Integrasi Intellectual Capital Dan Knowledge Management Serta Dampaknya Pada Kinerja Bisnis Perusahaan Farmasi. *Jurnal Akuntansi Multiparadigma*. Vol. 6, No. 3, 2015.
- [25] A.E. Sari, S. Albetris, Dampak Dimensi Intellectual Capital Terhadap Knowledge Management Pendamping Desa di Kabupaten Kerinci. *Jurnal Manajemen dan Sains*. Vol. 4 (2), 2019, pp.220-227.
- [26] S.A.H. Golafshani, and F.A. Malayeri, The Effect of Intellectual Capital on Knowledge Management With The Mediating Role of Organizational Commitment. *Jurnal Pendidikan Humaniora*. Volume 6, Number 2, 2018, pp. 85–90.
- [27] H. Mustapha, L. Abdelheq, The Role of Investment in Intellectual Capital in improving organizational performance considering knowledge management: The case study of wireless communication sector in Algeria. *Arab Economic and Business Journal*. Vol.13, 2018, pp.73–91.
- [28] S. Yamin, dan H. Kurniawan, *Generasi Baru Mengolah Data Penelitian dengan Partial Least Square Path Modelin : Aplikasi dengan Software XLSTAT, SmartPLS, dan Visual PLS*. Salemba Infotek, 2011, Jakarta
- [29] M. Sarstedt, J.F Hair, C.M. Ringle, K.O. Thiele, & S.P. Gudergan, Estimation issues with PLS and CBSEM: Where the bias lies. *Journal of Business Research*, Vol. 69(10), 2016, pp. 3998–4010.
- [30] G. W. H. Tan, K.B. Ooi, S.C. Chong, & T.S. Hew, NFC mobile credit card: The next frontier of mobile payment? *Telematics and Informatics*. Vol. 31(2), 2014, pp. 292-307.
- [31] L.Y. Leong, T.S. Hew, K.B. Ooi, & B. Lin, The determinants of customer loyalty in Malaysian mobile telecommunication services: a structural analysis. *International Journal of Services, Economics and Management*, Vol. 4(3), 2012, pp.209-236.
- [32] C.H. Wong, G.W.H. Tan, B.I. Tan, & K.B. Ooi, Mobile advertising: the changing landscape of the advertising industry. *Telematics and Informatics*. Vol. 32(4), 2015, pp. 720-734.
- [33] Sawarjuwono, Tjiptohadi, A.P. Kadir, Intellectual capital: Perlakuan, Pengukuran dan Pelaporan (Sebuah Library Research). *Jurnal Akuntansi & Keuangan*. 5 (1), 2003.
- [34] M.T.K. Dewi, Meningkatkan Keunggulan Kompetitif Perusahaan Dengan Penerapan Knowledge Management. *Jurnal JIBEKA*. Volume 7. No. 3, 2013.
- [35] R.A. Khan, Knowledge Management: A Framework for Competitive Advantage. *Global Journal for Information Technology and Computer Science*. Vol.1 (1), 2012.
- [36] Ling, Yih, Eze, Gan, dan P. Ling, Knowledge Management Drivers For Organisational Competitive Advantage. *Proceedings of Applied International Business Conference*, 2008, Malaysia.
- [37] A.N.H. Zaied, G.S. Hussein, & M.M. Hassan, The Role of Knowledge Management in Enhancing Organizational Performance. *International Journal Information Engineering and Electronic Business*. Vol. 5, 2012, pp. 27-35.
- [38] N.S. Munir, *Penerapan Manajemen Pengetahuan di Perusahaan di Indonesia*, 2011, PPM Manajemen
- [39] P. Chatzoglou, & D. Chatzoudes, The role of innovation in building Keunggulan Bersaings: an empirical investigation. *European Journal of Innovation Management*, EJIM-02-2017-0015, 2017.
- [40] A. Okunoye, Context-Aware Framework of Knowledge Management Cultural and

- Infrastructural Considerations. Rastogi, PN (2000). Knowledge management and intellectual capital — the new virtuous reality of competitiveness. *Human Systems Management*. Vol. 19(1), 2004, pp.3948.
- [41] S.C. Chong, & B. Lin, Exploring knowledge management (KM) issues and KM performance outcomes: empirical evidence from Malaysian multimedia super corridor companies. *International Journal of Technology Management*. Vol. 43 No. 4, 2008, pp. 285-303.
- [42] C.T. Ho, The relationship between knowledge management enablers and performance. *Industrial Management and Data Systems*, Vol. 109 (1), 2009, 98–117.
- [43] Y. Rezgui, Knowledge Systems and Value Creation: An Action Research Investigation. *Industrial Management & Data Systems*. Vol. 107, No. 2, 2007, pp. 166-182.
- [44] C. Lin, A. Liu, M.L. Hsu, & J.C. Wu, Pursuing excellence in firm core knowledge through intelligent group decision support system. *Industrial Management & Data Systems*. Vol. 108, No. 3, 2008, pp. 277-296.
- [45] S. Kurdabadisalehi, H. Rezai, & S. Sabet, Explain the relationship between intellectual capital and knowledge creation in the insurance company's. *Proceeding of Fourth International Conference Insurance (Insurance Management Efficiency: Challenges and Solutions)*. Energy Research Institute, 8 December 2010.
- [46] M. Shahpasand, The Effect of Intellectual Capital on Knowledge Management: Study on Agriculture Organization Experts in Kurdistan Province. *International Journal of Business and Social Science*. Vol. 4 No. 12 [Special Issue – September 2013]