The Effects of Intellectual Capital and Knowledge Management on Business Performance

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ABSTRACT

The purpose of this study was to examine the effects of intellectual capital and knowledge management on business performance. This study was conducted in Indonesia. Research respondents were bank employees who had structural positions. Data had been collected by using a survey with questionnaires. We acquired 63 responses out of 80 questionnaires that had been distributed (78,75%). Based on data analysis by using Partial Least Square (WrapPLS 4.0), this study found that intellectual capital had no significant effect on business performance. Knowledge management had a significant effect on business performance. However, the results of this study showed that the simultaneous integration of IC and KM had a 45% effect on business performance. Finally, some limitations and future research are also discussed.

Key Words: Business Performance, Intellectual Capital, Knowledge Management

1. INTRODUCTION

Bank, according to Prof. G.M. Verryn Stuart, is a business entity which functions to satisfy the needs of people, by giving credit in the form of money received from others, even by creating new money (paper or metallic). The main orientation of banking is based on the principle of trust. Banks are required to be able to adapt to the current development and the advancement in information technology. This provides more value to the banking sector [1]. Many companies are transforming from conventional business by relying on labor (labor-based business) to knowledge-based business of which the main characteristic is the knowledge.

Knowledge-based business is a business which is run mostly by using intellectual capital. Intellectual capital plays a very crucial role in maintaining a company's competitive advantage over its competitors and adding value to the company. The term 'intellectual capital' is used for all non-tangible or non-physical assets and resources of an organization [2]. Besides the role of intellectual capital in knowledge-based business, knowledge management is also a factor that will affect the success of a company. The role of knowledge management is increasingly important for a company, because it can facilitate better interaction through the availability of information and this is good in order to be a learning organization. One business sector that uses intellectual capital and knowledge management quite intensively is banking. Banking is a risk-laden industry, with funding and financing on productive assets as well as other service activities such as online banking which customers can do without the intervention of bank employees, etc. Therefore, this requires the development of intellectual capital in banks, so that the banks can gain competitive advantage and success in knowledge-based economy as it is happening today.

To date, the direction of policy of government and Bank of Indonesia seems more oriented to the structural improvement. Attention to the development of intellectual capital has not been a priority even though intellectual capital is the substance of good and bad performance of an organization in the long run and of course this should be a concern for the development of organization in the future. Concerning on the effective and efficient development of intellectual capital, a development model among each component of intellectual capital is required—the right development of human capital, structural capital, and customer capital as components of intellectual capital owned by banks, and how the banks implements the principles of knowledge management is expected to improve Indonesia's banking performance. Therefore, this study questioned the innovation model that must be applied by banks, so that in the future the companies have competitive advantage and can improve their performance. Studies on the relationship between intellectual capital and business performance have been carried out by several researchers. A study conducted by [3] that used the data from listed companies in Taiwan found that intellectual capital had positive effect on business performance. Additionally, a study conducted by [4] discovered positive relationship between intellectual capital and business performance. However, there have been a few studies examining the effect of intellectual capital and knowledge management on banking company performance.

2. LITERATURE REVIEW

2.1 Business Performance

[5] stated that performance is the result of achievement in a certain period. In order to achieve good performance, positive efforts need to be made. Likewise in a company, if the company conducts its business activities well, it will gain good business performance. Business performance has

broad scope. In terms of time, business performance can be divided into long-term and short-term performance. Short-term performance is measured within the company's one accounting period. In a formal control system, performance measurement includes financial and non-financial measurements [6] Financial measurement actually shows various actions that occur outside financial sector. The increase in financial return is a result of sorts of operational performance. Business performance examined in this study was business performance seen from the perceptions of leaders in the structural line of banks while still referring to indicators of profitability, productivity, and market value [7].

2.2 Intellectual Capital

According to [8], the term 'intellectual capital' is used for all non-tangible or non-physical assets and resources of an organization, which include process, capacity of innovation, patterns and knowledge that are not visible from its members, as well as collaboration networks and organizational relations. Intellectual capital is also defined as a combination of intangible resources and activities that allow an organization to transform a collection of materials, finances and resources in a system that will ultimately be able to create stakeholder value.

In the context of relationship between intellectual capital and business performance, stakeholder theory is more appropriate to be used as the main basis for explaining intellectual capital and business performance. The components of intellectual capital are the following:

1. Human Capital

Human capital is defined as knowledge, skills, and experience that employees bring when leaving a company [9], including the individual knowledge of employees in an organization [10], generated from competence, attitude, and intellectual intelligence [11].

2. Structural Capital

Structural capital is knowledge that will remain in a company consisting of organizational routine, procedure, system, culture, and database. Some structural capital is protected by law and becomes intellectual property right which is legally owned by the company [9]. Structural capital is described as what is left in the company when employees leave at night [11].

3. Customer Capital

Customer capital is a resource that is associated with a company's external relations with consumers, suppliers or partners in Research and Development (R&D) [9], including brands, consumers, customer loyalty, company names, backlog orders, distribution networks, business collaboration, licensing agreements, and supporting contracts. An important concept of customer capital is the knowledge formed in marketing channels and customer relations that the organization develops by running the business.

2.3 Knowledge Management

Knowledge management evolved as a body of knowledge after the economic era [12] and [13]. It is believed that knowledge can inform and reform business arena with continuous improvement or radical innovation, both of which drive the change for the better, because they assimilate the new and relevant knowledge in an organization [14].

Humans, in the context of knowledge management, are the source of knowledge, innovation, and renewal. Humans are intangible resources that are believed to be able to develop the knowledge. That is, the better the knowledge acquired by humans is, the better the new knowledge that will be able to be created [15]. Knowledge management in selecting solutions must be in accordance with the business process applied in a company as well as identify disadvantages and advantages of the management process.

[16] said that the cycle that becomes the main process in knowledge management consists of the processes of knowledge creation, knowledge retention, knowledge sharing, and knowledge utilization. In order to be an innovative organization, efforts are needed to build the culture of knowledge sharing. [17] stated that employees' behavioral culture of building knowledge sharing will create a learning work climate; the culture of learning will result in excellent performance of employees.

2.4 Hypothesis

Based on the literature review above, the hypotheses of this research are:

1. Intellectual capital has a positive and significant effect on business performance of banking sector in West Sumatera.
2. Knowledge management has a positive and significant effect on business performance of banking sector in West Sumatera.

3. RESEARCH METHOD

This type of study is causative in nature, which is a study that aims to determine causal relationship in a phenomenon or problem solving which is studied to see how far the effect of independent variables on the dependent variable. This study was conducted in banking sector in West Sumatera in 2019. The population in this study was the employees who had structural positions in banking sector, of which the total number was not yet known with certainty. This study used purposive sampling technique with the criteria that the employees had been working in banking companies for more than 5 years and had structural positions. The number of respondents for survey research is at least 30 respondents [18]. Data analysis technique used WrapPLS program; the data were first tested for normality using SPSS version 16.0. In WrapPLS, the model is fit if fulfills requirement below:

$APC = \rho < 0.05$ $ARS = \rho < 0.05$
$AVIF = Good\ if < 5$

3.1 Definitions of Operational Variables

In order to provide an explanation of the research variables used, operational definitions for the variables in this study were formulated as follows:

Table 1. Operational Definitions of Variables

No.	Variable	Conceptual Definition	Indicators
1.	Business Performance	Performance is the result of achievement in a certain period.	1. Profitability 2. Productivity 3. Market value
2.	Intellectual Capital	Intellectual capital is an intangible asset that greatly affects an organization's operational process.	Human capital Structural capital Relational capital
3.	Knowledge Management	Infrastructure and information technology with the aims of acquiring and sharing knowledge, in addition to structural facilitator and organizational culture.	Knowledge creation Knowledge retention Knowledge sharing Knowledge utilization

4. RESULTS AND DISCUSSION

This study used Structural Equation Modeling (SEM) analysis tool with the alternative method namely Partial Least Square (PLS). The software used was WarpPLS version 4.0. PLS-SEM was carried out in two stages, as follows:

4.1 Structural Model Testing (Outer-Model)

Before outer-model testing was done, the resampling method was determined first. The resampling method used in this study was the jack-knifing method, because the number of research samples was less than 100. Knok (2013) in [19] stated that jack-knifing can yield reliable coefficient and p-value for small sample size (less than 100). Then, the pre-process of data was carried out to see outliers in the data. The data is considered free of outliers if it is in the range between -4 and 4.

Figure 1. Pre-Process Data

From the figure above, it can be seen that there was no problem found in the research data, whereas each check was carried out by the program that had to yield the answer 'no', so that the data could be proceeded to standardization process. The results of data standardization could only be checked directly on the program to ensure that there was no outlier data.

To ensure that the data met all the requirements of the outer-model, the testing of the instrument models was then carried out. It consisted of validity and reliability tests. Validity test was conducted in the forms of convergent validity and discriminant validity.

Convergent Validity Test
Data is said to be convergently valid if the loading value is above 0.7 and the p-value is significant (< 0.05). Based on the results of data processing, the loading value on output combined loadings and cross-loadings can be seen as follows:
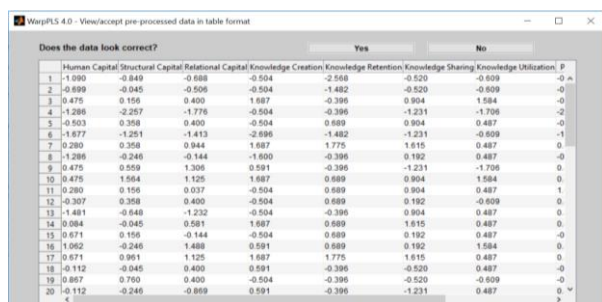
Table 2. Combined loadings and cross-loadings

	IC	KM	BP	SE	p-value
HC	0.927	-0.161	0.049	Reflect	<0.001
SC	0.936	-0.065	-0.056	Reflect	<0.001
RC	0.951	0.221	0.007	Reflect	<0.001
KC	0.164	0.836	0.005	Reflect	<0.001
KR	0.246	0.876	-0.100	Reflect	<0.001
KS	-0.314	0.931	0.147	Reflect	<0.001
KU	-0.071	0.848	-0.063	Reflect	<0.001
Profita	0.362	-0.132	0.931	Reflect	<0.001
Produkt	-0.093	0.059	0.980	Reflect	<0.001
Nilai Pasar	-0.258	0.068	0.956	Reflect	<0.001

From the results above, the loading factor value was above 0.7 and sig. value was smaller than 0.05. These results indicated that the convergent validity criteria were met, and then discriminant validity test was performed.

Discriminant Validity Test

After the convergent validity had been fulfilled, discriminant validity of the data was then examined by seeing the output on *view correlation among latent variables*. Discriminant validity is met, if the root of AVE in diagonal column is greater than inter-construct correlation in the same column. The AVE value in this study can be seen as follows:

Table 3. Latent Variable Correlations

	IC	KM	BP
Intl_Ca	**0.938**	0.847	0.595
Know_Mg	0.847	**0.874**	0.668
Buss_Pf	0.595	0.668	**0.956**

From the table above, it can be concluded that the discriminant validity was fulfilled; the AVE root in the diagonal column was greater than the inter-construct correlation in the same column. IC construct (0.938) was greater than 0.847 and 0.595. Then, KM construct (0,874) was greater than 0.847 and 0.668. Finally, BP construct (0.956) was greater than 0.595 and 0.668.

The reliability test used in this study was noting the value of composite reliability. A construct is considered reliable, if the values of composite reliability and Cronbach's alpha are greater than 0.70. The values of composite reliability and Cronbach's alpha could be seen from the output of latent variable coefficients, as follows:

Table 4. Latent Variable Coefficients

	IC	KM	BP
Comp. reliability coefficients	0.956	0.928	0.969
Cronbach's alpha coefficients	0.932	0.896	0.952
Average Variances Extracted	0.880	0.763	0.914

The output above shows that the values of composite reliability and Cronbach's alpha have met the requirement, which is above 0.70. Overall, the results of measurement model (outer-model) reflective construct met the requirements, so that they could be proceeded to structural model (inner-model) for testing the model.

4.2 Structural Model Testing (Inner-Model)

After the outer-model testing, next the inner-model testing was carried out. For the model using mediation model, firstly direct tests were conducted between intellectual capital and business performance, and between knowledge management and business performance. The direct effect model can be seen in the following figure:
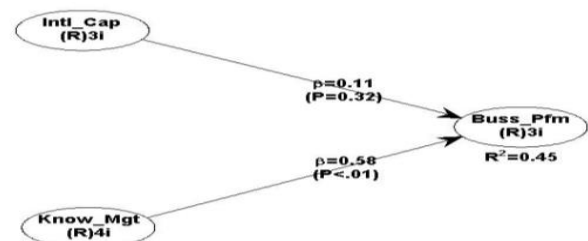

Figure 2. Direct Effect Model

From the model above, the direct effect of intellectual capital on business performance was positive (0.11) and not significant with p-value > 0.01. Thus, the first

hypothesis was rejected, which stated that intellectual capital has positive and significant effect on business performance. The direct effect of knowledge management on business performance was positive (0.58) and significant with p-value < 0.01. Thus, the second hypothesis was accepted, which stated that knowledge management has positive and significant effect on business performance. R-Square value of 0.45 indicated that 45% variance in business performance could be explained by the variance of intellectual capital and knowledge management.

The next step was conducting structural evaluation (inner-model) including a model-fit test. Then, based on the results of data processing using WarpPls, the model obtained was in accordance with the model fit indicators, which were as follows:

APC = 0.342, ρ < 0.001
ARS = 0.4497, ρ < 0.001
AVIF = 3.533, Good if < 5

4.3 Discussion

The Effect of Intellectual Capital on Business Performance

The first hypothesis (H_1) was tested to find out employees' perceptions of the effect of all components of intellectual capital (human capital, structural capital, and customer capital, simultaneously) on business performance. Based on the results of the study in Figure 2 above, the value of path coefficient obtained from the relationship between intellectual capital and business performance was 0.11 with p-value = 0.32 and this was greater than the value of significance (0.05). From these results, it can be concluded that banking employees in Padang had a perception that intellectual capital and business performance were positively correlated but had no significant effect.

The results of hypothesis testing indicated that the intellectual capital owned by banks in Padang had not been utilized optimally in improving the companies' business performance. Value added from the funds spent by the companies for the employees did not contribute to improving the companies' financial performance. IC through HC dimension measured through the expenses incurred by a company for its employees in the forms of salary, benefits, and training attended by employees can lessen company profits, because it is current expenditure [20]. Therefore, the increase in employees' IC does not have significant effect on a company's business performance. However, banks assume that the investment they make to support the increase in intellectual capital in a company is not a short-term investment, but rather a long-term one. So, for a short-term, expenditure on IC will not affect business performance.

The result of this study is in line with the result of a study conducted by [21] concluding that IC had no significant effect on business performance.

The Effect of Knowledge Management on Business Performance

Knowledge management is a business concept encompassing efforts that are organized with mutual agreement, are coordinated, and consciously organize organizational knowledge through the processes of creating, structuring, distributing, and implementing, in order to enhance organizational performance and create value [22] and [23].

Based on the results of this study, the variable of knowledge management had beta coefficient of 0.58 with the value of significance probability p < 0.01, so it had significant effect on companies' business performance. This could be proven from the significance value, which was smaller than alpha (0.05). This means that the higher the knowledge management is, the more likely it will improve a company's business performance. This study supports a study conducted by [24], who found that knowledge management had significant effect on company's performance.

The result of this study is in line with the studies conducted by [25] and [26]. It also supports a study conducted by [25], who examined the effect of knowledge management on company's performance, and revealed that knowledge management had an impact on company's performance.

5. CONCLUSION

Based on the results of data analysis, the conclusions of this research are: 1) intellectual capital has a positive but not significant effect on business performance, and 2) knowledge management has a positive and significant effect on business performance. It means that the management of banking company has not yet utilized the intellectual capital optimally, therefore management must implement several policies in order to optimize its utilization.

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