Intellectual Capital, Knowledge Management, and Firm Performance in Indonesia

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Abstract- This study refers to the theory of knowledge-based view which revealed knowledge as the source of the organization to achieve competitive advantage. This study applies intellectual capital and knowledge management as variables to test the effect on firm performance. The research data were garnered using primary data in the form of a questionnaire from directors of rural banks in the Riau Islands Province of Indonesia. Hypothesis testing using Structural Equation Modelling (SEM) method. The results showed that intellectual capital and knowledge management have a positive and significant impact on firm performance.

Index Terms— firm performance, intellectual capital, knowledge-based view theory, knowledge management

I. INTRODUCTION

The economy has changed from production in material-based to production in information-based pushed organizations to develop into knowledge-based organizations. This change encourages that knowledge resources are important for organizations to achieve the competitive advantage claimed by knowledge-based view (KBV) theory [1], [2]. KBV theory claims that both of intellectual capital and knowledge management are important streams of research to be discussed as sources to achieve sustainable competitive advantage [3]. Intellectual capital is acknowledged as knowledge assets of an organization that creating value [4]. Business managers have focused on the firm's ability to create and manage knowledge to increase firm valuation [5]. [6] and [3] argued intellectual capital stresses on stock of knowledge resources and knowledge management focusses on behavioral process of handling and leveraging the knowledge stock. Therefore, intellectual capital plays a role as an input for knowledge management.

The banking sector is an ideal sector to research of intellectual capital and knowledge management because this sector is one of the most knowledge-intensive industries [7], [8]. Banks depend on their services to their clients, therefore, banks had to invest in human resources, systems, and relationships with stakeholders to provide the best services. Indonesia has two main banking entities, traditional banks and rural banks. According to the Financial Service

Authority Indonesia rule number 20/POJK.03/2014, rural banks provide the same services as traditional banks while they are limited in inter-bank money transferring activities and a rather small scale. Rural banks main purpose is to serve local saving and loan needs. However, rural banks in Indonesia are caught trapped by poor risk management, fraudulence, higher competition between commercial banks, other microfinance institution, and financial technology especially peer to peer lending. [9] has reported that 84 rural banks have been liquidated from 2005 till 2017. There is an urgency to exploit how to achieve competitive advantage through intellectual capital and knowledge management implementation in rural banks.

Most of the studies on intellectual capital in the banking sector is using Value Added Intellectual Coefficient (VAIC) such as [10], [11], [7], [12]. However, there is still a lack of literature focused on rural banks in Indonesia especially using survey approach. This study will make two contributions. First, this research will be conducted using survey instrument to provide empirical investigation. Second, this research intends to reveal the relationship of intellectual capital, knowledge management, and firm performance of rural banks in Indonesia. Business manager will be able to identify the role of intellectual capital and knowledge management in increasing the performance of banking sector.

II. LITERATURE REVIEW AND FRAMEWORK

A. Intellectual Capital

Intellectual capital stands for all of the knowledge and knowing capabilities possessed by firms and allows firms to acquire sustainable competitive advantage [4]. Intellectual capital emphasizes all of the intangible resources of firms that can be used to achieve competitive advantage [13]. There are three subdimensions that are widely used in research to examine intellectual capital affect firm performance such as human capital (HC), structural capital (SC), and relational capital (RC) [14], [15], [16]. Human capital is generally recognized as employees's competencies, attitudes, and intellectual agility. Structural capital refers on firm's strategic asset like systems, procedures, and databases. Relational capital refers value of organization's relationship with customer and its network [17].

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B. Knowledge Management

Knowledge management refers to capabilities that allow firm creating, transferring, documenting knowledge within organization [8]. Knowledge management deals with processes that allows firms to achieve knowledge-based competitive advantage [13]. There are four dimensions of knowledge management process, knowledge creation (KC), knowledge sharing (KS), knowledge acquisition (KA), and knowledge documentation (KD). Knowledge creations is the abilities to create new ideas and solutions. Knowledge sharing refers to transferring knowledge from one person or group to another. Knowledge acquisition is the abilities to acquire and accumulate knowledge to its organization. Knowledge documentation means ability to store all of the knowledge that has been acquired, created, and shared [18].

C. Firm Performance

Firm performance can be measured by financial and non-financial performance. Financial performance represents return based of firm on invested capital and it can be measured in quantified indicators. Non-financial performance is measured by subjective measurement depends on respondents' judgment [18].

D. Framework and Hypothesis

[4], [16], [13], and [17], [19] supported that intellectual capital has positive and significant influence on firm performance. [8], [13], [18], and [20] have found that knowledge management has influence positively to firm performance. [6] and [3] mentioned that intellectual capital plays a role as an input for knowledge management. [21] and [22] revealed that intellectual capital has positive relationship with knowledge management. [23] found that successful management of intellectual capital has relationship with implementation of knowledge management. Hereafter, the hypothesis is generated as below:

H₁: intellectual capital has a positive and significant impact on firm performance.

H₂: knowledge management has a positive and significant impact on firm performance.

H₃: intellectual capital has a positive and significant impact on knowledge management.

H₄: knowledge management mediates intellectual capital and firm performance.

Fig. 1. Theoretical Framework

III. RESEARCH METHODOLOGY

The population in this research was rural banks in Riau Island Province at Indonesia. This study applied saturation sampling method and data of this study was collected via questionnaire. There were 85 directors of 43 rural banks

listed in the Financial Service Authority. However, from 85 questionnaires were distributed, only 71 questionnaires returned, thus the response rate of this research is 83.5%. Hypotheses tested using structural equation modelling (SEM) and all data interpreted using SmartPLS.

All the questionnaires were applied 5-point Likert scales from 1 (strongly disagree) to 5 (strongly agree). Intellectual capital is adapted from [19] measured using 3-item scales for human capital, 4-item scales for structural capital, and 6-item scales for relational capital. Knowledge management is adapted from [18] measured by 4-item scales of knowledge creation, 5-item scales of knowledge sharing, 3-item scales of knowledge acquisition, and 3-item scales of knowledge documentation. Firm performance adopted from [24] with 5-item scales for non-financial performance and [25] with two financial ratios (return on assets and return on equity) as measurement of financial performance.

Fig. 2. Path Model of Research

IV. RESULTS

Result in this research is divided into two parts, i.e. evaluation of measurement model and evaluation of structural model. Evaluation of measurement model to test validity and reliability of the research model and evaluation of structural model to test the hypotheses.

A. Measurement Model Evaluation

According to [26] the constructs in the model are reflective form, therefore measurement model evaluated by convergent validity i.e. outer loadings must above 0.7 and Average Variance Extracted (AVE) must above 0.5 to test validity. Reliability evaluated using Cronbach' Alpha (CA) must above 0.5 and Composite Reliability (CR) 0.5 of the model. During the validity test, all the parameters have adequate levels, except for the loading of indicators: SC4, RC5, RC6, KS1, KS2, and KS3 whose values are below from 0.7 and indicators lowers than 0.7 should be excluded from the model.

TABLE 1. MEASUREMENT MODEL EVALUATION

Var.	Dim.	Item	Loading	AVE	CA	CR
Intellectual Capital (IC)	HC	HC1	0.887	0.793	0.869	0.920
		HC2	0.869			
		HC3	0.914			
	SC	SC1	0.885	0.725	0.807	0.887
		SC2	0.916			
		SC3	0.744			
	RC	RC1	0.849	0.741	0.883	0.920
		RC2	0.895			
		RC3	0.892			
Knowledge Management (KM)	KC	KC1	0.799	0.679	0.842	0.894
		KC2	0.864			
		KC3	0.834			
		KC4	0.798			
	KS	KS1	0.916	0.836	0.804	0.911
		KS2	0.913			
	KA	KA1	0.804	0.628	0.703	0.835
		KA2	0.835			
		KA3	0.736			
	KD	KD1	0.805	0.732	0.815	0.891
		KD2	0.855			
		KD3	0.903			
Firm Performance (FP)	Fin	FP1	0.958	0.910	0.901	0.953
		FP2	0.949			
	Non-Fin	NFP1	0.831	0.659	0.871	0.906
		NFP2	0.796			
		NFP3	0.799			
		NFP4	0.835			
		NFP5	0.798			

B. Structural Model Evaluation

Structural model evaluation tested using bootstrapping test to evaluate hypotheses testing. The test is supported if *P*-Value was 0.05 or above. Structural model evaluation shown in Table 2 and Figure 2.

TABLE 2. STRUCTURAL MODEL EVALUATION

Hypotheses	Structural Path	Coefficient	P-Value	Result
H ₁	IC → FP	0.557	0.000	Supported
H ₂	KM → FP	0.335	0.001	Supported
H ₃	IC → KM	0.710	0.000	Supported
H ₄	IC → KM → FP	0.235	0.002	Supported

The result of this research model showed that all the hypotheses are accepted. Intellectual capital dan knowledge management have positive influence firm performance. Intellectual capital has positive impact to knowledge management. Thus, the mediation role of knowledge management on intellectual capital and firm performance is supported.

Figure 2. Bootstrapping Test

V. CONCLUSION

This study refers to the theory of knowledge-based view which mentioned knowledge as a source of the company to achieve competitive advantage. KBV theory claims that intellectual capital and knowledge management are important streams of research to be discussed as sources of contributing sustainable competitive advantage [3]. The research data were garnered using primary data in the form of a questionnaire from directors of rural banks in the Riau Islands Province of Indonesia.

Based on the result of this research, the conclusions are drawn: (1) both of intellectual and knowledge management have positive and significant impact to firm performance; (2) intellectual capital has positive and significant impact to knowledge management; (3) knowledge management mediates on intellectual capital and firm performance.

A. Implications

Theoretically, the finding in this research contributes to the literature about knowledge-based view theory that intellectual capital and knowledge management independently influence firm performance. It filled the gap that intellectual capital plays an input for knowledge management.

Practically, this study supports business manager should strengthen intellectual capital such as to invest in human capital development, organization structure, and maintain a good relationship with stakeholders to enhance knowledge management and firm performance. Knowledge management can be built from good implementation of intellectual capital.

B. Limitation and Suggestion

Although this research has contributions as mentioned before, it has several limitations which may become opportunities for future research. First, this research' sample only consisted of rural banks in Riau Island Province. It is quite that judgment from respondent may be different in other geographical and cultural contexts. Second, the present research addressed three components of intellectual capital that widely known. It neglected other possibilities such as technological capital and spiritual capital [17]. Hence, this research suggests examining in other knowledge-intensive

industries such as microfinance institution, insurance company, higher education, and future research also able to exploit other subdimensions for intellectual capital as mentioned before.

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