

## **An Assessment of Intellectual Capital in Regional Government Enterprise; Experience in Indonesia**

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**Abstract:** Regional autonomy demands high quality performance of government organization. BUMD (Regional Government Enterprise) plays an important role in the regional economic performance. BUMD is one of the sources of revenue for regional government, whether provincial or district. But the fact is BUMD has a low performance. This happens due to lack of understanding about quality service standard and also low quality of human resource. BUMD faces the same changes in business climate just like any other business organization. Those changes, include the emerge of knowledge base economy which in demands BUMD to be more professional and profit oriented. This research uses intellectual capital approach to analyze the quality of organization in BUMD. Intellectual capital is intellectual material such as knowledge, information, patent and experience which use to increase the wealth of organization. It contains of three sources, they are human capital, customer capital and structural capital. This research analyses the effects of human capital and customer capital to customer capital. The respondents are BUMD employee in Sukoharjo District who had been work more than a year in their institution. This research use intellectual capital methods developed. The tools of analyses of this research is hierarchical regression analyses. The result shows that human capital and customer capital have a positive effect to structural capital. The conclusion is BUMD must increase their human resource's quality and standardized their service in order to increase their organization's performance. This research has two limitation, first, there is a low respond rate among BUMD employee. Second, this research is not directly relates the effect of intellectual capital to company's performance which can be an opportunity for further research.

**Key words:** BUMD, intellectual capital, human capital, customer capital, structural capital

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### **INTRODUCTION**

The implementation of regional autonomy brings several changes in the public sector practices. A lot of critics have been told to public organization (i.e., government organization) in Indonesia since they have very bad quality of service. The main problem is the quality of human resource and public organization. Ideally, it all should have change since regional autonomy demands more qualified human resource and organization in public sector (Debrah, 2014; Su, 2014). Regional autonomy demands creative, smart, innovative and entrepreneurship public employee. Those kinds of public employee will have to disseminate in all of public organization. However, several concepts have been used to analyze regional government's performance, for example, the idea to change bureaucratic paradigm of public employee to entrepreneurship paradigm. It becomes the main concept of corporate governance. In Indonesia, several concepts of modern management have been implemented in the public sector. Several district in Central Java province has change their service procedure

to the public in order to increase community's satisfaction. For example, Sragen District in Central Java province has implements one stop service in investment regulation. Those examples show that local government organization is progressing in a positive way. Unfortunately, transformation process in the local government organization is very slow. It happens due to two problems. First, the quality of human resource or public employee is low. Second, the performance of local government is also in a low quality. It does not have a standard of measurement. How can we measure an abstract object such as the intangible resources in organization such as intellectuality of human resource?

Local government enterprise or BUMD is one of the local government organizations which directly contact with customer (i.e., society) in Indonesia. BUMD have a strategic role in the development of local economic whether in the district or province level. Local government has a dream that BUMD could increase local government revenue (PAD). Unfortunately, the role of BUMD in the development of local economic is insignificant in Indonesia. In average, the contribution of BUMD in local

government revenue is <1%. This problem happens due to two problems in BUMD. First, BUMD also have lack of qualified human resource in order to achieve their desired level of performance. Second, there is a dualism in the goals performance of BUMD in Indonesia. The first goal is to give an excellent service to the society. The second goal is to earn profit to local government revenue. These two goals are contradictive, since, BUMD is in a non-profit organization. Their business sometimes does not earn profit but only to serve society. For example, PDAM which is a BUMD in water distribution. Their core business is water distribution for society. Production cost in water distribution is higher than the price of the water itself. That's why PDAM is always become a cost center or subsidy center in local government budget.

This study introduces a new method to measure local government organization (i.e., BUMD). The new method is intellectual capital. Intellectual capital measures intangible assets in organization which sometimes fail measured by financial report. Intellectual capital was developed by Bontis *et al.* (2000).

**Knowledge as a strategic intangible asset:** One reason BUMD have a low performance is their disability to control over the value chain of the industry. It happens due to lack of competitive advantage. For example, BUMD in financial business such as BKK and Bank Pasar often loss in competition with private financial institution such as BPR or other private bank, especially in Central Java, where private financial institution is the market leader. Knowledge is the main value chain in service business. Knowledge in financial business is competitive interest rate and service quality standard. The latter is often ignored by BUMD. Unfortunately, both are very important aspect for consumer. They are also the real form of intangible asset for company.

Measurement of company knowledge is the main problem in the knowledge management issue. There are several methods for measuring intangible assets but they all have weakness. One of them is intellectual capital. As a method, intellectual capital is in the developing age so it needs several adjustments. IT and chemical companies in USA use intellectual capital method in determining their business strategy (Nickerson and Silverman, 1997).

Figure 1 is the integration process of intellectual capital and business strategy by those companies. A company should answer four basic questions before adopting the models above:

- Who is going to be the target market?
- What kind of investment should be done to maintain relationship with customer?

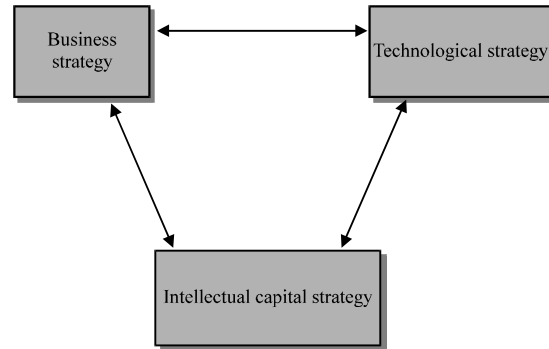


Fig. 1: Integration process in decision making (Nickerson and Silverman, 1997)

- What kind of technology should be developed?
- How company should organize itself?

**Intellectual capital concept:** There are several definitions of intellectual capital. Intellectual capital is intellectual material-knowledge, information, intellectual property rights, experiences-which can be used to create wealth. Another definitions by Brooking, defines intellectual capital as a combination of market intangible asset, intellectual property, infrastructure and human resource which be able to optimize the major functions in the company. Bontis (1998) defines intellectual capital as an exploratory of effective function of the knowledge in production process by combining tangible and intangible assets. Intellectual capital is also unseen process and assets and intangible assets of the company. Olve and Wetter define intellectual capital as an element in the company's value which is similar to market premium. Tome (2004) defines that intellectual capital is seen as a production factor and as an asset (like physical capital, energy, land, only to name the most important) that organizations have to mix, in order to have success: in consequence, IC is a tremendous tool of wealth, production and Economic Development (ED).

Intellectual capital is a new approach to analyze phenomena in the knowledge-based economy. This approach count gap between company's values with their assets which could not be explain by physical assets. For example if a company sent their employee to have training in management quality then they have to pay the cost of training. The payment is an investment by the company, so it needs a return. If the employee complete his training and then he get promote as a production manager, company could analyze their return. While he become a production manager the company increase their productivity because of several changes in production process by the manager from his new knowledge, then we could say that the company has their return on

investment. The problem is to determine how much knowledge has its effects on the productivity. This is the main issue of this study. This study tries to explain the role of intangible asset in the company in this case BUMD. This study uses intellectual capital definition proposed by Stewart. By this definition, intellectual capital of an organization is gained from human capital, customer capital and structural capital.

- H<sub>1</sub>: human capital has a positive effect on structural capital mediated by customer capital

**Human capital:** Human capital is individual ability required by organization to solve customer's problem. Human capital also defines as a combination of talent, education, experience and attitude to life and business (Hudson, 1993; Herd, 2010). Bontis completes the definition of human capital as a collective ability of a company in arranging the best solution from their individual knowledge. In other words, human capital is the quality of human resource which is able to give their contribution to organization.

Employee is increasing intellectual capital by their competence, attitude and intellectual ability. Skill and education are included in employee's competence. Employee's intellectual ability keeps cognitive and innovative aspects, so that they can solve organization's problem. Employee is an important asset of the company but they do not belong to the company. So, employee turnover is a loss for the company. But, they are also a thought that if a company loses a high quality employee it will force them to build a new perspective and finally a company's knowledge instead of individual knowledge formed in the organization.

Human capital represents stock of employee's individual knowledge (Bontis *et al.*, 2000). Knight (1999) proposes organization will increase their human capital quality if they hire, manage and develop the best human resource.

- H<sub>2</sub>: human capital has a positive effect on customer capital
- H<sub>3</sub>: human capital has a positive effect on structural capital

**Customer capital:** Customer capital is the depth (penetration), width (coverage) and profitability of the organization's franchise. Customer capital represents the potency of organization coming from their intangible assets and also the value of business relationship (Kaya *et al.*, 2010). Customer capital has a strong relationship with market orientation concept. Market orientation is the use of market intelligence by organization widely to anticipate customer needs at the present and in the future (Kohli and Jaworski, 1990).

Research in marketing often discloses relationships among several concepts of consumer behavior such as loyalty and satisfaction. Consumer's satisfaction and loyalty have proven related with employee's satisfaction. In several researches, consumer's satisfaction could be predicted with employee's satisfaction.

- H<sub>4</sub>: customer capital has a positive effect on structural capital

**Structural capital:** Structural capital or organizational capital is the organizational capabilities of the organization necessary to meet market requirements (Kaya *et al.*, 2010). It also could be defined as everything stays in the company when employee is going home. Structural capital emerges from the process and value of the organization which reflects external and internal focus of the organization plus value development in the future (Su, 2014). If a company has bad system and procedure, then intellectual capital in the company could not achieve their full potency.

Knight (1999) divides structural capital into several types, they are organizational strategy, internal network, system, database and file. Also property rights, patent, process, invention, trademark, brand and license are included in structural capital. Organization which has strong structural capital, could also have a good corporate culture. It will support their employee to try something new, learn new things and even, experience failure. Structural capital is a critical path which makes intellectual capital possible to measure at the organizational level.

**Model development:** Bontis *et al.* (2000) has conducted a research about the effects of intellectual capital on company's performance in Malaysia manufacturing and service industries. Respondents of this research are CEOs of several major companies in Malaysia. There are 107 respondents of this research and analyzed by PLS (Partially Least Square) method. The result shows there is a positive significant effect of intellectual capital on company performance.

Bontis *et al.* (1999, 2002) also test learning process in the organization with intellectual capital method. The setting of this research is financial consultant in Canada. This research introduces SLAM (Strategic Learning Assessment Map) construct to measure company's learning process. This construct has been developed from intellectual capital method. The respondents of this research are CEOs of the financial consultant. The result shows that company has better learning process when implementing the concept of intellectual capital.

Bontis and Girardi analyze the effect of intellectual capital training on the quality of manager's decision. This research uses KRMS (knowledge management

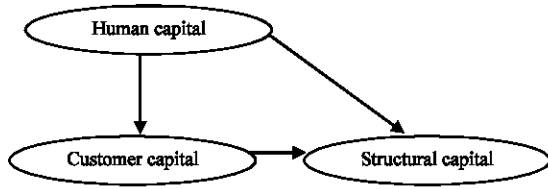


Fig. 2: Intellectual capital model (Bontis *et al.*, 2000)

receptivity survey) instrument. The respondents are executive in public organization in Canada. The result shows that the quality of manager’s decision has increase after they receive intellectual capital training.

Coff (2002) tests the role of human capital in the merger process. The setting of this research is companies in the USA which conduct merger during 1988-1989. The result shows that human capital is one of the antecedents of company value after a merger process. Sumedrea analyzes the link between intellectual capital and firm performance in companies listed in Bucharest Stock Exchange. In this study intellectual capital measured with VAIC (Value Added Intellectual Capital) and business performance measured with ROA. The result shows that intellectual capital has positive effect to business performance. This research tests the intellectual capital model proposed by Bontis *et al.* (2000) (Fig. 2).

**MATERIALS AND METHODS**

**Sample and population:** Population of this research is BUMD employee in Sukoharjo District in Central Java province. They are the employee of BKK (Badan Kredit Kecamatan) and Bank Pasar. Those two institutions are public financial institution organized by Sukoharjo District. There are 12 units of BKK all over Sukoharjo District. Table 1 shows employee data of those 12 BKK and one Bank Pasar.

There are only 113 employees of BKK and Bank Pasar in Sukoharjo District. I choose census as the sampling method since the population is small (Cooper and Schindler, 2013). Unfortunately, the respond rate of this research is only 25%. I sent 113 questionnaires to the respondents and after waiting for a while there are only 28 complete questionnaires.

**Operationalization of definition:** Human capital is individual ability required by BUMD for solving customer’s problems measured by rating scale from not good to very good.

Customer capital is the depth (penetration), width (coverage) and profitability of the BUMD’s franchise measured by rating scale from not good to very good.

Table 1: Employee data of Bank Pasar and BKK Sukoharjo District

BUMD Bank Pasar and BKK	No. of employee
Baki	16
Sukoharjo	7
Nguter	6
Gatak	6
Kartasura	6
Grogol	11
Mojolaban	9
Polokarto	5
Tawangarsi	6
Bulu	4
Weru	3
Bendosari	6
Bank Pasar	28
Total	113

Bagian perekonomian pemkab sukoharjo

Table 2: Factor score of intellectual capital construct

Indicators	Factor score
<b>Human capital</b>	
Appreciation to employee	0.911
Working facility	0.911
Employee’s personal relationship	0.841
Employee’s perception to company’s image	0.656
The performance of working team	0.853
Training program	0.911
Competency	0.767
Promotion policy	0.903
The contribution of employee’s idea	0.822
Employee’s ability in decision making	0.786
<b>Structural capital</b>	
Appreciation to information	0.636
Management and storage of data	0.638
Company administration and files	0.785
Information spreading in the company	0.742
Company’s library	0.886
Computer network	0.726
<b>Customer capital</b>	
Public relation department’s performance	0.939
Service to customer	0.939
Information for customer	0.771
Communication with supplier and competitor	0.939
Response to customer complaint	0.805

Table 3: Internal consistency of intellectual capital construct

Variables	Cronbach alpha
Human capital	0.8169
Structural capital	0.9123
Customer capital	0.9598

Structural capital is the capabilities of the BUMD necessary to meet market requirements measured by rating scale from not good to very good.

**Measurement:** There are three variables in this research they are human capital, structural capital and customer capital. We measure each variables by instrument developed by Bontis *et al.* (2000). Table 2 shows the construct validity of all variables. This research uses confirmatory factor analysis to measure construct validity of intellectual capital construct. Table 3 shows the reliability or internal consistency of the intellectual capital construct. This research uses Cronbach alpha to measure internal consistency of the intellectual capital construct.

**RESULTS AND DISCUSSION**

To test the hypotheses, this research uses hierarchical regression analysis for mediating effect. The HRA of this research contains of two models. Model 1 use to analyze the mediating effect of customer capital variable. Model 2 uses to analyze the direct effect of human capital and customer capital to structural capital. Table 4 shows the results of hierarchical regression analysis in this research.

Model 1 shows there are no mediating effect of customer capital in the relationship of human capital and structural capital. Equation 1, analyze the effect of human capital to customer capital. The result from t-test of the equation 1 is -1.028 with p-value 0.313. R<sup>2</sup> of this regression model is 0.039. F-test shows result 1.057 with p-value 0.313. Regression coefficient of equation 1 is not statistically significant. Model 1; Eq. 2 analyze the effect of customer capital to structural capital. The result shows t-test 4.976 with p-value 0.000. R<sup>2</sup> is 0.488 and F-test is 24.761 with p-value 0.000. This equation shows an effect of customer capital to structural capital. From those two equations, I conclude that Model 1 is failed to shows mediating effect of customer capital on the relationship of human capital and structural capital.

Model 2 is the alternative model which analyzes the direct effect of human capital and customer capital to structural capital. Model 2 represent by Eq. 3. The result shows from t-test, human capital have a t-test 5.673 with p-value 0.000 and t-test of customer capital is 8.356 with p-value 0.000. F-test of Eq. 3 is 43.323 with p-value 0.000. R<sup>2</sup> of Eq. 3 is 0.776. Model 2 shows that human capital and customer capital have a positively significant effect to structural capital. Comparing Model 1 and Model 2, it shows that the alternative model have more meaning than the first model.

Hypotheses testing with hierarchical regression analysis shows that customer capital does not have a mediating effect in the relationship of human capital and

structural capital. On the contrary, human capital and customer capital become antecedents of customer capital. This result is different by Bontis *et al.* (2000) which shows mediating effect of customer capital.

The direct effect of human capital and customer capital to structural capital means that human resources and the quality of service to customer give a positive effect to the ability of BKK/Bank Pasar to meet customer requirements. The quality of human resource means that every employee in the BKK/Bank Pasar must understand the service procedure of the company. They have to fully understand about credit disburse mechanism and other service offered by the company. It will gives a positive contribution to the company. The 81% of BKK/Bank Pasar employees in Sukoharjo District are high school graduate while 19% of them are university graduate. It shows that BKK/Bank Pasar in Sukoharjo District have lack competency compare to private bank or BPR in the district. Other limitation of BKK/Bank Pasar in Sukoharjo District is lack of training program for employee, whether, on the job or off the job training.

Most of BKK/Bank Pasar employees are capable to maintain the quality of service for customer. My observation shows that they willing to serve their customer directly to their home or company. Most of their creditors are farmers and traditional merchant by serving them in their home or work place; it will minimize the non-performing loans rate.

Several important notes emerge from my observation. BKK/Bank Pasar employees do not have a proper working facility. They also have lack of incentive whether financial or non-financial. The only thing that moves BKK/Bank Pasar employee to their performance is the target determined by Sukoharjo District regional government. Table 5 shows the hypotheses in this research and their results.

The model proposed by Bontis *et al.* (2000) is revisited in this research. Figure 3 shows the intellectual capital model of BUMD in Sukoharjo District.

Table 4: HRA results

Independent variables	Model 1 (dependent variables)		Model 2 (dependent variable)
	Eq. 1 (customer capital)	Eq. 2 (structural capital)	Eq. 3 (structural capital)
Human capital	0.170	-	0.675*
Customer capital	-	1.002*	1.158*
Adj. R <sup>2</sup>	0.002	0.468	0.758

\*Significant at  $\alpha = 5\%$

Table 5: Hypotheses and the result

Hypotheses	Result
H <sub>1</sub> : human capital has a positive effect on structural capital mediated by customer capital	Not supported
H <sub>2</sub> : human capital has a positive effect on customer capital	Not supported
H <sub>3</sub> : human capital has a positive effect on structural capital	Supported
H <sub>4</sub> : customer capital has a positive effect on structural capital	Supported

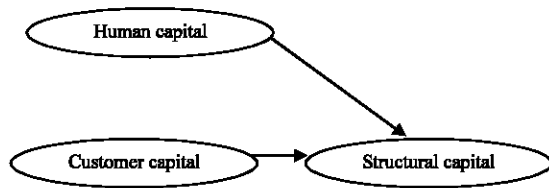


Fig. 3: Intellectual capital model of BUMD in Sukoharjo District

### CONCLUSION

This research shows a different result with the one conducted by Bontis *et al.* (2000). It shows that customer capital is not an intervening or mediating variable in the relationship of human capital and structural capital. In this setting, human capital and customer capital are antecedents of structural capital. It also means that the quality of human resource is independent from the quality of service. But together, they all have a positive effect to the ability of BUMD to meet customer requirements.

Managerial implications of this research are there must be several policy changes by Sukoharjo District regional government to their BKK/Bank Pasar. First, regional government should pay more attention to the quality of human resource in BUMD. This policy is important to increase BUMD's ability to anticipate society needs. Regional government could implement human resource policy such as: conduct more comprehensive human resource planning, increasing employee's competence and conduct a complete training program for employee. Recruitment process of the employee should be redesign.

Second, BUMD must aware of the quality of the service. It needs a standardization of service in the BUMD organization. Third, Sukoharjo District regional government must give a better attention to the wealth of BUMD employees. They need more working facility and incentive in order to increase their performance.

### LIMITATIONS

This research has two limitations. First, the response rate is very low. It happens due to lack of appreciation of BKK/Bank Pasar employee with this research. Second, the model in this research is not directly relate intellectual capital with company or employee performance. These two limitations is open a wide chance for another researcher who has interests in such issues.

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