Resource-Based Capability on Development Knowledge Management Capabilities of Coastal Community

Roberto M. K. Teniwut1, Cawalinya L. Hasyim1, Wellem A. Teniwut1

1Fisheries Agribusiness Study Program, Tual State Fisheries Polytechnic
Langgur-Sathean Ringroad Km.6, Langgur, Southeast Maluku, Indonesia 97611

Email: teniwut_rio@yahoo.com

Abstract. Building sustainable knowledge management capabilities in the coastal area might face a whole new challenge since there are many intangible factors involved from openness on new knowledge, access and ability to use the latest technology to the various local wisdom that still in place. The aimed of this study was to identify and analyze the resource-based condition of coastal community in this area to have an empirical condition of tangible and intangible infrastructure on developing knowledge management capability coastal community in Southeast Maluku, Indonesia. We used qualitative and quantitative analysis by depth interview and questionnaire for collecting the data with multiple linear regression as our analysis method. The result provided the information on current state of resource-based capability of a coastal community in this Southeast Maluku to build a sustainability model of knowledge management capabilities especially on utilization marine and fisheries resources. The implication of this study can provide an empirical information for government, NGO and research institution to dictate on how they conducted their policy and program on developing coastal community region.

1. Introduction

Knowledge is one of the major resources to faced great challenge that currently occurred [12] while converting knowledge to become an intellectual asset which consists of human capital structural capital and relational capital are the key for competitive advantage [13]. Therefore, the successful on managing knowledge system is important for individual or community-based especially in business world [11].

Knowledge management becomes widely applied on various of the field, which has not solely exclusive to IT and IS field but also in social science, KM has evolved and drawn support from different research background [2]. Knowledge management is a strategic approach to increase added value on the effectiveness of organizational performance on facing rapidly changing social and environment [1]. Regarding the limitation of IT and IS based view, there is an increasing attention on examining the role of social community on accelerating knowledge transfer and knowledge retention [1]. Although the big challenge on social community-based knowledge management is the knowledge based on tacit dimension, while having said that, it's important to verbalize and documented knowledge that creates, available and ability transferring through a social community.

In the development of fisheries and marine development sector, maintain the sustainability and economic value at the same time is the most challenging factor. In fisheries management, there are raw data and information that obtain and collect from various sources, which is commonly practiced to make the right decision on developing a sustainable fisheries management. To face the challenge, decentralization (bottom-up) approach were adopted by many countries based on the notion that fishers can be useful sources for information for better fisheries management, where it brings us to another challenge to convince policymaker on knowledge based on fishermen and farmers instead of scientist
Thus, it is necessary to form institutionalize community-based on creating and sharing knowledge on fisheries and marine utilization and management to achieve sustainable and economic objectives.

Community's experience-based knowledge (EBK) is one of the important approaches on the implementation of knowledge base [5]. Coastal community much like in Southeast Maluku, where they have local wisdom that been institutionalized which called “sea sasi”, which is based on experience that been process through trial and error for many years related to managing fisheries and marine resources in the area. Based on this evidence, the application of knowledge management based on fishermen and farmer experience should be easier in the region to convince local government to apply the KM on accelerating of sharing knowledge on managing and utilizing fisheries and marine resources in the area. Purposed of this study was to identify and analyze the empirical condition of resources-based capabilities and its impact on knowledge capabilities management. This study focused on Nonaka and Takeuchi categories on KM especially in routine knowledge assets, such as organizational structure, Technology support, and culture. A study conducted in Southeast Maluku, Indonesia, where information gathered from fishermen and farmer in the region.

2. Methodology

2.1. Research framework

[14] Proposed resource-based capability (RBC) approach used in this study which based on studies by Gold et al. (2001) where factors that influence knowledge capability management were technology, organizational structure, and organizational culture. Technology on this study refers to information technology inside and outside organization that increases the effectiveness of sharing information, where according to [10] technology can have an impact on KM when sufficient technology is in place and at the same time can bypass complex organizational structure which can increase the effectiveness of KM. The organizational structure of this study refers to all factors related to operational and command structure which include regulation, work design, rules and practice [8], where the best practice of KM has significant relation with less hierarchy on organizational structure. For organizational culture on this study is related to the situation in work which is related to knowledge sharing, coordinating, cooperating and knowledge acquiring [8-9].

We proposed some adjustment on the model of KCM and RBC that used to be applied in private business especially on the role, where fishermen, farmer and micro enterprises of marine ecotourism in the area play role as an employee and Southeast Maluku District in the organization while the leader of this region as manager. We measured RBC factors based on the perspective of the coastal community. For data collection, we used questionnaire design based on studies proposed by [6-8]. For data sampling, we used purposive sampling to select respondent based on criteria where fishermen and farmers who actively conducted fisheries and marine utilization activities from fishing, fish processing, marine ecotourism, and mariculture. We conducted our research on Southeast Maluku District, Indonesia, to be exact on 12 villages (Dudunwhan, Sitiniohi, Ohoidertutu, Ngilingof, Matwaer, Evu, Letvuan, Sungai, Ngafan, Sathean and Selayar) as it showed in figure 1. This research conducted from February to June 2017.

2.2. Data analysis

We used hierarchical regression to analysis the data with SPSS 24, where the model can be seen as follow:

\[ KCM = a_0 + \beta_1 T + \beta_2 OS + \beta_3 OC + \varepsilon \]

Where:
- KCM = Knowledge Capability Management
- T = Technology
- OS = Organizational Structure
- OC = Organizational Culture
- \( \varepsilon \) = Error
2.3. **Validity and reliability test**

Based on processing data, the result showed on validity and reliability test showed that all test passed, where all variables are valid based on the significant (p value < 0.05) of Pearson correlation coefficient and every questions on each variable are reliable based on cronbach alpha > 0.6.

2.4. **Classical assumption test**

Before we conducted discussion based on hierarchical regression result, we ought to run more test on classical assumption tests from multicollinearity, heteroscedasticity, autocorrelation, and normality. On Table 2, showed that all test passed, means that we can continue to analyze the result based on hierarchical regression result.

**Table 1. Validity and Reliability Test**

| Variable                      | Cronbach Alpha | Decision   |
|-------------------------------|----------------|------------|
| Knowledge Capability Management | 0.810          | Reliable   |
| Culture                       | 0.914          | Reliable   |
| Technology                    | 0.908          | Reliable   |
| Structure                     | 0.899          | Reliable   |

| Variables                   | Coefficient | p-value | Decision |
|-----------------------------|-------------|---------|----------|
| Knowledge Capability Management | 0.789      | 0.000** | Valid    |
| KCM1                        | 0.770      | 0.000** |          |
| KCM2                        | 0.721      | 0.000** |          |
| KCM3                        | 0.774      | 0.000** |          |
| KCM4                        | 0.725      | 0.000** |          |
| KCM5                        |            |         |          |
Table 2. Classical assumption test

|                      | Classic Assumption Test                         |
|----------------------|-----------------------------------------------|
| Multicollinearity    | DW = 2.010 4-dU= 1.8306; dU = 2.1694 Passed    |
| Heteroscedasticity   | Scatter Plot showed it passed the test         |
| Autocorrelation      | All variables have < 4 VIF                     |
| Normality            | Normal P-P Plot Shows it passed                |

Figure 2. Scatter plot and normality plot

3. Result and Discussion

3.1. Empirical condition of knowledge need and support from local government

Our study found that most of coastal community in the region need and willing to receive any support to increase their knowledge on utilization and managing fisheries and marine resources showed in figure (a) while on the other hand, the impact felt by coastal community on the role of local government in increasing their knowledge capability was meager. Most of the coastal community stated that local government had not done any significant approach on helping the coastal community in utilize and manage fisheries and marine resources in the region (b). This result implied that there was significant need for developing a model on increasing knowledge capability management on utilizing and managing fisheries and marine resources in the region.
Figure 3. Comparison between need for increase the knowledge (a) and the local government role on increase the knowledge of coastal community in the region (b)

Figure 4. Problem that needs to be address

On figure 4, showed that combination of production, post-production, and marketing was the most needed to be addressed immediately, this result indicated there was a need for comprehensive training for the coastal community especially to face market competitiveness and increase the stability of their welfare in the long run. The most coastal community still conducted their business in an antiquated way, for instance, they do not have an exact schedule on fishing which would impact their production. Also they would sell their catching immediately without considering best price available in the market. For mariculture such as seaweed, the main problem was the marketing on the product and post-production. The lack of the knowledge on the post-production had in great impact on the decreasing on the quality of seaweed, in addition to harder to find better market, the profitability of the farmer become very unstable.
3.2. The relationship between Resource-based Capability and Knowledge Capability Management

On table 3, can be seen based on correlation matrix between all RBC factors (Technology, Organizational Structure, and Organizational Culture) and knowledge capability management, it appeared that all three factors of RBC have a significant and substantial relationship with knowledge capability management. As [14] pointed out in their study that in resources based capability three factors affecting knowledge capability were technology, structure, and culture. All these three factors have the great impact on the effectiveness the application of knowledge capability as it also supported by studies from [8-10].

| Variables     | Coefficient | p-value | Decision          |
|---------------|-------------|---------|-------------------|
| Culture       | 0.679       | 0.000** | Significant relation |
| Technology    | 0.790       | 0.000** | Significant relation |
| Structure     | 0.710       | 0.000** | Significant relation |

**significant at 5%

3.3. The impact of resource-based capability on knowledge capability management

Based on the result in table 4, for three model that we have proposed, the R-square value showed for every model appears that the highest number of R-squared showed on model number 3. It means that the best model in our study where there are all three predicted of RBC on KCM. The result also showed the highest value of F test on model number 3. So it concluded that we used model number three for discussion. This result also cemented the concept proposed by [14], three factors of RBC involve on knowledge capability.

| Model                        | R Square | Adjusted R Square | F       | Significant |
|------------------------------|----------|-------------------|---------|-------------|
| Predictors: (Constant), CK   | 0.560    | 0.558             | 319.424 | 0.000**     |
| Predictors: (Constant), CK, T| 0.704    | 0.702             | 297.332 | 0.000**     |
| Predictors: (Constant), CK, T, OS | 0.813 | 0.810             | 360.247 | 0.000**     |

**significant at 5%

4. Conclusion

A coastal community in the region needs for support to increase their knowledge on utilization and managing fisheries and marine resources, while at the same time, the impact of local government on increasing their knowledge was insignificant [15]. Therefore there's a need to build a better model on accelerating and increasing knowledge capability of a coastal community in the region. Combination of production, post-production, and marketing was the biggest problem that needs to be addressed immediately to increase coastal community welfare. Based in the study showed that to build knowledge capability model, three factors involved on RBC had a significant relationship, and result also showed that three factors (technology, organizational culture, and organizational structure) represent the best model for KCM and all three had simultaneously effect on KCM.

References

[1] P.J. Sher, V.C. Lee 2004 Information technology as a facilitator for enhancing dynamic capabilities through knowledge management, Information & Management 41 (8), pp. 933–945.

[2] Wiig, K. M 2000 Knowledge management: An emerging discipline rooted in a long history (pp. 3-26). Boston: Butterworth-Heinemann.

[3] Brown JS, Duguid P 2001 Knowledge, and organization: a social practice perspective. Organization Science, 198–213.
[4] Hoefnagel, E., Burnett, A., and Wilson, D. C 2006 The knowledge base of co-management. Developments in Aquaculture and Fisheries Science, 36, 85-108.
[5] Wilson, D. C., del Valle, I., and Jessen, R 2006 Introduction: the Knowledge Base as Process. In Knowledge Base for Fisheries Management (pp. 1-25). Pergamon Press.
[6] Marquarde, M.J 1996 Building the Learning Organization, McGraw-Hill, New York, NY.
[7] Gold, A.H., Malhotra, A. and Segars, A.H. 2001 Knowledge management: an organizational capabilities perspective. Journal of Management Information Systems, Vol. 18 No. 1, pp. 185-214.
[8] Yang, C. and Chen, L.C 2007 Can organizational knowledge capabilities affect knowledge sharing behavior?. Journal of Information Science, Vol. 33 No. 1, pp. 95-109.
[9] Chuang, S.H 2004 A resource-based perspective on knowledge management capability and competitive advantage: an empirical investigation. Expert Systems with Applications, Vol. 27 No. 3, pp. 459-65.k
[10] Orlikowski, W.J 2000 Using technology and constituting structures: a practice lens for studying technology in organizations. Organization Science, Vol. 11 No. 4, pp. 404-28.
[11] Jimenez-Jimenez, D., and S. Valle, R 2013 Studying the effect of HRM practices on the knowledge management process. Personnel Review, 42(1), 28–49.
[12] Wang, S, and R. A. Noe 2010 Knowledge sharing: A review and directions for future research. Human Resource Management Review 20.2: 115-131.
[13] Rudež, H. N., and Mihalič, T 2007 Intellectual capital in the hotel industry: A case study from Slovenia. International Journal of Hospitality Management, 26(1), 188-199.
[14] Aujirapongpan, S., Vadhansindhu, P., Chandrachai, A., and Cooparat, P 2010 Indicators of knowledge management capability for KM effectiveness. Vine: The journal of information and knowledge management systems, 40(2), 183-203.
[15] Teniwut W. A 2016 For sustainable revenue of fisheries sector in small islands: evidence of Maluku, Indonesia. AACL Bioflux 9(3):722-732.