Factors affecting readiness of knowledge management implementation: a case study of state senior high school in Palembang

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Abstract. Employee’s rotation is often performed in organization. In some periods, the rotation is performed to meet organization’s requirement. However, it also indirectly leads to a decreased of organizational performance when there is a gap between job specification and the ability of employee. This problem can be handled by managing the knowledge of employees which is called knowledge management (KM). Specifically, in Indonesia, the employees who work as teachers in state high school have the high rate of employees’ rotation. Therefore we need to perform KM in this condition, we must find out some factors that affecting readiness of KM implementation. The founded factors can be used to assess the readiness level of organization to implement the KM. This research proposes a method to find out factors which affecting the readiness of KM implementation in state high school of Indonesia and how importance are these factors using Analytical Hierarchy Process (AHP) method. The case study was take place on state senior high school in Palembang which is a capital city of South Sumatera. The result shows the affecting factors are collaboration, learning, top management support, IT Support, business strategy, ICT Use, performance expectancy of KM, effort expectancy of KM, and informal consecutively.

1. Introduction

Peter F. Drucker well known as the father of modern management [1] stated that “the basic economic resource is no longer capital, nor natural resources, not labor. It is and will be knowledge”. This statement shows the importance of knowledge today and future. Knowledge need to be managed through some processes such knowledge discovery, knowledge capture, knowledge sharing, and knowledge application or it is called knowledge management (KM) [2].

One of the important of KM is avoiding loss of knowledge. Dr.Andrew M. Pena wrote on [3] about “Institutional Knowledge: When employees leave, what do we lose?”. He stated that the answer is knowledge. Loss of knowledge can be occurred because of the rotation of employees in organization. In fact, for some periods the employees’ rotation is performed to meet the needs of organization and it is common in some organization. However, the employees’ rotation may also indirectly lead to a decreased of organizational performance if there is an incompatibility between the position with the skill of employees. This employee’s rotation is one of the worries about loss of knowledge.

In Indonesia, there are so many employees’ rotation occurred in some organizations, whether in public or private organization. In term of education, specifically the employees
who work as teachers in state high school have the high rate of employees’ rotation. Therefore, to keep the existence of knowledge, KM is needed to handle the problem of employees’ rotation which caused the loss of knowledge problem. The Solo Post [4] stated that on academic period of 2015-2016, the civil servant mutation is enforced to the teacher or staff of schools in Indonesia who have dedicated themselves for four to eight years. It means that KM is needed to handle that problem.

To perform the KM, the first think need to be conducted is find out the affecting factors. It will be used to assess the readiness level of organization to implement the KM. When the state of KM readiness assessment shows the organization is ready, KM is ready to be implemented. In this step, KM implementation can be supported by using KM system [2].

Based on some of literatures above, this research proposes to find out factors that affecting the readiness of KM implementation in state high school of Indonesia. The case study take place on state senior high school in Palembang as capital city of South Sumatera. This research also tries to rank the importance level of founded affecting factors based on expert judgement. Analytical Hierarchy Process (AHP) method used to rank the level of importance factors.

2. Previous Study
Some previous studies discussed about KM readiness. Some studies proposed model to assess the KM readiness, while others assess the KM readiness for some cases. Atrinawati and Surendro in their study about “assessment for knowledge management readiness” [5] generate some factors to assess the KM readiness level using Capability Maturity Model Integration (CMMI). Those factors are generated by combining knowledge management success factor (KMCSF) variables of David Skyrme [6] and KMCSF variables of Jennex and Olfman [7]. Those are leadership, culture/structure, processes, explicit knowledge, tacit knowledge, knowledge hubs and centers, technology infrastructure, measures, people/skills, and exploitation/market leverage. Finally, AHP is used to get the priority level of each factor.

Another research proposed a KM readiness model by using some factors. The factors are generated from KM enabler and individual acceptance, and it’s relation to the intention to be involved in KM [8]. KM enabler consist of organizational culture (collaboration, trust, learning, business strategy, and management support), organizational structure (decentralization, informal, and reward), and IT infrastructure (IT support and ICT use). Individual acceptance consists of performance expectancy of KM and effort expectancy of KM. And intention to be involved in KM process consists of SECI model (socialization, externalization, combination, internalization).

Another study about KM readiness measurement [9] was conducted using the model [8]. This study took place at institution of higher learning in Malaysia. The research question was which variables are supporting the readiness of KM implementation in Malaysian’s Higher Learning. The result showed the supporting variables are organization strategy, ICT use, and performance expectancy of KM.

3. Proposed Method
The proposed method starts from creating the initial model based on the literature review which are consist of 12 variables as X, and 4 variables as Y. The next step is validity and reliability test of the initial model. Based on the test, the model will be revised by removing the invalid and unreliable indicators. Result of the test will show the valid and reliable factors.
as the factors that affecting readiness of KM implementation. In the last step, the affecting factors will be ranked by using AHP method to get the importance level of affecting factors.

3.1. Initial Model
Based on the literature review, the variables and indicators which are used to find out the factors affecting readiness of KM implementation in state senior high school of Palembang are consists of two parameters. The first parameter is KM enablers. The variables of KM enablers are organizational culture, organizational structure, and IT infrastructure. The second parameter is individual acceptance which covers performance expectancy of KM and effort expectancy of KM as variables. Both variables, as known as X variables, are measured to SECI model, as known as Y variables, which are means the intention to be involved in KM. The variables and indicators are described on figure 1.

![Figure 1. Variables and indicators](image)

The variables and indicators on figure 1 then modelled into initial model. After collecting the questionnaire’s data, the initial model will be tested by validity and reliability test. The initial model is described on figure 2.

![Figure 2. Initial Model](image)

3.2. Data Analysis
The data analysis on this study using Smart PLS 3 [10] as tools for conducting validity and reliability test.
3.2.1. *Validity Test*. The validity test consists of convergence and discriminant validity. Convergence validity is measured by loading factor and average variance extracted (AVE). Discriminant validity is measured from cross loading factor. According to [11], the loading factor value which more than or equal to 0.7 is valid, the AVE value which more than 0.5 is valid, and the cross loading factor value which more than 0.7 and other variables is valid.

3.2.2. *Reliability Test*. The reliability test consists of Cronbach’s alpha and composite reliability. The range of Cronbach’s alpha based on [12] are low reliability (Cronbach’s alpha < 0.5), moderate reliability (0.5 ≤ Cronbach’s alpha ≤ 0.7), high reliability (0.7 < Cronbach’s alpha ≤ 0.9), and perfect reliability (Cronbach’s alpha > 0.9). According to [11], a variable is reliable when the composite reliability value is greater than 0.7.

3.3. *Analytical Hierarchy Process (AHP)*

AHP is one of tools that can be used in term of decision making. AHP was developed by Thomas L Saaty on 70s. The AHP is about breaking a problem down and then aggregating the solutions of all the sub-problems into a conclusion [14], [15]. This study uses AHP to rank the valid and reliable factors which previously has been tested by validity and reliability test. The result will show the importance level of factors affecting readiness of KM implementation instate senior high school in Palembang.

4. *Research Instrument*

The research instrument in this study is a questionnaire based on [8]. The questionnaire used 5-Point-Likert which consist of strongly disagree (1), disagree (2), agree enough (3), agree (4), and strongly agree (5). The questionnaire then consulted to the expert to be validated. Then the readability test of this questionnaire was conducted on 5 senior high school teachers. The result of readability test makes some changes on some questions based on the environment of senior high school teacher. The questionnaire consists of variables and indicators described on table 1.

| Variables                       | Number of Question | Indicator’s Code       |
|---------------------------------|--------------------|------------------------|
| Collaboration                   | 4                  | C1, C2, C3, C4         |
| Trust                           | 4                  | T1, T2, T3, T4         |
| Learning                        | 5                  | L1, L2, L3, L4, L5     |
| Business Strategy               | 4                  | BS1, BS2, BS3, BS4     |
| Top Management Support          | 3                  | TMS1, TMS2, TMS3       |
| Decentralization                | 4                  | D1, D2, D3, D4         |
| Informal                        | 4                  | IN1, IN2, IN3, IN4     |
| Reward                          | 4                  | R1, R2, R3, R4         |
| IT Support                      | 5                  | ITS1, ITS2, ITS3, ITS4, ITS5 |
| ICT Use                         | 4                  | ICTU1, ICTU2, ICTU3, ICTU4 |
| Performance Expectancy of KM    | 4                  | PE1, PE2, PE3, PE4     |
5. **Sampling**

The sampling method used in this study is purposive sampling. Purposive sampling is when a researcher chooses specific people within the population to use for a particular study or research project [16]. This study took place on 5 favourites state senior high school in Palembang to be sampled. The schools are SMA N 1, SMA N 3, SMA N 5, SMA N 6, and SMA N 17 Palembang.

The samples are chosen based on Prof. Arief Rachman statement in [17]. According to that statement, favourite school has some criteria of KM readiness, such as professional school leader, comprehension of school’s vision and mission from the academicians inside school, pleasant learning atmosphere, variance of learning activities, learning plan of teacher, and support of school’s positive program.

Total samples are 30 respondents and 5 experts. The respondent’s questionnaire is used to identify the factors affecting readiness of KM implementation, and the expert’s questionnaire is used to rank the identified factors. The respondents consist of 3 teachers and 3 staffs of each school, while the expert is the headmaster or vice headmaster of each school.

6. **Result and Evaluation**

6.1. **Demography**

Most of respondents are 27% 41-47 years old and 23% 34-40 years old. There are only 10% of respondents aged 55-61 years old. Most of respondents are also 63% female while the rest are 37% male. Then 50% of respondents are teacher and 50% of respondents are staff. The experts are consists of every headmaster or vice headmaster of each state senior high school.

6.2. **Validity Test**

The validity test was conducted using loading factor and average variance extracted (AVE) as convergence validity and cross loading as discriminant validity. Loading factor result show some invalid indicators (loading factor < 0.7) Variable decentralization (indicator D1, D2, D3, and D4) and variable trust (indicator T1, T2, and T4) need to be removed because all or almost indicators inside each variable are invalid. Then AVE as the next validity test shows all variables are valid (AVE > 0.5).

Cross loading factor shows valid indicator when the indicator’s value is greater than 0.7 and greater than other variables. The result of cross loading factor shows some indicators are not valid, there are I4, R1, and R3. There is only 1 indicator left on variable reward, therefore variable reward (R) must be removed because the mean value cannot be computed.

6.3. **Reliability Test**

The reliability test was conducted using Cronbach’s alpha and composite reliability. The result of Cronbach’s alpha shows all the valid variables are reliable. The reliability test is continued to composite reliability. The result shows all the valid variables are reliable (composite reliability > 0.7).
6.4. Factors Importance Level
The validity and reliability test filtered twelve variables on X variable to be nine valid and reliable variables. The valid and reliable variables are factors affecting the readiness of KM implementation in state senior high school Palembang. Those are business strategy, collaboration, effort expectancy of KM, ICT use, informal, IT support, learning, performance expectancy of KM, and top management support. The affecting factors are calculated by AHP method to get the importance level of each factors. The weights of pair wise comparison matrix for this method are gotten by questionnaires’ data of expert. The scale used inside questionnaires refers to Saaty Table[15].

The value of consistency index (CI) is 0.12264 with $\lambda_{max}= 10.10376$. The value of Index Ratio (IR) is 1.45. So, the CR = 0.084579. The CR value is less than 0.1. If the CR value is less than or equal 0.1, the calculation is true. From the calculation of AHP, the affecting factors consecutively are collaboration (0.17), learning (0.16), top management support (0.15), IT Support (0.13), business strategy (0.11), ICT Use (0.10), performance expectancy of KM(0.08), effort expectancy of KM (0.07), and informal (0.03).

7. Conclusion
Base on the evaluation of outer and inner model, there are nine factors affecting the readiness of knowledge management implementation in state senior high school of Palembang. Those are business strategy, collaboration, effort expectancy of KM, ICT use, informal, IT support, learning, performance expectancy of KM, and top management support. The importance level of each factors affecting the readiness of knowledge management implementation in state senior high school of Palembang are collaboration, learning, top management support, IT Support, business strategy, ICT Use, performance expectancy of KM, effort expectancy of KM, and informal consecutively.

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