Knowledge Management System Evaluation

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ABSTRACT

The aim of this research is to determine the factors that may affect user awareness when using KM Portal. It analyses KMS using factor analysis to determine the factors influencing user awareness of KM Portal. Research is done through questionnaire on 275 respondents to collect data on KM Portal. The study showed that three factors influenced user awareness for KM Portal, 1) quality of KM Portal content and features; 2) admin and company participation; 3) user participation. All factors produced a model that can be used for the calculation of user awareness of KM Portal. It also showed that in terms of data processing, the current state of KM Portal is barely sufficient. Thereby suggesting that the company can increase user awareness of KM Portal by improving the three factors mentioned.

Keywords: Knowledge; Knowledge Management System; Evaluation; Factor Analysis; User Awareness

INTRODUCTION

Nowadays, almost all companies are applying information technology to run their businesses. Information technology can assist companies to obtain accurate and relevant information and ensure efficiency and effectiveness in the workplace.

One that must be considered by the company is how to manage human resources to be able to improve efficiency and effectiveness. The transition from an industrial economy to a knowledge economy brings Knowledge Management (KM) to the forefront of industry. In an organization, knowledge is obtained from individuals or groups of people on organizational routines (McClure, 2010). All employees are expected to continue to explore knowledge and not just rely on the existing system or technology. Kürsad Özlen also states the importance of the improved management of knowledge through the use of Knowledge Management Systems has enormously increased in order to solve

employees' tasks and deliver services to citizens effectively while facilitating decision-making capabilities. Furthermore, an organization's wide adoption of Knowledge Management becomes important in order to obtain higher benefits. It is crucial to develop a knowledge management program that allows organizations to store and recover new knowledge to sustain and maintain organisational effectiveness (Juan-Gabriel and Cepeda-Carrión, 2010). The matter of staff participation should not be an afterthought, rather it must be a core aspect of business strategy, and aligning knowledge activities with business objectives will provide a great positive impact for the company and improve its competitive advantage.

An organization needs to t learn how to leverage itself in order to gain valuable insight that will prove useful to it in the immediate and long term. (McClure, 2010). In order to thrive, members of a community must see tangible benefits such as fast answers to technical questions, insight on regional issues directly from local experts, searchable documents and discussions, and career support through training or networking (Keiser, 2013). John Browne states that all companies face the same problem, i.e. how to use knowledge more effectively than their competitors.

However companies often do not make good use of their resources and consequently fail to realize the importance of knowledge (Robertson, 2012). It is indeed most unfortunate if the knowledge of each employee is not tapped. Hence KM process should be aligned to both the organization's culture with measures to create and share knowledge. In achieving these objectives, companies need to create values by applying tacit and explicit knowledge into business processes. Processes based KM including the identification, collection, sharing, documentation and repeated use of a combination of explicit and tacit knowledge (Nogeste & Walker, 2006). The competence of a person can be increased by sharing knowledge because knowledge is keep in mind even can enhance his knowledge by receiving feedback from others (Eftekharzadeh, 2008). Explicit knowledge is the knowledge that has been codified (documented) in a form that can be distributed to others or transformed into a process or a strategy. In an organization, explicit knowledge consists of the policies, procedural guides, reports, products, strategies, goals, core competencies, and IT infrastructure of the enterprise (Rainer et al., 2015). Tacit knowledge is the cumulative store of subjective or experiential learning. In an organization, tacit knowledge consists of an organisation's experiences, insights, expertise, know-how, trade secrets, skill sets, understanding, and learning. Because it is unstructured, it is difficult to formalize or codify, in contrast to explicit knowledge (Rainer et al., 2015). To create a shared knowledge environment, companies need to have some criteria, i.e. how companies implement strategies to share knowledge, manage, improve, develop concepts and skills to share knowledge, and also support employees to practice knowledge-sharing

activities by building the information technology and techniques in sharing knowledge. Organizations' KM efforts often fall short when KM platforms lack great content or are overly complicated to use. Based on Keiser research, some firms succeed by shortening the learning curve for their employees and customers. They communicate with constituencies and recognize stakeholders for their contributions, completely eliminating the trust barrier that inhibits people from sharing knowledge when it's not clear how it will be used. The multiple channels allow for sharing across geographic boundaries, uniting people who work in different office locations, down the street, or around the world. Then the firms have built and are nurturing a knowledge sharing culture by capturing and sharing knowledge, making it available in a unified knowledge network, and eliminating the "lack of time" excuse used by many for not contributing to a community (Keiser, 2013). According to Lee and Yang as well as Fischer and Oshwald in Fong and Choi (2009), reveals that in fact the company undoubtedly has a process that manages the storage of knowledge and integration of knowledge from different divisions or units. This is due to users devoting attention to focusing on their main tasks and being reckless with matters such as knowledge storage. System to manage knowledge is called Knowledge Management Systems (KMS). Academics and practitioners admit KM can improve the competitive advantage of a company (Sambamurthy & Subramani, 2005).

Based on these problems, the objectives of this research is to analyse the performance of KMS that are running on the company in terms of KM factors, i.e. people, process, and technology, to find out the factors and indicators that affect the awareness of the users in using the KM Portal, and to identify the models based on the results of the KMS evaluation. This research will also provide an overview to the management through the factors, indicators, and models that have been identified that affect the awareness of users in using the KM Portal.

METHODOLOGY

The population in this research is restricted only to employees who are uses of KM Portal. The sample size is 275 respondents from a population of 1321 people.

Data Analysis Techniques

To perform data analysis in this research there was a series of stages , i.e. reliability test with Cronbach Alpha, test the adequacy of the data with KMO-MSA, variable correlation test with Bartlett Test, factor analysis, and perform factor regression from factor analysis result with factor scores.

Reliability Test, KMO-MSA and Bartlett Test

Results of the research called reliable if there are similarities of data in a different time (Sugiyono, 2008). In testing the reliability of existing variables, this research using SPSS software application to get Cronbach Alpha value. Cronbach's Alpha

value shows the average value of the correlation between items that measure the same construct (Pallant, 2005). According to Nunnaly (1978) (as cited in Pallant, 2005) recommends a minimum Alpha value is 0.7. If the Cronbach Alpha value greater than 0.7, then the data can be said to be reliable. KMO-MSA test in this research will be performed with SPSS software application. If the KMO-MSA value is > 0.5, then the data has been enough to be factored (Heir et al, 2006). In this research, Bartlett test also performed using SPSS software application. If the Sig value is less than $\alpha = 0.05$, then the data has not been enough to be factored.

RESULT AND DISCUSSION

From the results of reliability test using SPSS is known the Cronbach Alpha value shows alpha coefficient at 24 variables has a value of 0.904 so the instrument used in this research was considered reliable for the questions in each of the variables used.

KMO & Bartlett's Test

Based on KMO test and Bartlett's Test using SPSS can be seen that the assumption of the adequacy of the data has been fulfilled because the MSA and KMO value is amounted to 0.905. It shows the adequacy of the data test has been fulfilled. Moreover, is known the significance of the Bartlett's test, Sig. is 0.000 showed less than α, i.e. 0.05, which means between variables has been correlated.

Anti-Image Correlation

The SPSS test results can be found in the table on Anti-image Correlation. Variable error can be predicted by another variable with the provision if MSA = 1, then the variable can be predicted without error by the other variables. And if MSA > 0.5, then variable can still be predicted and can be analysed further. Meanwhile if the MSA < 0.5, then variable can't be predicted and can't be analysed further, or excluded from other variables. Based on the results obtained is found one variable valued below 0.5, then these variable cannot be analysed further, whereas the other variables can be continuously analysed.

Total Variance Explained

Eigenvalues or characteristic roots used to measure the variance of all variables on factors, people, process, and technology. Ratio of Eigenvalues measure the importance of these factors to variable. The first test, with eigenvalue ≥ 1, then formed 4 new factors of the analysis results. The cumulative result of the variance extraction is 58.257%. This cumulative result is greater than 50% so all of these factors are still valid. The researchers also do test on 3 factors, and then generated the cumulative value of variance extraction on 3 factors in the amount of 53.122% and the cumulative value of variance extraction on 2 factors is 49.372%. Seeing these test results, then for 2 factors is not valid because its value is below 50%. And the best distribution result is 3

factors. Thus all three of these factors will be processed for further analysis because it has met the criteria.

Component Matrix

After analysing the factors, then formed new factors and new indicators to increase user awareness and the reduction occurred on early indicator and on several factors. In this research, the indicator in question is indicator used to evaluate the KMS.

The first factor is formed from Detailed Knowledge or Information, Easily Find Information, System User Friendly, Sharing Knowledge, Knowledge Retention, Understandable, Knowledge for Decision Making, Knowledge for Improve Ability, and Information Update indicators. All of these indicators form factor "The Quality of KM Portal Content and Features". The second factor is formed from Reward, Knowledge Storage, Accessibility, Knowledge Creation, Training, Fast Reply, and Complexity Barriers indicators. This second factor is represented to be "Admin and Company Participation". The third factor is formed from User Active without Reward, User Active without Regulation, and User Active without Persuasion indicators. The third factor is represented to be "User Participation".

Model Used to Perform Evaluation of Knowledge Management System

Factors that formed are The Quality of KM Portal Content and Features, Admin and Company Participation, and User Participation. That factors used to evaluate KMS for User Awareness. To get the dominant factors, then performed the regression between these factors with value of the KMS according to the respondent assessment who obtained based on the results of questionnaires. The questionnaire asked about KM Portal overall assessment of 1-10 with quantification are 1 is very poor and 10 is excellence. The first factor to the third factor has significance value below 0.5%, respectively 0,000, 0,000 and 0,000 so these factors are reliable to include in the KMS evaluation model. Then the researchers do the calculations and the results obtained are the first factor value (X1) is 0.918; the value of the second factor (X2) is 0.252; the third factor value (X3) is 0.306; and the constant value (C) is 6,902. The following model has been created from KMS evaluation.

$$Y = 0.918 \ X1 + 0.252 \ X2 + 0.306 \ X3 + 6.902 \qquad (l)$$

Based on the model above, it can be depicted KMS evaluation model in Figure 1 as follows.
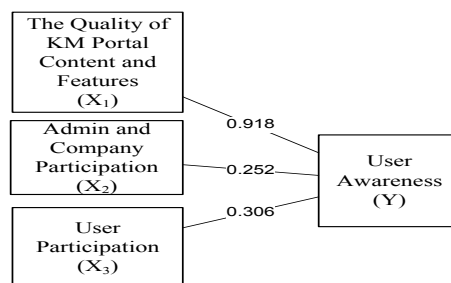

Figure 1: Factor's Value used to KMS evaluation

From the model on Figure 1 above, can be seen the first factor value (X1 = The Quality of KM Portal Content and Features) is positive 0.918, it means KM Portal quality improvement which includes Detailed Knowledge or Information, Easily Find the Information, System User Friendly, Sharing Knowledge, Knowledge Retention, Understandable, Knowledge for Decision Making, Knowledge for Improve Ability, and Information Update will affect 0.918 on increasing user awareness in KM Portal use.

The second factor value (X2 = Admin and Company Participation) is positive 0.252, showed any increase in Admin and Company Participation factor that manages KM portal including Reward, Knowledge Storage, Accessibility, Knowledge Creation, Training, Fast Reply, and Complexity Barriers will affect 0.252 on increasing user awareness in KM Portal use.

The third factor value (X3 = User Participation) is positive 0.306. This means any increase in User Participation factor which includes User Active without Reward, User Active without Regulation, and User Active without Persuasion will affect 0.306 on increasing user awareness in KM Portal use.

Knowledge Management System Evaluation

Based on the value of factors and the model can be determined evaluation user awareness of the use of KM Portal, then the researchers do the factor regression of these factors to get the maximum and minimum values. By doing the regression of these factors, then obtained minimum value of X1 factor = -3.29833, X2 factor = -4.15024, and X3 factor = -3.87210 and obtained maximum value of X1 factor = 2.94042, X2 factor = 2.83336, and X3 factor = 2.21678.

By doing the regression of these factors, then obtained limits of minimum and maximum values as follows at model Chung-Hung and Hwang-Yeh (2007), with minimum and maximum values:

$$-3.29833 \leq X1 \leq 2.94042 \quad (2)$$

$$-4.15024 \leq X2 \leq 2.83336 \quad (3)$$

$$-3.87210 \leq X3 \leq 2.21678 \quad (4)$$

CONCLUSIONS

The first factor is formed from Detailed Knowledge or Information, Easily Find Information, System User Friendly, Sharing Knowledge, Knowledge Retention, Understandable, Knowledge for Decision Making, Knowledge for Improve Ability, and Information Update indicators. All of these indicators form factor "The Quality of KM Portal Content and Features".

The second factor is formed from Reward, Knowledge Storage, Accessibility, Knowledge Creation, Training, Fast Reply, and Complexity Barriers indicators. This second factor is represented to be "Admin and Company Participation".

The third factor is formed from User Active without Reward, User Active without Regulation, and User Active without Persuasion indicators. The third factor is represented to be "User Participation".

Taking into consideration the limitations of this study which is focused on user awareness, the researchers suggest the need to increase the number of possible variables as well as the sample size.

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