The Factor Analysis of Knowledge Management Process for Public University Lecturers in Bangkok

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Abstract

The objective of this research was to study the factor analysis of the knowledge management process for public university lecturers in Bangkok. The sample was 650 lecturers working in Government universities in Bangkok. The instrument used for data collection was 5 rating scales questionnaire eliciting data concerning knowledge management process of these university lecturers. The reliability of the instrument, calculated by Cronbach Alpha Coefficient is 0.95. The data analysis by using exploratory factor analysis by orthogonal rotation with the varimax method was used to extract factors. Findings: There was the knowledge management process of university lecturers ten components, described by 85 items. Loading factors ranged from .40 to .77 and they accounted for 68.77 percent of the total variance. The factors name were: (1) tacit knowledge acquisition; (2) discovery knowledge; (3) capture knowledge; (4) knowledge creating; (5) knowledge creation from research; (6) management knowledge storage; (7) knowledge storage and access; (8) knowledge sharing; (9) knowledge transfer and dissemination; and (10) learning.

Contents

Contribution of this paper to the literature
This study contributes to the existing literature by performing the factor analysis of the knowledge management process for public university lecturers in Bangkok.

1. Introduction

Due to the sudden changes in the advancement of technology and education innovation and from globalization, thus affecting the demand for technology to support education. Knowledge management is a tool in managing an organization towards becoming a learning organization. The organizations will have the ability to adapt to the changing environment effectively, deliver quality outcomes, and recognize as a high-performance organization (Yaemsuda, 2018).

The government policy has focused on knowledge management in order to improve personals quality of learning. It has been enacted in a royal decree of the Governance rules and procedures in 2003, section 11 to apply the information technology as a tool for learning and exchanging the knowledge effectively (Onkaeo *et al.*, 2012).

The university lecturers ought to supported and encouraged by universities to the end of enhancing their knowledge such that they will have the capabilities required for efficiently carrying out their duties (The Ministry of Education, 2017).

In a study, the problems of knowledge management of public university lecturers found that (1) lecturers have heavy teaching loads. Some lecturers spend time compiling textbooks and so they do not have time for information searching. (2) Developing new knowledge takes time. And in order to appropriate knowledge management model for public university lecturers found that consisted of five aspects: (1) acquisition; (2) creation; (3) storage and access; (4) sharing; and (5) learning (Cruthaka, 2019).

The researcher is therefore interested a study knowledge management process for public university lecturers in order to factor analysis of knowledge management facilitate knowledge acquisition, knowledge creation, knowledge storing and retrieving, knowledge sharing, and learning. To be a guideline and option for university lecturers to manage, create new knowledge to be in line with roles, duties and responsibilities and to open educational opportunities and increase educational capacity of educational institutions in Thai society.

2. Research Objectives

The purpose of this research was to study the factor analysis of knowledge management process for public university lecturers in Bangkok.

3. Research Methodology

In this research, population descriptive research consisted of 12 university lecturers using stratified sampling methods to find the population according to the proportion of 12 universities. Sample size was determined based on factor analysis using size. The sample is about five times the number of variables or more (Sisathitnarakun, 2004). The required sample population consisted of 490 subjects. However, 650 subjects were used in this research investigation in order to decrease variances resulting from the sample size. The information on the personal characteristics of university lecturers consisted of 372 women (57.20%) and 278 men (42.80%). 95 lecturers (14.62%) are in the age group of 25- 35, 300 lecturers (46.15%) are in the age group of 36-45, 211 lecturers (32.46%) are in the age group of 46-55, and 44 lecturers (6.77%) are in the age group of 56-69.

The research instrument is a bilateral questionnaire about the knowledge management process of university lecturers. The first part of the questionnaire was brought out as information about the demographic characteristics of the respondents using open-ended questionnaires and checklists. In the second part of the questionnaire, the researcher uses the data obtained from the questionnaire about the knowledge management process of the university lecturers. The accuracy of the content is determined by the consistency index (IOC) for questions about the objectives or definitions of variables used by five experts. The questions were prepared in a format that the answers were prepared in a five-level assessment with 98 items when using the Cronbach's α (alpha) coefficient. The reliability of the questionnaire was 0.95.

As for the data collection, the researcher started the collection process by sending a letter from the Faculty of Human Resources Development, Ramkhamhaeng University to the President of 12 universities in Bangkok. After obtaining permission from the Rector, the researcher sent a copy of the questionnaire to these universities with a pre-stamped envelope showing the name and address of the researcher. The researcher coordinated with the secretary at the Office of the President, the head of the secretariat and the personnel in the faculty who provided cooperation to return the completed questionnaire. The researcher returned 650 questionnaires (100% return rate).

In the analysis of demographic characteristics, the researcher used the percentage as a technique of descriptive statistics. In analyzing the composition of the university's knowledge management process, the researcher used a factor extraction method and principal component analysis to ensure that at least three elements were kept apart from using the orthogonal varimax method.

In determining the composition, the researcher uses the following criteria. The component must have an eigenvalue greater than or equal to 1 (≥1) with a variable or list describing elements that have more than three variables. Each variable must have a load factor greater than or equal to 0.40 (≥0.40). When analyzing the elements, then interpret and strive to be an element that controls the knowledge management process of university lecturers in Bangkok.

4. Results

The analysis of the elements of the important factors that used orthogonal rotation using the varimax method found that the list of knowledge management processes is consistent with the elements of the same factor. The remaining 85 variables were once again rotated and ten components were found which did not bear relationships with one another and were accordingly mutually independent. These variables had loading factors greater than or equal to 0.40 (≥0.40) and

eigenvalues greater than or equal to 1 (≥1). Variables were explanatory of components with more than three variables. The knowledge management process for 85 items was explanatory of variance at 68.77 percent as shown in Table 1.

Table-1. Eigenvalue, percentage of variance and accumulated percentage of variance, number of items, number of variables, and loading factors.

Component	Eigenvalue	Percentage of variance	Accumulated percentage of variance	Number of items	Loading factors
1	39.98	46.49	46.49	16	.436-.758
2	3.90	4.53	51.03	19	.400-.729
3	3.10	3.60	54.63	9	.474-.603
4	2.27	2.64	57.26	6	.444-.664
5	1.86	2.16	59.42	9	.410-.673
6	1.57	1.83	61.25	5	.637-.770
7	1.51	1.75	62.99	5	.432-.657
8	1.42	1.65	64.65	5	.587-.729
9	1.26	1.46	66.11	6	.515-.670
10	1.21	1.41	67.51	5	.502-.633
11	1.08	1.26	68.77	-	-

The analysis of the ten elements of the knowledge management process is as follows: (1) learning can be explained by 16 variables with load factors ranging from 0.436 to 0.758; (2) storage and access to knowledge can be explained by 19 variables with the load factor between 0.400 and 0.729; (3) knowledge sharing can be described as 9 variables with load factors between 0.474 and 0.603; (4) knowledge transfer and dissemination can be described by 6 variables with load factors between 0.444 and 0.664; (5) knowledge creation can be explained by 9 variables with loading factors between 0.410 and 0.673; (6) knowledge discovery can be explained by 5 variables with the load factors being between 0.637 and 0.770; (7) capturing knowledge can be explained by 5 variables with load factors ranging from 0.432 to 0.657; (8) knowledge creation from research can be explained by 5 variables with loading factors between 0.587 and 0.729; (9) tacit knowledge acquisition by default can be explained by 6 variables with load factors ranging from 0.515 to 0.670; and (10) management knowledge storage can be described in 5 variables with loading factors between 0.502 and 0.633.

5. Discussion

The results of the study of the elements of the knowledge management process of university lecturers in Bangkok found that 10 elements that can be described as follows:

Component 1: Learning can be described in 16 variables with load factors between 0.436 to 0.758. Variables with the highest load factor were the summarized new knowledge and utilize and used as best practices. University lecturers need to learn and use to integrate best practices in teaching. This corresponds to the concept of Ahmed and Shepherd (2010) concerning work conducted on experience can be captured knowledgebase can subsequently be re-used by individuals and teams to create yet more insight and learning. This conclusion is consistent with the research conducted by Arthur (2013) which found that in 2000, the British construction company Taylor Woodrow began a knowledge management initiative focused on technical knowledge managed by a team at the Technology Center in Leighton Buzzard, United Kingdom Knowledge management (KM) initiatives are intended to collect and use best practices to improve project performance.

Component 2: Knowledge storage and access can be described in 19 variables with load factors between 0.400 to 0.729. Variables with the highest load factor were computer keyword creation and knowledge database management. Lecturers should create an index which helps to find full-text records. This finding is consistent with Jashapara (2011) which confirms that retrieving important goals is creating an index that helps position the structure of text and documents. Text data can be loaded into the system and routed through conversions such as general word deletions. This finding is consistent with the research examined by Petcharat and Jiamprachanarakorn (2015) who found that the universities should continually improve knowledge management by giving importance to knowledge in other fields and knowledge management should be accessible by different channels.

Component 3: Knowledge sharing can be described in 9 variables with load factors between 0.474 to 0.603. Variables with the highest load factor was group discussions in field studies and self-knowledge sharing. were is according to a research investigation conducted by Arthur (2013) who found incentives for KM in higher education institutions funded by the government, with seven academic departments and more than 500 faculty in Malaysia. Trying to upgrade the group - won the award from the existing faculty as part of the campus-wide drive to the e-learning. The concept was setting up a community of practice, which had been approved and the official launch is to promote knowledge sharing and distribution of instructional design for e-learning between teachers in different departments. This finding is consistent with Cruthaka (2019) who found that the conditions of knowledge management represented by public university Ey professors are shared and exchanged knowledge through training, meeting, conferences and academic seminars at the national level and international.

Component 4: Knowledge transfer and dissemination can be described in 6 variables with load factors between 0.444 to 0.664. Variables with the highest load factor was academic counseling, coaching and counseling. This is because the principles of counseling are coaching and consulting with teaching and selling ideas from managers and experts. Lecturers need training and coaching by senior advisors and teachers. This corresponds to the Thananan (2010) which confirms that the introduction of the use of coaching and counseling in order to convey the tacit knowledge for proposals to introduce apply new knowledge in a variety of contexts. This is consistent with Abbass (2017) who found that the importance of knowledge management in higher education institutions can be applied to the community of practitioners in solving everyday problems, transferring best practices, encouraging cooperation among to specialize in developing new knowledge work in your own field deeply with a large group of experts and learn about the topics of interest.

Component 5: Knowledge creation can be described in 9 variables with load factors between 0.410 to 0.673. Variables with the highest load factor were creating knowledge that can be adapted and used in teaching and research. This corresponds to the framework of Ichijo and Nonaka (2007) that says that new knowledge is developed when individuals in the organization see the intellectual relationship between their actions and the consequences. This conclusion is consistent with the research conducted by Cruthaka (2019) which found that the experts aspects were the search for knowledge through having conversations with colleagues who were deeply experienced in research and instruction; continuously creating knowledge through research; and creating innovations whereby knowledge could be stored by developing a manual for collecting knowledge while providing information concerning good practices.

Component 6: Knowledge discovery can be described in 5 variables with load factors between 0.637 to 0.770. Variables with the highest load factor were knowledge discovery in databases online, internet networking such as google scholar. This is because the university lecturers use technological capacities as a tool for knowledge management involving applications and Internet networking with computers and advanced mobile technology with high-speed Internet signals. Those can be used for retrieving a body of knowledge systematically stored in databases from various worldwide resources. This corresponds to the conceptual framework of Fernandez *et al.* (2004) who describe that knowledge discovery as the development of new tacit or explicit knowledge from data and information or from the synthesis of prior knowledge. This is in accordance with Earmsiriwong (2011) who said that germane software programs had to be installed in computers and software programs worked on the web as well. Many companies have prepared online applications such as Google Docs and Office Web Apps from Microsoft that help access and share work and documents on browsers so that documents can be accessed anywhere through computers or other mobile equipment with the ability to connect with the Internet.

Component 7: Capture knowledge can be described in 5 variables with load factors between 0.432 to 0.657. Variables with the highest load factor aspect were knowledge capture from cooperation networking between the Public, State Enterprises and partnership. This is because lecturers acquired knowledge that is good practice from those organizations to apply knowledge for achievement in job performance. This corresponds to the conceptual framework of Awad and Ghaziri (2004) who said that knowledge capture using the interpretation to build the rules that represent the expert's thought processes or solution. This finding also accords with Ahmed and Shepherd (2010) who describe that the organization needs to manage the external interface of knowledge management from outside sources and implanting and leveraging it inside the organization. There is essentially two way to achieve this. One is to source knowledge through purchase or collaboration. The second is to transfer knowledge by developing mechanism and process to absorb and assimilate knowledge.

Component 8: Knowledge creation from research can be described in 5 variables with load factors between 0.587 to 0.729. Variables with the highest load factor are knowledge creation from routine to research. Because research is one of the important missions of university professors. Therefore, professors recognize the benefits of data research for teaching and curriculum development and create knowledge in publicizing research. This corresponds to the conceptual framework of Ichijo and Nonaka (2007) which explains that basic research aims to create new knowledge for their own benefit. Applied research is useful and beneficial to the goal. According to the examination of the research conducted by Cruthaka (2019) on the condition of knowledge management displayed by public university lecturers. The research found that knowledge was created by synthesizing knowledge on the basis of conducting research related to their own interests or from problems related to problems arising from funding sources and writing research articles.

Component 9: Tacit knowledge acquisition can be described in 6 variables with loading factors between 0.515 to 0.670. The variables with the highest load factor aspect were knowledge acquisition from an expert. These aspects were the search for knowledge through having conversations with colleagues who were deeply experienced. This is in accordance with Ichijo and Nonaka (2007) who describe that conversation is the most natural and commonplace of human activities; at the same time, it is one of the best means for sharing and creating knowledge. Good conversations are the cradle of social knowledge in any organization. This conclusion is consistent with the research conducted by Petcharat and Jiamprachanarakorn (2015) who found that the university should motive its personnel to share knowledge in the organization, focusing on learning from people, both inside and outside the university, who have direct experience in knowledge management.

Component 10: Management knowledge storage can be described as 5 variables with the load factors in between 0.502 to 0.633. Variable with the highest load factor was the storage of practitioners, the knowledge that collects data and information from any source, adding value to with collecting and storing knowledge. University lecturers conduct studies and research to enhance academic positions for academic and professional development. Lectures must extract information from both inside and outside the country from reliable sources in the digital library on campus to be able to use information to support research and disseminate research through e-Journals. a corresponds to the Awad and Ghaziri (2004) that explains that knowledge workers are people who change business and personal experience into knowledge through capturing, evaluating, applying, sharing and dissemination within the organization to solve specific problems or create value. In the organization, there is a chief information officer to take advantage of the reams of information stored on various systems.

6. Conclusion and Recommendations

The results suggest that the knowledge management ten components as appropriate for creating and management knowledge for public university lecturers in Bangkok. The recommendations are that:

1. The use and application of knowledge management processes for public university lecturers should be considered in each component by technology and nontechnology because some faculty members of the faculty are not experts in technology and have insufficient technology experience forget knowledge creation, collection and access to knowledge, knowledge sharing and transmission and dissemination of knowledge.

2. In this study of components, the knowledge management process of public university lecturers showed ten components. The use and application of knowledge management process as step by step following: (1) tacit knowledge acquisition (2) discovery knowledge (3) capture knowledge (4) knowledge creating (5) knowledge creation from research (6) management knowledge storage (7) knowledge storage and access (8) knowledge sharing (9) knowledge transfer and

dissemination and (10) learning. The public university used data obtained from the study to construct a knowledge management model for developing knowledge of university lecturers.

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