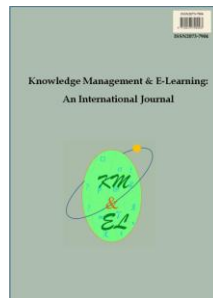

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Knowledge management systems in support of an induction programme: An action research approach

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Knowledge management systems in support of an induction programme: An action research approach

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Abstract: Higher education institutions are in the knowledge business since they are involved in knowledge creation, dissemination and learning. However, not many higher education institutions get the most benefit out of managing their knowledge. Most of these institutions are so busy delivering knowledge that they fail to capture the best practices in their knowledge delivery. The induction programme for new lecturers is therefore very important to improve the quality of teaching. In teaching, lecturers might be the subject matter experts but could lack knowledge related to teaching, such as theories of teaching and learning, classroom organization and management, development of curriculum and course content, and professionalism. This paper examines if knowledge management systems (KMS) can support the induction programmes for new lecturers in an academic setting at the Bina Nusantara University in Indonesia. Action research is used as the underlying methodology. Specifically, a 5-step canonical action research was used to conduct the study. Our findings post intervention suggests that most lecturers understand the importance of the induction programme and the lecturers have positive attitudes towards the implementation of KMS to support the induction programme.

Keywords: Knowledge; Knowledge management systems; Induction programme; Action research

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1. Introduction

Induction programmes are often implemented within educational institutions to support both educationists and students better transition into a new teaching and learning environment (Laing, Robinson, & Johnston, 2005). From a student perspective, inductions are often defined as programmes that enable new students to better assimilate themselves with a new learning environment, allowing them to become more familiar with the needs and expectations in such environments (Laing, Robinson, & Johnston, 2005). From a teacher education perspective, inductions are commonly related to initiatives that prepare educators in dealing with various educational aspects e.g. policy, student expectations, use of instructional material etc. prior to formally beginning their teaching (Harrison & McKeon, 2008; Murray, 2008).

The induction at most institutions of higher education in Indonesia is relatively, an informal process (Thair & Treagust, 2003). Indonesian institutions of higher education are free to do their own induction for newly recruited lecturers and they simply have to follow guidelines from the department of Higher Education (Samarawickrema & Stacey, 2007). However, there is no strict control mechanism to monitor if higher institutions have done a proper induction for newly recruited lecturers (Thair & Treagust, 2003).

This paper examines the design, implementation, and evaluation of the perceived effectiveness of a KMS as a tool to support induction programmes at Universitas Kristen Satya Wacana (UKSW), a private university located in Central of Java, Indonesia. The paper is organized as follows: it starts by doing a preliminary survey to identify problems faced by UKSW in its induction programmes. It then explores the potential of implementing a KMS to support the induction programme. Based on existing theories of knowledge management, a web-based KMS was designed and presented to the top management of UKSW. The effectiveness of the system was then measured. The aim of this research is to demonstrate if knowledge management ideals can be used by institutions like UKSW to improve their induction process for new lecturers. Action research was used as the overall research approach to conduct the study.

2. Knowledge management

Knowledge Management (KM henceforth) is a process of knowledge creation, validation, presentation, distribution, and application (Bhatt, 2001; Dorasamy, Kaliannan, Raman, & Muthaiyah, 2011). Knowledge is “a justified personal belief that increases an individual’s capacity to take effective action” (Nonaka, 1994). Action in this context requires physical skills, competencies, and cognitive abilities. Distinguishing between “data”, “information”, and “knowledge” is difficult. In general though, data are considered to be the raw facts, information is regarded as an organized set of data, and knowledge is perceived as meaningful information. According to information is interpreted data into a meaningful framework, while knowledge is authenticated information and can be thought as true. To distinguish effectively between information and knowledge is not merely found in the content, structure, accuracy, utility of the supposed information and knowledge, but rather, knowledge is defined as information possessed in the mind of an individual (Nonaka, 1994).

Polanyi (1962) refers to information processed in the mind of an individual as "tacit" knowledge. He further states that when knowledge is articulated or communicated, it then becomes "explicit". Explicit knowledge is often communicated in the form of words, written text, computer data, and other means. The recipient can then cognitively process and digest the information so that it is converted back to tacit knowledge. This is consistent with Churchman’s (1971) statement that "knowledge resides in the user and not in the collection".

Two major points emerge from this conceptualization: First, due to the personalization of knowledge, in order for one person’s knowledge to be useful to others, it must be communicated in such a manner as to be interpretable and accessible to others, or in other words, to be made explicit. Second, only information which is actively processed in the mind of an individual, or so called knowledge, through reflection can be useful. Knowledge will be useful if it is shared to others to guide action.

The major challenge in managing knowledge is less its creation and more in its capture and integration (Grant, 1996; Davenport, 1996). Indeed, knowledge is of limited organisational value if it is not shared. The ability to integrate and apply specialized knowledge of organisational members is fundamental to a firm’s ability to create and sustain competitive advantage in a knowledge economy (Grant, 1996).

3. KM and induction programmes in higher education

Induction of new staff can reduce anxiety, fear of failure on the job, and turnover. It saves time and develops realistic expectation (Ivancevich, 2004). This is true not only for industries but also relevant to education institutions. The difference between induction programs in industry and in education is that, in education the skills of teaching must be acquired as they are being performed (Bullough, Knowles, & Crow, 1991) while the latter involves using innovative methods of instruction, teaching style, and also mastery of the content. As stated under the introduction section, induction programmes in the context of educational institutions can be examined either from a student or an educator perspective. Laing, Robinson, and Johnston (2005) examine the migration process of students from high school into higher education. The authors state that in any induction programme for students, issues such as students’ need and expectation, and the process that inducts students into these needs and expectations are necessary.

In general, Laing, Robinson, and Johnston (2005) state that formal use of induction programmes can assist students to better migrate into a higher education environment, given students' positive response to the "Spiral Induction Programme (onSIP)" that was implemented at a higher education institution in Southampton. The main outcome of onSIP based on the authors' findings is that it allowed students to become more responsible of their self learning through various online learning activities. OnSIP also enabled administrators and students to identify additional support required to ensure the students' migration process into higher education was well managed (Laing, Robinson, & Johnston, 2005).

Harrison and McKeon (2008) examine an induction programme from a teacher-educator perspective, studying the attributes towards successful migration amongst teachers from schools to higher education in England. The authors state that induction programmes can facilitate the migration process amongst teachers in the following manner. Firstly the authors assert, formal induction programmes can inject more flexibility in the induction programme. Secondly, an induction programme that allows for "learning conversations" (p.151), amongst colleagues can also assist in the migration process. Thirdly, the authors further assert that induction initiatives that allow staff to share personal experience with each other can also assist in the cause.

Murray (2008) states that successful induction initiatives often occur at the micro level—within teacher-education departments, in team-based settings. In this context, he argues that induction programmes are best examined and understood as work-based learning interventions. The author further asserts that issues such as consistency and quality of the induction programme, can impact the final outcome of any intervention. While Murray's work provides useful insights on work-based learning (induction at the micro level), the author's case is not related to implementation of any formal knowledge-based systems in support of induction efforts.

In the context of Indonesia, as mentioned in the introduction, with the exception of work by Thair and Treagust (2003) and Samarawickrema and Stacey (2007), limited work has been done to examine the role of induction programmes in an educational setting. Samarawickrema and Stacey's work, focus more on end user adoption of web-based learning and teaching as part of an induction programme—focusing on behavioral-technology adoption issues such as subjective norm, ease of use and perceived usefulness of web-based systems to support teaching and learning situations. Thair and Treagust (2003) state that while most education institutions of higher education in Indonesia recognize the value of induction programmes, most take a lackadaisical approach in implementing such initiatives. The authors further state that more guidelines and policy interventions from education authorities are required before the true value propositions of induction programmes can be achieved in the local context.

Higher education institutions are knowledge intensive organizations that produce knowledge services (Rowley, 2000; Hawkins, 2000). They create, acquire, transfer and disseminate knowledge to students. The use of KMS should therefore naturally benefit institutions of higher education. To date, only a few universities in Indonesia have implemented a knowledge management system (KMS). Generally, KMS in Indonesian institutions tend to focus more on digital libraries in institutions (Thair & Treagust, 2003; Samarawickrema and Stacey, 2007). Higher education is in the business of knowledge creation, dissemination, transfer and learning. Higher education institutions have significant opportunities to apply knowledge management practices to support every part of their mission (Kidwell, Vander Linde, & Johnson, 2000). The use of KM techniques

and technologies in higher education can be as important as it is in the corporate sector, if it is done effectively.

KM implementation can help to improve decision-making, improve the quality of academic and administrative services, reduce time in “product” development, i.e. curriculum development and research that leads to reduced cost. According to Kidwell, Vander Linde, and Johnson (2000), there are 5 major applications for implementing KM in higher education, namely research process, curriculum development process, student and alumni services, administration services, and strategic planning.

KM applications can serve as a repository to host research interests, research results, and research opportunities. It can be in the form of a portal showcasing administration procedures and best practices. Through the implementation of KM, the expected outcomes for research staffs are to produce quality research, create convenient access to the best practice without reinventing the wheel. Specifically, the benefits expected are to increase competitiveness and responsiveness, reduced time for doing the research and administration of the research, facilitation of interdisciplinary research by improving the communication and collaboration of staffs from multi-discipline.

KM applications can support the curriculum development process. This can be in the form of a readymade repository of curriculum revision, curriculum content to both facilitate the needs of lecturers within the faculty and to support the collaboration of cross-faculty curriculum design and teaching. A KM portal can also support the teaching processes (before, in-class, and after teaching activities), pedagogy and assessment techniques, portal for new faculties with guides to develop curriculum, working with senior lecturers, and other related guidelines for new lecturers (this process is indeed called induction programme for new lecturers), and repository of external linkages in regards to curriculum design advisory task forces, guest speakers, adjuncts, and case study sites (Raman, Ryan, & Olfman, 2004). The benefits expected from the implementation are the enhancement of quality curriculum design, shorten time for curriculum development, development of new lecturers in relation to curriculum related matters, improve the administrative services related to teaching and learning, improve the responsiveness of staffs in curriculum design, and promote the inter-disciplinary curriculum designed by improving the collaboration and communication of cross-faculty staffs.

KM applications can also support for student and alumni administrative functions. The applications can be in the form of portals that provide information for policies and procedures related to admission, financial aid, billing and payment procedure, registration, other supporting functions, i.e. housing, dining, and so on. The portal can also contain information regarding the career services to both students and alumni. It can be in the form of repository of students’ cases in relation to regulation violation and penalty given, students’ achievements and rewards, other best practices that can give motivation to other students. The benefits expected are to improve services to students and alumni, and to improve effectiveness and efficiency to do study related administration.

While some universities do not differentiate the students and alumni from the administrative services KM, but some do (Kidwell, Vander Linde, & Johnson, 2000). While the student and alumni services KM is more towards external parties, namely serving the needs of the alumni community, the administrative services is more for the internal staff usage to support the back-office functions. The application of KM can be in the form of portal for financial services, procurement process and procedures, and service of human resources department. Overall, well integrated KM applications can support the strategic planning of a university. KM platforms can provide internal information for

strategic plans, be used to prepare reports for external parties (e.g. government and other authorities), record institutional achievement and rewards, and provide links to external information relevant to policy and administrative decision making functions. In this context, one could suggest that well implemented KM applications can enable a new staff (academic and administrative) to quickly familiarize with academic and/or administrative functions in a university (Raman, Ryan, & Olfman, 2004; Kidwell, Vander Linde, & Johnson, 2000). Lecturers are central to developing human capital in academic institutions as they are the “actors” who deliver knowledge to their students. Therefore, improving the knowledge, skills, ability, and wisdom of lecturers should be the top priority of any KM implementation. KM can be used to support higher education institutions in all aspects of their processes and services, such as improving the research process, the curriculum development process, student and alumni services, administration services, and strategic planning activities (Kidwell, Vander Linde, & Johnson, 2000).

The above paragraphs imply the following gaps in the literature pertaining to induction programmes. Firstly, while most studies examine on factors or antecedents of successful induction programmes in an education setting, limited research has been done in relation to actual implementation of knowledge-based systems to support induction efforts. Although the work of Laing, Robinson, and Johnston (2005) somewhat imply that use of formal technology driven systems can support induction efforts, understanding such issues from an instantiation of a formal Knowledge Management System (KMS) to support induction efforts does not exist. Secondly, and more vitally, this study seeks to extend the body of knowledge in relation to KSM-education induction process, in the Indonesian context—which in our view remains unexplored.

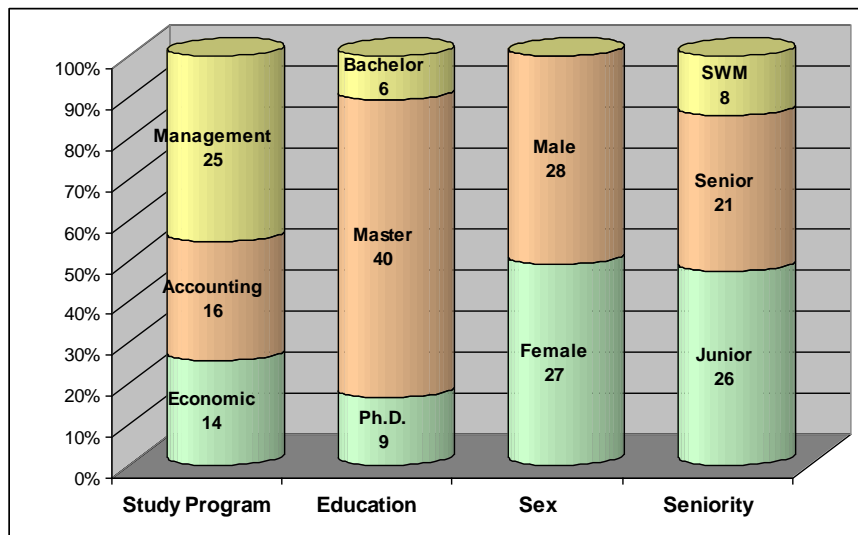
4. Methodology

A four stage action research method was used in this study. The four stages are: Problem diagnosis, Action planning, Action taking and Evaluation. The specific activities under each stage are presented in the sections that follow. The reason that this method was considered suitable to conduct a research was that it enables the achievement of action and understanding at the same time, and the researcher having active participation in the project (Davison, Martinsons, & Kock, 2004). Although some researchers (Lincoln & Guba, 1985; Schwandt, 1989) perceive qualitative and quantitative approaches as incompatible, some researchers believe that qualitative and quantitative research can be effectively combined in the same research project (Corbin & Strauss, 1990; Patton, 1990). Both qualitative and quantitative approaches are adopted in the last action research phase, which is the evaluation phase. Given this backdrop, this research aims to answer the following questions:

- Can a KMS reduce the length of the induction time?
- Can a KMS improve competency during the induction programme?
- Does KMS change the learning culture, in relation to communication and collaboration?
- Does KMS support induction programme more effectively compared to the “manual” induction programme?

4.1. Case setting

This research was done at the faculty of Economics. The faculty of economics was established in 1960 and is the largest faculty with 4,000 students and 65 academic staff. It runs three programmes, namely (1) management, (2) accounting and (3) economic and development studies. The target population in this research is 65 lecturers in this faculty. The sample used comprised 55 lecturers as 4 lecturers were on study leave, 5 lecturers were part-time lecturers, and 1 lecturer was on leave. The distribution of the population is shown in Fig. 1. Data collected in this study were through personal interviews and written questionnaires.



Note: SWM – Senior with mentoring experience

Fig. 1. Distribution of population

Information was also obtained from document review and analysis. Examples of such documents are UKSW’s internal Standard Operating Procedure, Human Resource manual, and review of relevant policy and manuals stored in the organization’s Intranet. Observation and participation in the lecturers’ meeting was another source of salient information. The subsections that follow discuss the steps used in the action research process.

4.2. Problem diagnosis

The researchers developed an interview with twelve questions based on the work of McNally (2002) on induction framework. The results of the interviews are summarized as follows. When asked about the current Induction Programme, the respondents mentioned the following:

- There was no standardization for the Induction Programme
- Only 65% joined the induction program, with different length of the program (less than 1 week, 1 month, and 3 months).

From the interviews, all lecturers agree that Induction Program is very important in relation to quality teaching, and called for a more standard process in doing so. In terms of user satisfaction of the existing induction program, 70% (n=55) were not satisfied with the current induction programme. In terms of ease of documentation and access to induction material, 89% (n=55) mentioned that the information is not well documented, and 75% (n=55) mentioned that it was not easy to access information pertaining to induction at the university.

When asked about ease of communicating with the community in relation to the induction process, 60% (n=55) mentioned that the communication is not well between mentor and mentee. 75% (n=55) mentioned that the communication between the new lecturers with their community could be improved. When the lecturers are asked about the role of Information Technology (IT), 80% felt that current process was not supported by IT, albeit all respondents believed that IT can support the induction programme much better. Overall, the lecturers remarked that an IT based system could improve the programme in the following manner:

- Improve classroom organization and management (23.03%)
- Enhance curriculum development (21.21%), and
- Provide access to theory on teaching and learning (18.79%)

Given the above, the research team embarked on a project to implement a web-based IT system, namely an instantiation of a KMS to support the induction programme at the university.

4.3. Action planning

Action planning involves collaboration between the researcher and users to consider alternatives to remedy the problem (Kohli & Kettinger, 2004). The alternatives are generated and guided by theory indicating a desired future state as well as the means of change that would achieve such state (Baskerville & Wood-Harper, 1996). The respondents during action planning were the lecturers who participated during the problem diagnosis phase of the project. The objective of this stage was to ascertain if the lecturers at the faculty of Economics recognized the existence of the issues inherent in the induction programme, understood that KMS can help them in solving these issues, and find out whether UKSW has the infrastructure and supporting environment needed to implement the KMS. The KM Success Model (Jennex & Olfman, 2003) was used to facilitate the instrument development process and used to map the KM theory. The findings in this phase showed that the majority of the lecturers felt that the induction process can be improved overall and also there was a role for KM systems in assisting the process. This led the research team to move to the third phase of the action research cycle, namely intervention.

4.4. Action taking

Action taking or intervention refers to the implementation of the planned action. The system was developed by following the Systems Development Life Cycle [SDLC] (also known as the waterfall model). The to-be-system has to cater the need to be able to search and retrieve information at the desired time, as indicated from the problem diagnosis phase. Respondents felt that they needed a system that enabled them to capture and then share knowledge especially knowledge that supports the induction programme.

The proposed system therefore was aimed at addressing the following goals with regards to the induction programme at the university:

- Enable lecturers to locate expertise (other colleagues) in a given subject domain
- Access to academic policy documentation
- Create a common platform for new and existing lecturers to share teaching and learning material
- Enable lecturers to share ideas, information and knowledge with each other – particularly from the experienced lecturers to the new entrants.

The detailed functions of the system are summarized in Table 1.

Table 1
KMS features

KMS Features	Platform Technology	Components in KMS
Document Management	Document Management & Workflow	a. Materials to support the induction programme b. Materials to support teaching & learning / AKTA IV
Expert Locator	Collaboration & Communication	a. Lecturers database categorized by their expertise, by subject(s) that they taught.
Knowledge-base	Document Management & Workflow	a. Decree issued by the Foundation/Yayasan, Rectorate, and Faculty of Economics b. Standardized Procedures c. Minutes of Meeting
Templates & Forms	Collaboration & Communication	a. Standardized template ready to be used b. Standardized forms
Linkages to internal & external sites	Informal Knowledge Networks	a. Link to UKSW website b. Link to Ministry of Education website c. Link to Internal IS application d. Link to Partners of UKSW
Calendar of Events	Collaboration & Communication	a. Calendar of Event that contains both general and department specific events b. News / “Announcement-board” about the agenda to be conducted or done
Knowledge sharing	Informal Knowledge Networks	a. Collaborative work that support the lecturers to work on a project b. Forum and Blog
Searching Tools	Search & Retrieval	a. Google Search

4.5. Evaluation

The evaluation phase examines whether the theorised effects were realized and if these effects were able to address the problems identified. After testing the system, it was

rolled out. A training session on how to use the system was conducted the following week, and post training evaluation of the system was then done in two phases. The first phase of the evaluation was done immediately after the training. The research team interview fifteen participants who had completed the training session, and were selected based on the following criteria:

- The participants were very active during the training
- Familiarity with the induction process
- Coordinator of subject matter expert
- Willingness to participate in the interview process

The researcher used open-ended questions based on the work of Raman (2006). The questions were categorized into three groups; (1) general feedback / overall impression of the system, (2) system specific questions, and (3) extent of goal achievement. The interview was recorded and later transcribed. Following are some of the responses that were received.

One senior respondent commented as follow:

I am glad that I can make use of this system that greatly helps the teaching staff and the organization in general. The department should have implemented this system long time ago. I expect that the quality of teaching can be improved by learning the induction content available in the system and can help the lecturers to better prepare for their teaching tasks.

Another respondent said,

I am very enthusiastic about the system. It helps me access information very easily.

Most lecturers felt that this system could definitely be used in the induction programme. Some recorded comments are as follow:

It can definitely help the induction programme because of the many functions designed to improve the program.

Yes, I think the system can help the induction program that is currently done in an informal and unstructured manner.

When asked about what aspects of the induction programme could benefit from the system, the following statements were examples of the responses received.

Information is distributed quickly. All lecturers will know the activities and will be updated on the induction program and other faculty-related information.

It improves competencies of lecturers in pedagogy that they need very much, especially those that have no teaching experience.

Lecturers were very positive when the question on whether the system can improve the communication between lecturers was asked. Most of them believed that the communication can be improved by using this system. Management support and enforcement has to be in place in order for the system to be fully utilised. A clear reward scheme has to be defined. The following are the recorded comments:

If most of the faculty of Economics staff are willing to use this facility, the communication among management and staff will be improved and be more effective.

Another commented as follow:

It can definitely improve because the system enables better and well-documented communication among lecturers. New lecturers can learn much from senior lecturers by making use of the “lesson-learnt” facility.

4.6. Evaluation-phase 2

The second phase of the evaluation process was done six months after deployment. The respondents were separated into two different groups. Group one was defined as user of “manual induction programme”. It consisted of 25 lecturers that were identified in the preliminary survey (45% of N=55). Group two was defined as user of “KMS supported induction programme.” It consisted of 30 lecturers (55% of N=55). A questionnaire was developed using the User Satisfaction with KMS framework (USKMS) proposed by Ong and Lai (2007) and combined with the KM Success Model of Jennex and Olfman (2003), to examine if the system was indeed helpful for the induction programme.

A t-test was then used to assess whether the mean of group who experienced “manual induction” was statistically different from the other group who experienced “the induction with KMS support”. The t-test was used to assess whether the effectiveness, perceived benefits and net benefits of one group is statistically different compared to the other group. The test was developed to prove the hypothesis for the following variables:

- a. Effectiveness;
- b. Perceived Benefit;
- c. Improving Competencies; and
- d. Shortening Learning Time

Each variable above is being proved using the following hypothesis;

H_0 = The average mean of the variables (a-d listed above) for the “manual induction” group is statistically higher than the average mean for the “KMS supported” group. .

H_1 = The average mean of the variables (a-d listed above) for the “manual induction” group is statistically lower than the average mean for the “KMS supported” group.

The results of each variable as shown in Fig. 2 to Fig. 5 that H_0 is not accepted, hence it is proved that KMS supported induction programme is more effective.

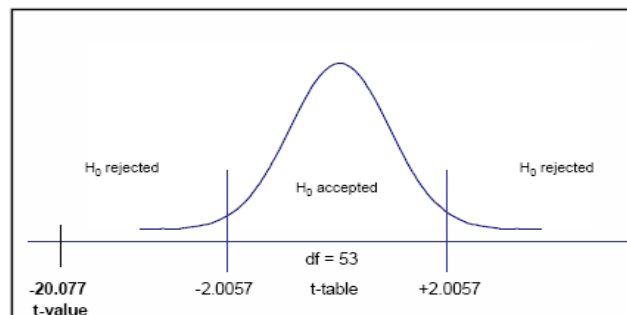


Fig. 2. T-test for variable effectiveness

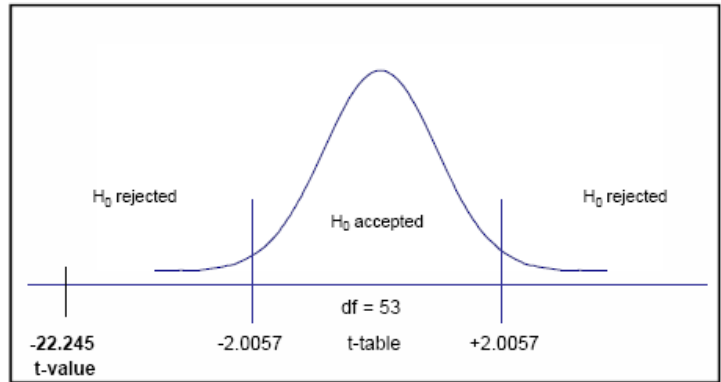


Fig. 3. T-test for variable perceived benefits

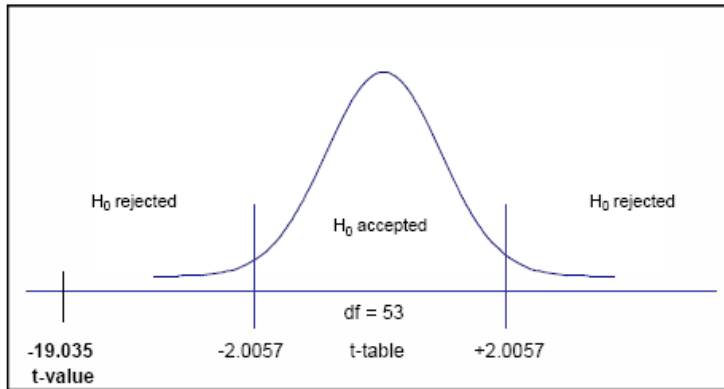


Fig. 4. T-test for improving competencies

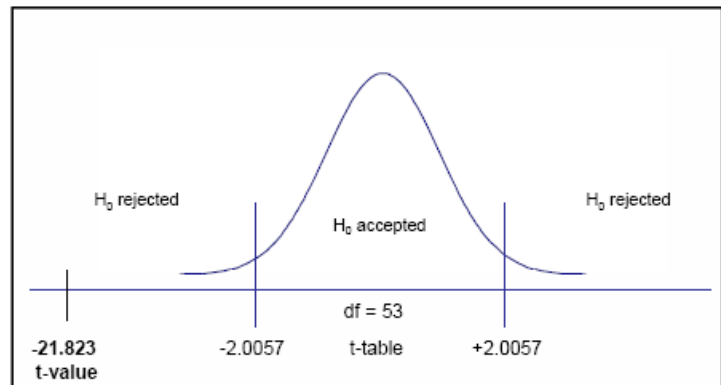


Fig. 5. T-test for shortening learning time

In summary, the findings from the t-test suggest that the KMS implemented to support the induction programme, was perceived as being beneficial by the academic community in the university. The result of the second phase of the evaluation process echoes the findings from the qualitative interviews as reported in phase one of the evaluation process. The second phase of the evaluation process also had several

statements that required the respondents to think about the critical success factors that would ensure effective use of the KMS for induction moving on. Respondents in this regard, mentioned that to ensure the successful implementation of the systems, following factors should be taken into consideration:

- Training is very important, especially to familiarize the KMS and the features provided;
- Content of the system should be completed and should be accessible and searchable; and
- The system should be kept simple and user friendly.

5. Discussion and lessons learned

The above phases of the action research initiative suggest that the KM system implemented at the university has led to positive outcomes in the context of improving the induction programme. However, implementation of any form of IT system to support university level induction programmes, are subject to several critical success factors. Jennex and Zakharova (2005) identified at least 12 critical success factors (CSFs) that contributes to the successful implementation of a system, but no rank / hierarchy order is identified for the CSFs. These include among others factors such as: (i) the existence of top management support, (ii) a culture that promotes use of technology for induction purposes (iii) ease of access to the system (iv) overall strategy of blending KM ideas to an induction programme and (v) the extent of training provided. These factors are again consistent with our findings as reported in the preceding section.

6. Conclusion

Higher education institutions are in the knowledge business since they are involved in knowledge creation, dissemination and learning. A good institution of higher education should ensure that every new lecturer is given proper induction, allowing them to very quickly adapt to the teaching and learning environment. In this regard, structured induction programmes are indeed necessary. This paper suggests that an induction programme (for a higher institution of education) can benefit through the support of a KM system. Our findings suggest that the participants of the action research project, find that the KM system that was built and implemented at UKSW, is indeed beneficial. Nevertheless, our study also suggests that organisations that want to implement KMS to support induction programmes should take the following factors into consideration: the existence of top management support, a culture that supports use of technology, training, and system accessibility.

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