CHAPTER 7

CONCLUSION

7.1 Introduction

This chapter concludes the main findings of this research and presents a discussion of the results for each research question. It draws conclusion from the results, discusses issues and explores significance of the research and the limitations. Some suggestions are also made as possible extensions of this study. Finally, conclusions are made to wrap up the study.

7.2 Overview of the research

Knowledge Management (KM) is considered key to achieve opportunities for better decision-making and competitive advantages for organizations. Academic sector have significant opportunities to apply KM practices to their university's mission. Applying KM concepts has led Higher Education Institutions (HEIs) to explore how KM might be applied in a HEIs setting.

The research was conducted in the Faculty of Computer Science and Information Technology (FCSIT) at a research-intensive University in Malaysia, referred to in this study as the HEIs. This study explored the uses of KM in higher education by developing and utilizing a KM tool using WST for curriculum review process in HEIs to support employability among fresh graduates. There are four groups of people involve in this case study, viz the employer (referred to in this thesis as the Industry), HEIs, current students, graduated students and administrator.

The research began with identifying the objectives of the research. The broad research question is 'How KM as a tool assist Higher Education Institutions in

curriculum review process to support employability?' Followed by that, a literature review was carried out to develop an understanding of KM and its role in HEIs, as well as a study on the ICT programme instruction, current curriculum review process and market needs. There is also a review on the stakeholders' perception of the employability of ICT graduates, gather the requirements of KMS that could support the employability of ICT graduates and the improvement of curriculum review process. All the information gathered were used during the process of designing and developing the KMS that could support employability of ICT graduates and the improvement of curriculum review process.

A number of surveys to different group of people were carried out to examine the importance of KM in HEIs, the importance of HEIs-Industry collaboration, investigate the current HEIs curriculum and market needs, causes of unemployment among ICT graduates, capture the requirements of KMS that can support the employability of ICT graduates and the importance of KM tool in HEIs to improve curriculum to increase employment level among fresh graduates. Following the literature review is the data collection; data findings and data analysis process were carried out. This research task was divided into six stages:

i.   Collect the data for the case study. To realize the objectives, the researcher employed a mixed methods research design to answer the research questions, which included questionnaires, interviews and document review.

ii. A number of surveys to examine the importance of KM in HEIs, the importance of HEIs-industry collaboration, investigate the current HEIs curriculum and market needs, causes of unemployment among ICT graduates; capture the requirements of KMS that can support the employability of ICT graduates and

the improvement of curriculum review process and the importance of KM tool in HEIs to improve curriculum to increase employment level among fresh graduates.

iii. Series of interviews to understand further on KM in HEIs, current curriculum process, the causes of unemployment among graduates and the proposed elements to be included in the KM tool.

iv. Document analysis of the current curriculum design to further understand the current curriculum settings.

v. Develop diagram for better understanding. A conceptual framework was designed to develop the KM tool.

vi. Conclude the research findings. This research concluded by updating the work system theory. While the results revealed strong support for KM usage at HEIs in curriculum review process, there was also recognition of the weakness of specific KM performance results in some aspects of the KM program, especially in the area that required knowledge sharing among different group of people.

7.3   Answering the Research Questions

The purpose of this research was to support the curriculum review process using Knowledge Management (KM) tool. The ultimate goal of this study is to produce competent graduates and support their employability in the job market. The KM tool proposed in this study benefits the students, HEIs and employers. The study is based on Work System Theory (WST), as discussed in section 2.12 and section 5.5.7 to realize the objectives of the study:

1. To elicit higher education stakeholders understanding of knowledge management practices, their feedback of ICT programme instruction and curriculum review process.

2. To explore the higher education stakeholders perception of the employability of ICT graduates.

3. To capture the requirements of knowledge management system that can support the employability of ICT graduates and the improvement of curriculum review process.

4. To design and develop knowledge management system that can support the employability of ICT graduates and the improvement of curriculum review process.

Four research questions were posed in order to meet the four research objectives. The research questions within the context of the four objectives outline the basis for the chapter's conclusions as discussed in this chapter. The research questions presented in the following sections are addressed in each context exploring implications and application of the study.

7.3.1 How Knowledge Management practices influences the ICT programme instruction and curriculum review process?

The purpose of Research Question 1 was to determine the importance of KM approach in the ICT programme instruction and curriculum review process. In order to get a better picture of how KM practices influences the HEIs, the study identified the importance of HEIs and industry collaboration. As shown in the WST conceptual framework, the system helps to gather information on the curriculum, skills, knowledge and also on job vacancies.

Besides that, some of the major activities performed in the system with KM are to support the HEI to create employment based curriculum which involve the employer, HEIs and students by developing a strong relationship between HEIs and employer. These supported the significant role of KM approach in HEIs. Steyn (2004) argued that, KM could improve faculty development efforts, especially for new faculty members, improve administrative services related to teaching and learning with technology, improve responsiveness by monitoring and lessons learnt from the experiences of colleagues.

Petrides & Nodine (2003) added that, KM in HEI could help the institution in reviewing, revising, and effecting stronger curriculum development processes, interdepartmental assessments, department portfolios or program reviews. Besides that, KM could improve the overall curriculum enhancement process (Hawkins, 2006). Applying KM to HEI is not an easy task. Each HEI is unique in its scope, size, and priorities, and is a complex institution that balances both providing superior education and research opportunities, while simultaneously operating as an efficient and effective business in a competitive market (Cranfield & Taylor, 2008).

There is a need for KM technology and systems to bridge the gap between present and prior contexts of knowledge creation, sharing, or application. KM activities which are created for encouraging KM processes must be in agreement with the organization's goals, social processes, organization behavior, and organization strategy. The researcher also added that KM in HEI could helps in the growth of learner-centered knowledge and action learning, growth in work-related learning, movement from closed to open-knowledge systems and extensive development in computer-based communication technologies and most important, it could improve the student's competency. If KM approach is properly developed within HEI, it would improve the HEI performance and productivity especially the curriculum review process.

Besides that, in order to answer how KM practices influences the HEIs in curriculum review process, it also delved the issues in the current HEIs curriculum review process. This gave a better understanding on the existing process of curriculum review process before a new curriculum review process is introduced using KM tool. Study results demonstrate that the majority of HEIs practitioners, students and employers rated all statements representing the reasons for using KM practices as critical or important. Mean scores showed that the highest ranked reasons to use KM practices included helping in reviewing, revising and effecting stronger curriculum development processes, interdepartmental assessments, department portfolios or program reviews. Besides that, it also helps HEIs to support the educational curriculum towards a more human and humane oriented strategies. Finally, it also helps the HEIs to integrate knowledge within and outside an organization, improving the competitive advantage of an organization, and increasing the competencies in students to satisfy the industry's need in the job market.

The literature study suggested that in general, the creation, accumulation, sharing, and integration of knowledge help an organization to support ongoing operations and increase organizational performance (Wu & Wang, 2006). The results of this research add to the literature by suggesting that HEIs practitioners use KM practices to support the curriculum review process by helping HEIs to share and integrate knowledge within and outside the organization. Nonaka (1994) has researched this type of activity and described its importance in encouraging frequent dialogue and communication across the organization. While knowledge itself cannot be measured, it can be captured and converted into measurable assets. In this study, the HEIs member's knowledge and employers' knowledge could be captured and converted into measurable assets with aid of KM tool.

Followed by that, the study identified the importance of HEIs-industry collaboration in enhancing the curriculum review process. The study results demonstrate that majority of current students and graduated students supported the collaboration between HEIs-industry will help HEIs to enrich their teaching resources and curriculum. This is further supported by majority of the employers that collaboration between HEIs and industry will help to enhance the curriculum review process. The results of this research add to the literature by suggesting that though a proper collaboration between HEIs and industry, it could support HEIs to enhance the curriculum review process. Henry & Riccardo (2010) argued that HEI-industry collaboration has been adopted by more universities all over the world and has achieved success to some degree. Liefner & Schiller (2008) argued that since there was a valuable improvement of teaching through HEI-industry collaboration, universities should cooperate with more industry.

The findings highlight many benefits of HEIs and industry collaboration. It will certainly help HEIs to support its curriculum review process, which helps the HEI to generate graduates with all the importance competencies which is required by the employers in the job market. Although there are many advantages of HEIs-industry collaboration, there are also a number of obstacles which avoid HEIs to collaborate with industry such as resistance to change, aged academician who uses the old teaching method, cultural gap, low HEIs attitude to innovation, general tendency to isolation, and partial adequate or non adequate facilities. The HEIs-industry collaboration will be more successful if HEIs are informed the benefits clearly.

The next issue that the study discussed was on the issues in the current HEIs curriculum review process. According to the faculty members, majority of the respondents argued that, in the current curriculum enhancement process, the HEIs capture and uses knowledge obtained from other HEIs to review or enhance the current curriculum review process. So, in order to enhance the curriculum to suit the employers'

need, the HEIs need to give more consideration on employers. This is supported by Quek (2005) that affective curriculum could prepare graduates to control their potential to meet skills required by employers in the job market.

7.3.2 What are the stakeholders' perceptions of the employability of ICT graduates?

The purpose of Research Question 2 was to determine the stakeholders' perception of the employability of ICT graduates and the causes of unemployment among ICT graduates. Based on the WST conceptual framework, a thorough study was also carried out in the process and activities in the existing curriculum setting in the HEIs in order to identify the causes of unemployment among ICT graduates. Some of the process and activities discussed are information processing, communication, sense-making, thinking, decision making, curriculum review and physical action.

Based on the findings, most of the current students argued that lack of interpersonal skills are the most contributing factor and capacity to communicate well in English is the least contributing factor for unemployment. On the other hand, for the graduated students, lack of ICT proficiency is the most contributing factor and lack of experience is the least contributing factor towards unemployment. For the employers, lack of ICT proficiency and capacity to communicate well in English contribute the most contributing factor and experience contributes the least for unemployment among fresh graduates.

This is supported with the survey conducted by a public university in Malaysia in year 2009 for 279 employers that, graduates from local universities lack competency in their area of specialization, have a poor proficiency in English, and lack basic communication skills. The area of low proficiency of English and poor communication skills generally tops the list of weaknesses among local graduates. Local graduates are

also reported to lack leadership and interpersonal skills. The employers also claimed that, the development of all these soft skills are essential to make them employment-ready as the lack of soft skills has been cited as one of the key factors for unemployment among undergraduates in Malaysia. Holmes, Alison & Miller (2000) argued that employers are now looking for graduate with not only academic capabilities, but also developed the key skills that will enable a successful and expeditious transition from education into employment.

Khoo (2001) mentioned that, there were mismatch in graduates' skills and the employer's expectation due to lack of information on the transition between higher education institutions and job market.

HEIs play a very important role in producing good workforce with required competencies for industry while industry makes full use of these products to become more competitive in the local and foreign market. From this study it is clear that the current students and graduated students are not satisfied with the current teaching and learning. As there are a number of factors that causes unemployment among the graduates in the job market, there should be an immediate action taken by the HEIs. So, HEIs need to enhance the current curriculum review process to supply competent graduates to satisfy the employers' need in the job market.

7.3.3 How knowledge management system could support the employability of ICT graduates and the improvement of curriculum review process?

The purpose of Research Question 3 was to capture the requirements of knowledge management system that could support the employability of ICT graduates and the improvement of curriculum review process. Based on the findings, these could be achieved by developing a stronger relationship between industry, HEIs and students.

This could help HEIs to improve the curriculum review process and support the employability.

KM could encourage a knowledge-creation process and utilize that knowledge for curriculum improvement. KM could also improve the quality of curriculum and programmes and leveraging best practices and monitoring outcomes. Apart from that, KM could also improve the speed of curriculum revision and updating. By adapting KM in HEIs, it could save the HEIs time and effort to get knowledge on the skills and knowledge that is required in the job market. KMs in HEI could help in reviewing, revising, and effecting stronger curriculum development processes. This could improve the decision making on curriculum. Based on the finding, it was also highlighted that, KM could support the interdisciplinary curriculum design and development facilitated by moving across boundaries

A case study conducted by the National Research Institute for Higher Education found that generally employers require their employees to have good communication skills with personal attributes and knowledge in ICT (IPPTN, 2007). Woo (2006) argued Malaysian graduates lack the basic skills and knowledge that they were supposedly trained in their HEI. The Minister of Higher Education (2011) said that most graduates do not interact actively when working in a team and are less committed to their work. The development of all these soft skills are essential to make them employment-ready as the lack of soft skills has been cited as one of the key factors for unemployment among undergraduates in Malaysia.

John (2000) argued that, learning is maximized if the context for learning resembles the real-life context in which the to-be-learned material will be used. Ted (2005) explains that, by placing course content in the context of a real-world scenario helps a student remember specific details of a lesson because the context gives the information meaning. Dearing (1997) added with the fact that introducing real-life work

experiences into the HEI curriculum will improve their labour market prospects. This is supported with the fact that, a number of Malaysian universities are not producing "work ready" graduates because the country's education system is too exam-oriented.

In recent years, many companies do not trust new graduates, who may have learned 'mountains of' theories but lack of practical abilities. Purcell, Pitcher & Simm (1999) said that the importance of work experience in enabling graduates to obtain appropriate employment. Louise (2009) discovered that the working experience during their studies definitely help them to secure a job after their studies. The findings shows, by capturing the requirements of KMS in HEI, it could support the employability of ICT graduates and the improvement of curriculum review process.

7.3.4 How well does the KM tool support HEIs to support the curriculum review process?

The purpose of research question 4 was to determine how well the KM tool in HEIs support employability rate among the graduates and the improvement of curriculum review process. Based on the finding, data were collected based on the satisfaction and functionality of the proposed KM Tool. The respondents were also asked on the general comments about the proposed KM tool with open-ended questions in order to gain in-depth understanding of KM tool to support the HEI curriculum review process.

HEI cannot be a standalone system in today's market as it cannot handle the new expectations and demands. HEI need to be a networked system which connects to the environment. It is the task of HEI to bring the new requirements of ICT industry demands to their students. HEI plays an important role in the formation of knowledge, economy and democratic society (Kazi, et al. 2010). Universities are encouraged to pay greater attention to improve the teaching and support the students' learning by collaborating with industry.

In a number of Malaysian universities, their decisions on curriculum design strongly depend from internal sources. This will drive HEI to produce outdated curriculum. To prepare the next generation of Malaysian professionals, specific actions need to be done on HEI in delivering appropriate, market-driven and high quality courses. As discussed by Alter (2002), WST is helpful to explain the chosen KM system, identify the problems and opportunities in the current curriculum review process, describe the possible changes that could be made for a better curriculum review process using KM approach in HEI, and outline the possible impacts of the proposed KM tool in the HEI.

Based on the system evaluation, the proposed KM tool in this study is well accepted by all the three groups of people, viz, the students, HEIs and employers. The functionality of the majority of the KM tool features were rated positive by the respondents. With the aid of KM tool, it could help HEIs to support the curriculum review process. As shown in the conceptual framework, by improving the curriculum review process, it enriched the curriculum review process and enhanced the student's skills and knowledge. So, the HEIs could successfully produce competent graduates who could satisfy the employer's need. As a result, it could support the employability rate among the ICT graduates in HEIs.

7.4   Significance of the Study

The study has shown the importance of KM approach in the HEIs in supporting the marketability of ICT graduates and the improvement of curriculum review process using WST. The earlier KM approach adoption research has mostly studied on teaching and learning in HEIs. The implication of this study can be divided into two categories, viz (i) theoretical contributions and (ii) practical contributions. The existing literatures on KM in HEIs discusses on how the data can be managed within the faculty or university to

benefit the user. Ponzi & Koenig (2002) suggested that KM is in the process of establishing itself as a new aspect of management. Davenport & Prusak's (2000) view on knowledge and KM, who presents knowledge as deriving from information as information derives from data. Davenport further contends that for information to be transformed into Knowledge it requires human intervention hence humans apply their skills, ability, experience, know-how, values and culture via some transformation (comparison, communication, connections, and consequences) to change the information into knowledge.

In terms of theoretical contributions, based on the previous adoption, the studies have focused mainly in technologies on how knowledge within university could be managed with KM, while there is a lack of study on the importance of KM to improve the curriculum in HEIs. In this study, instead of specifying that knowledge need to be managed, it discusses on how knowledge could be communicated and managed among the employers, faculty and students to improve the curriculum and overall employment rate.

Besides that, this study also enhances the WST model to fit in curriculum review process in HEI. It showed the participants, information, technology, process and activities; product and services; customers, outcomes and the ultimate goal of the study. The WST is a broadly applicable set of ideas that use the concept of "work system" as the focal point for understanding, analyzing, and improving systems in organizations, whether or not IT is involved. The detail work system theory is discussed in Chapter 2.

Regarding practical contributions, this study introduce a prototype of KM tool in FCSIT. In this system, the employer should be able to post their vacancies where the employer would be able to state the skill and knowledge required in the current market. Besides that the employers also able to view the students resume and invite them for an interview.

Besides that, the university should be able to see the types of skills required in the job market and compare it with their current curriculum in a form of report and statistics. By doing so, the faculty should be able to compare the skills required in the job market and the skills taught in their HEIs. These will help them to improve their curriculum quality. In addition to that, the system also able to propose the action to be taken on the current curriculum processes. For the students, they are able to view the vacancies and post their resume. By using this KM, the HEIs could improve the quality of curriculum review process, which in turn improves the employability among the fresh graduates by satisfying the employers' need.

7.5 Further Studies

Future studies should expand on this present study by examining the use of KM initiatives in more HEIs. FCSIT was a good case study for beginning an examination of how KM can be used in HEIs to enhance the curriculum review process to ensure that the curriculum carried out in HEIs are satisfying the employers' needs by producing competent graduates.

Additionally, it would seem important to look more deeply into how the quality is measured as an outcome of the curriculum review process through KM approach. Besides that, there should be a study to survey all the stakeholders at a university that has implemented KM on their perception of the advantages and disadvantages of KM. Such a study would provide KM researchers with rich data about KM functionality in HEIs. Finally, a longitudinal survey which is able to show changes that occur through a longer period of time will be suitable for a stage-based study.

7.6   Summary

HEI is the backbone of any society. It is the quality of HEIs that decides the quality of human resources in a country. In 21st centruty, HEIs is seen as a complex system facilitating teaching, research, extension and internatiol coorperation and understanding. Knowledge is fluid and requires formal and informal processes and structures that support its creation, acquisition, distribution, and use throughout an organization to support competitive advantage and improve organizational performance (Davenport, De Leong & Beers, 1998; Ramesh & Sengupta, 1995). As Haney & Driggers (2010) have discussed, KM has the potential to increase productivity, decrease costs, and raise the skills and competencies of employees. It can be applied at the individual, team, and organizational levels. HEIs practitioners need a deep understanding of KM practices and strategies so that they are prepared to make meaningful recommendations that result in improved performance. This study has provided the possibility of using KM approach to enhance the curriculum review process in HEIs.