CHALLENGES IN UNIVERSITY-INDUSTRY COLLABORATION AND RESEARCH PRODUCT COMMERCIALIZATION IN A SELECTED HIGHER LEARNING INSTITUTION: LESSONS FOR TEACHING AND LEARNING

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ABSTRACT

Purpose: The critical issues among universities and industries are having low engagement. Other important issue includes researchers battling with teaching and learning workload issues. Besides, university researchers’ attitude towards the quality of academic work was another issue. Methodology: This study utilizes the qualitative research approach using the in-depth interview conducted through face-to-face. Seven respondents were selected consisting of those who are directly involved and have knowledge on issues regarding university and industry collaboration, as well as research product commercialization. Findings: The findings of the study found issues related to the researcher’s creativity to develop research product, recognition and respect for researchers and products, attitude and mindset as contributing factors that affect university and industry collaboration. These in turn reflects the researcher’s issue such as academic workload and the void of industrial factor in day to day teaching and learning.

Keywords: University, Industry, Teaching and Learning, Collaboration, Research

INTRODUCTION

The Importance of Research and Development (R&D) and Teaching and Learning

R&D activities in higher education institutions have a key role in shaping the status, the quality of institutions, the contribution which they contributes to economic and social development (Hazelkorn, 2008). To enhance R&D, greater compliance to global standards, collaboration between stakeholders and sustainable manufacturing practices is a crucial step towards achieving a high income nation (News Desk, 2015). R&D is a major factor towards cultivating knowledge and innovation (Marzuki, 2005). Knowledge has been recognized as the important source of growth in the global economy (Cavusoglu, 2016; Marzuki, 2005). Knowledge Economy (KE) also means that organizations and people create, disseminate, and use knowledge more effectively for greater economic and social development (Ogunsola, 2008). Furthermore, developing countries can benefit from knowledge based economy throughout the global development process (Ogunsola, 2008). Knowledge based economy leads to globalization and wealth creation. At the core of the issue is the importance of relating industrial experience and networking with teaching and learning in classroom since the end objective is to produce students who comprehends the need and demand of the industries.
The Impact of Teaching and Learning to Researchers

In every university, teaching and learning are the core aspects of the business Ramli (2015). A major part of these aspects are researches, which applies everything gained from teaching and learning to produce research products. Research products must in turn meet the demand of the industries. If products do not meet demands and specifications from the industries, the product may fail to attract collaborators for its production. However, due to the extensive requirements of some research, some researchers face issues balancing their time to learn, teach and conduct their research.

In most cases, when there’s inadequate time to balance between learning and conducting their research, researchers tend to put more emphasis on their research, rather than their studies Ramly (2015). In a study conducted by Suriyanti and Yaacob (2016), the findings revealed that the teachers used limited strategies in teaching writing due to their lack of knowledge and understanding of the writing approaches. Moreover, the culture of getting things right from the first try has been instilled in Malaysian students from a very young age. As indicated by Suriyanti and Yaacob (2016), writing teachers were mostly concerned with the final product of writing, which focused on the coherent and error-free text produced by the students. As a result, students became passive and dependent on the teachers.

Researchers are bound to a short time frame to complete their research (Aziz et al., 2013). Some research can be completed in a short time span; however, some require more time. In cases of medical and engineering, research can take from 5 to 10 years depending on the depth of the study and the product being produced. It is better if researchers distinguish between teaching, learning and doing research. The time spent to obtain the desired results is invaluable and irreplaceable (Aziz et al., 2012).

When a product is produced by a university’s researcher, it doesn’t get much exposure (Khademi et al., 2015). In this aspect, researchers need industry assistance. Industry player will provide ideas on how to produce innovative products and get recognized at its early stage by interested industry players. This process will help researcher to learn and upgrade their research skills. It is also the researcher’s responsibility to ensure their works productively and to ensure the project doesn’t get extended unnecessarily.

METHODOLOGY

A qualitative research has been developed in order to allow researchers to study social and cultural phenomena in social science (Myers and Avison, 2002). In this regard, researcher has adopted qualitative research method and undergoes exploratory investigations in order to identify the factors affecting collaboration and commercialization among researchers.

Researcher will examines the factors affecting university and industry collaboration and research product commercialization among researchers in the selected higher learning institution. The decision to use a particular case as an example as long as the case is unique and required a few interviews to demonstrate the phenomenon (Brannen, 2012). A case study research is focusing on ‘how’ and ‘why’ questions (Myers, 2009) and this is significant for descriptive and exploratory studies (Mouton, 2001). A case study can focus on defining processes, person or group behavior in its natural environment and the order of occasions in which the behavior occurs (Stake, 2005). Based on the above rationalization, instrumental case study approach will be utilized in accordance to the qualitative interpretive approach.

The interview questions construct to answer the research questions. The samples are selected through purposive sampling. The seven respondents were selected based on their achievements in assisting university and industry collaboration. Besides, they are considered as key person in their area of expertise. Then, researcher will create a code according to open coding. Researcher will paraphrase and summarized each piece of information using an in-depth review of the transcript to ensure close contact and familiarity with the information contained (Denzin and Lincoln, 2010). Then, researcher will create tentative sub-category. After that, the researcher compared the category across the sample identified in order to identify...
similarities and differences in the themes (Denzin and Lincoln, 2010). Axial coding consists of identifying relationship among the open codes.

Researcher identified themes within sub-samples from the respondents (Bowen, 2008). and selective coding; the researcher will choose of one category as the core concept, around which the other categories from the Axial Coding phase are grouped for the purpose of explaining the phenomena which has been observed (Bowen, 2008). Followed by 3 step of coding, the main theme will be extract. Finally, interpreting results for this study and the discussion on the sample will be explain.

Face-to-face interview has implemented in order to ensure rich information gained from the respondents. The background related questions were designed to explore respondent’s background, area of expertise, and job scope challenges and troubleshooting by way of an introduction to the interview setting.

The second set guiding question intends to explore the factors affecting university and industry collaboration among researchers. This part gives a picture of what are the hindrances for researchers during collaboration? Third set guiding question relates to the factors affecting research product commercialization among researchers. The interview respondents will tell about their difficulty to deal with many challenges during research product commercialization. The fourth set of guiding question will provide suggestion for effective university and industry collaboration and research product commercialization. In this part, interview respondent will provide answer on how to encourage researchers to achieve successful university and industry collaboration and research product collaboration.

The interview data was transcribed utilizing the tape recordings and accompanying written notes (Joffe and Yardley, 2004; Boyatzis, 1998). Next, researcher will develop the thematic code using Atlas.ti 7 software. This study uses raw data driven approach to develop the thematic code where the researcher worked directly with the raw information gathered from the interviews’ participants involved (Salleh & Omar, 2013).

RESULTS
The researcher has observed seven major themes through data collection. Factors of collaboration including researcher’s creativity to develop research product, product marketability and recognition and respect for researchers and products.

Researcher’s Creativity to Develop Research Product
In the context of teaching and learning, it was found that many researchers fail to integrate the needs and demands of the industries during lessons in class. Discussions are often not related to industrial needs rather more towards the enhancement of theoretical implications, not practical usage. Although there may be traces of creativity in the products, the end products often fail to meet industrial needs.

Creativity is the act of turning new and imaginative ideas into reality. Creativity and critical thinking are essential for developing the next generations of researchers. It was noted that creativity may be a cause for the lack of collaboration between the university and industry. Quite often, researchers produce products based on what their interests are. While some products may seem innovative and helpful from the researcher’s perspective; it may not be cost-effective or marketable from the industry’s perspective (Putit, et al., 2014). Industry is often seeking for short-term results; hence they refuse to get involved in the creative part of the research and product. On the other hand, Respondent A and Respondent X noted that among the main reasons industry players refuse to market a certain product is because they deem that it lacks creativity. For products like these, they usually do not get a chance for commercialization because it may not receive support from the university itself. Such products which do not do well when promoted in the university usually do not stand much chance to be commercialized.

Recognition and Respect for Researchers and Products
This study found that many researchers are often caught in their enthusiasm towards a certain research product, focusing more on cutting edge discoveries rather than industrial recognition. As a researcher
stumble upon an idea and commits time, resource and their own self research project, they mainly focus on discovering of new knowledge and new theories. Products that are produced from their research are cherished as it makes them feel proud. However, when the researcher or the product isn’t respected by the people they approach, it extinguishes their enthusiasm, ultimately causing them to either abandon the project or sell the idea away. Many researchers fail to see that without industrial recognition, new discoveries may be meaningless.

According to Respondent Y, his research product did not get a chance to commercialize due to less recognition and no mutual respect from the university and industry itself. During the roundtable meeting, the university’s top management had failed to provide full support to the researchers and even the appointed lawyers by university had failed to look after the interest of the researchers. Respondent Y opinion and voices has been ignored and not taken into account during the meeting.

**Attitude and Mindset**

Researcher’s attitude plays an important role in a products’ success in commercialization. Time constraint is still a challenge that researchers have to overcome in order to be able to actively contribute to their researches. Researchers were bound with specific time limit to wrap their research. If researchers were to develop a research-based product, the chance to successfully commercialize the product was devastatingly low. It is because it takes quite a long time for a research-based product to become end product that is ready to be commercialized. Hence, many researchers are more prone to do innovative-based research product as researchers are also bound with their other duties.

**CONCLUSION**

Overall, it can be said that researchers, university and industry have to play their roles effectively in order to achieve successful collaboration. Moreover, each party need to have “mutual understanding” and “consideration” to determine the success of collaboration in the selected higher learning institution. In future, researchers must understand that the lesson in classroom must be geared towards the need and demands of the industries. It is crucial and significant to educate the students that new discoveries must be aligned to the practical usage. Integrating a complete understanding of the “research values” and aiming towards research product commercialization with the industry in mind must start in the classrooms. Simultaneously, research management and university will have much confident and actively align in promoting research product at national level. In the field of education, the development of human potential is undeniably an important goal and this has been highlighted in the national philosophy of education in Malaysia. Therefore, with positive educational philosophy and inspiration there should not have the blaming and complaining of works loads and doing research as a burden. It is significant for the higher education institutions to retrieve the solution from grass root learning among the researchers. In this aspect, higher education institutions should mold-holistic human capital that will be a catalyst for research product commercialization within higher institutions. For future studies, a comparative study of multiple case studies of higher education in different contexts will allow researchers to compare the issues within different university context in the wake of globalization and free market impacts. This will provide a more holistic and useful insights to better assist higher education leaders and policy makers towards the betterment of higher education policies.

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