Intellectual Property Rights (IPR) Management and Monitoring Framework for University Innovation Centre

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ABSTRACT

With the advent of the knowledge economy, knowledge is the principal economic asset and its management and protection have become the cornerstones of an organization strategy. Due to the increasing importance of knowledge, private firms and public institutions such as universities, colleges and research institutes have discovered the importance of protecting and managing their intellectual property rights (IPR). The existence of strong competition amongst organization to create better performance has sparked the need for a strategic IPR management tool or mechanism to gain competitive advantage. This is no different for knowledge rich organization such as the universities where there is a need to improve the IPR monitoring and management to respond to the internal and external expectations. This paper introduces the concepts for managing IP through the IPR management and monitoring framework. This framework serves as a guideline to enable efficient IPR management tailored to the specific environment of the University’s Innovation Center that is responsible for managing IPR for the university.

Keywords: Intellectual Property Rights (IPR), IP monitoring, IP management.

I INTRODUCTION

Higher Education Institutions (HEIs) are in the business of producing knowledge in which innovative products and research outcome out of this abundance of knowledge must be protected (Cheeptham & Chantawannakul, 2001; Grimm & Anderl, 2013). The increasing number of innovative research in the university lead to several challenges on the effective management of IPR especially in areas of knowledge acquisition and dissemination (Grimm & Anderl, 2013; Hanel, 2006; Young, Hewitt-Dundas, & Roper, 2008). However, with the increased amount of innovative products scattered in various faculties this poses a challenge to the university’s innovation center that is responsible in identifying, evaluating and collecting information about the ongoing research. Furthermore, the monitoring of intellectual property (IP) is currently done manually through telephone conversations, emails and meetings in which the responsible officer must record the current status of the researcher’s intention to apply for an IP. This is deemed cumbersome for the innovation center staff as keeping track with the researcher’s project status, promoting the importance of IP and filtering the potential IP products is not done in a more strategic and structured manner. The university’s innovation center is also lacking in the use of information technology which can be considered as a strategic tool to enhance the management of IP. The role of information technology (IT) in managing the processes of IP management is deemed to be useful and beneficial to disseminate and capture these knowledge hence improve the management of IP (Gassmann, Ziegler, Rüther, & Bader, 2012; Grimm & Anderl, 2013).

Effective management of organization’s IP is of great importance as there is a need to enhance the IP management capability in order to overcome challenges arising from the global and local competition (Gassmann, et al., 2012; Liu & Chin, 2010).

Universities are more than ever challenged to design strategies and implement effective processes to enable an efficient IP management and monitoring process (Edvinsson & Sullivan, 1996; Gassmann, et al., 2012; Hua, Xu, & Shan, 2011). Hence, studies need to be undertaken to identify the processes involved in monitoring IP application for the university in order to explore the suitability of using IT in increasing IP management efficiency. This would then lead to the development of an IP monitoring and management framework for the university’s innovation center assisted with an IP monitoring tool for better work efficiency.

II LITERATURE REVIEW

The knowledge economy places a tag of urgency on understanding and managing knowledge based assets such as innovations and know-how. Many products and technologies are simultaneously marketed and utilized in many countries. With the opening up of trade in goods and services, IPR have become susceptible to infringement leading to inadequate return to the creators of knowledge. Innovators of such products and technologies would like to ensure research & development (R&D) costs and other costs associated with introduction of new products in the market are recovered and enough profits are generated
for investing in R&D to keep up the R&D efforts. IPR research in innovation management is a rapidly growing research field and there are now a number of large companies that have made significant investments in developing the capability to manage their intellectual capital (ICM) (Candelin-Palmqvist, Sandberg, & Mylly, 2012; Edvinsson & Sullivan, 1996). IP is a major source of value to the organizational business asset and should be incorporated into a firm’s overall strategy through effective management (Candelin-Palmqvist, et al., 2012; Edvinsson & Sullivan, 1996; Gassmann, et al., 2012; Hanel, 2006). Firms with large IP portfolios are more than ever challenged to design strategies and to implement structures and processes to enable an efficient IP management. Retaining promising technology has become a necessary condition for attracting venture capital and increasing the value and profits of established firms (Gassmann, et al., 2012; Hanel, 2006). In the new economy, with the increasing importance of knowledge, private firms and public institutions such as universities, innovation centres and research institutes have discovered the importance of IPR, and how it is managed and protected have become the cornerstones of organization strategy (Hanel, 2006). Various literature are stressing on the need to have proper management of IP through the establishment of an effective IP management systems and practices. The importance of knowledge sharing and how knowledge can be properly managed to provide value to the organization has also been numerously highlighted in various studies (Gassmann, et al., 2012; Grimm & Anderl, 2013; Hanel, 2006; Liu & Chin, 2010). There is also lack of insights with respect to where exactly IT tools are used in the management of IP, and how firms can use these tools to increase their IP management effectiveness (Gassmann, et al., 2012). Effective use of technology in managing IPR, monitoring the IP application, and the use of IT administrative tool capable of identifying and evaluating potential IP is necessary in order to share and transfer the knowledge namely with regard to intellectual property across different entities around the university (Grimm & Anderl, 2013).

Rowley (2000) explained on the four objectives of knowledge management in higher education through the studies of Davenport’s knowledge management objectives, which are to create knowledge repositories, improve knowledge access, enhance knowledge environment, and view knowledge as an asset. Through these objectives, knowledge management activities for IPR can be created and disseminated through the innovation centres of the universities in order to promote organizational learning, information sharing and knowledge empowerment to improve organizational performance and competitive advantage. This study focuses on the IPR management and monitoring activities in higher education where the knowledge gathered from various resources of the university can be captured in a knowledge base for identification, evaluation, future benchmarking, and knowledge dissemination. As universities aim to become top ranking universities, the importance of IPR is not only targeted for internal use of the organization. Moreover, it is a necessity to introduce university’s innovative products to meet market expectations and standards which can ultimately boost the university’s innovativeness to a global landscape. Efficient and effective use of technology in handling IPR can produce significant outputs and gain attractiveness to the local and global market and to economic capital (Pircher & Pausits, 2011).

A. Research Outcome and Intellectual Property Rights (IPR)

Organization Economic Cooperation and Development (OECD) defines research as the development of creative work undertaken systematically to increase existing knowledge, including human knowledge, culture and society, and the use of knowledge to devise new applications (Deakin-University, 2013). Research outcome can be categorized into products and services that may be covered under industrial property or copyright. Examples of university’s research outcome include research publications such as books, journal articles and modules that can be protected under copyright law or statutory declaration. On the other hand, one of the categories of industrial property are also known as patents. Patents include research as a useful invention, which may include processes, machines, articles of manufacture and blend or combination of chemicals (Eisenberg, 2000). IPR covering a range of subjects and ideas can be protected by other rights such as industrial designs and geographical indications. However, there are four main types of IPR protection of the public called the copyrights, trademarks, patents, and trade secrets. The types of IP differ significantly from each other in terms of the rights granted, how it is acquired, and how it is maintained (Eisenberg, 2000). For example, designers are given protection for their patents, industrial designs, trade secrets, confidential information, and layout design of integrated circuits for their innovation (Intellectual-Property-Office-of-Singapore, 2013).

B. Intellectual Property Awareness

Raising awareness of IP is a continuous effort of the university innovation centers to ensure that researchers fully understand the importance of IP. Changing perceptions on the role of IP and create an understanding of its importance to nearly every aspect of life, economic growth and development, is an ongoing challenge. Although the term IP has sparked interests in various people in the community, there is

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still much confusion about the underlying concept and importance of IP. The awareness campaign on IP organized by the center for innovation in universities plays an important role in spreading the definition of IP, the role of the innovation center with regard to IP management and the process of IP application.

Various studies have highlighted that there is a need to promote the awareness of IP through various mechanisms as listed below: (Cheeptham & Chantawannakul, 2001; Hua, et al., 2011; Jain & Rod, 2013; Silva, Henriques, & Carvalho, 2009)

a) Special training to educate the research project leaders and researchers generally about the importance of IPR.

b) Elective courses or public lectures related to IP so that people can understand and master the basic knowledge and strategies of IPR in a comprehensive manner.

c) Seminars and meetings organized by university innovation center to ensure researchers obtain the latest updates on the IPR.

C. Intellectual Property Mining

IP mining in general includes the search for new applications of technology (not just patents), a new market for the technology, or advanced technology for future collaboration. Comprehensive approach to the mining of IP helps to manage the research outcome as potential patent, patent categorized according to their technology, and set a timeline for each patent licensing program. With the help of other parties in a university such as faculty or research centers in various disciplines, presentations can be conducted by the researchers according to their specialty or field, followed by a process of identifying the completed research.

The component of IP mining derived from various studies have showed that the mining process of IP further harmonizes the IPR especially in the assessment of IP to be in accordance to industry standard, rating and ranking (Hanel, 2006). IP mining and portfolio analysis also includes discovering innovations related to the strategic value of the organization and how it can improve the competitiveness of the organization and future potential of innovation (Gassmann, et al., 2012). Studies also highlights that in order to have a successful management and monitoring of IP, the staff of innovation centers are required to have a general science background and to understand the relevant laws, conventions and treaties and higher knowledge about the legal issues in order to effectively provide advice on issues related to IP regarding to the creation, protection and exploitation of IPR for universities (Cheeptham & Chantawannakul, 2001; Jain & Rod, 2013).

D. Intellectual Property Screening

Screening of IP can be defined as the identification of research findings that adds value, contribution and patent licensing to the organizations (Jain & Rod, 2013). Screening activities of IP refers to the activity where a university's innovation center selects potential projects that fits the IP characteristics, followed by meetings with researchers in order to maintain and assure the appropriateness of their products. If the center of innovation universities concluded that the product or service is eligible to be categorized as a patent then a patent search is conducted as the conditions for a legitimate patent is that it must be something new in the world.

Early identification of innovative research outcomes through the screening of IP is crucial to obtain patent rights (Edvinsson & Sullivan, 1996; Jain & Rod, 2013; SAFE, 2011). Studies also show that implementing screening of IP to assess the value of commercial and competitive use of IP for their business is important to determine the most valuable patents related to market demand and high growth of business (Gassmann, et al., 2012; Hanel, 2006).

III PROPOSED MODEL

In order to successfully manage IP, researchers have identified a number of concepts that must be understood and addressed in order to design a framework for monitoring and management of IP. Figure 1 below illustrates a conceptual model of IP management and monitoring for university innovation centers. The conceptual framework consists of eight elements associated with the management of IP and knowledge management. Elements identified from the previous literature indicates that there are critical phases that must be involved in managing IP. The process begins by identifying the research results from various researchers across the university, followed by awareness programs on IP. These two elements are grouped under the diffusion of knowledge as it involves the dissemination of knowledge of IP to the innovators of existing products and potential IP applicants. This process then leads to the knowledge acquisition phase in which the products or innovations go through a process of IP mining where the products or competitive services are checked for their uniqueness as being something new in the market. Consequently, the products of IP will be screened and selected. Once both processes are finalized, the application phase of IP occurs. After the application is successful and universities obtained the rights to file for an IP, the process eventually leads to the industry or potential manufacturers for collaboration or commercialization.
The traditional approach in managing and identifying IP involves minimal intervention from IT where most of the activities are carried out manually by the responsible party. The typical initial step would involve a physical visit to each department within the organization to identify the different types of IP such as patents and/or copyrights or any other related services. The second step is to implement the process of identifying the IP through a time-consuming process of interviewing the researchers. Interviews with researchers enables the identification of all internal processes of IP and manually categorize IP for the department, types, products and processes. After the IP are identified and categorized, a portfolio of the IP or files are created. An annual audit portfolio of IP can be done either internally or externally by certified IP consultants. Audit allows companies to monitor the current status of the IP, by estimating the usefulness of the IP and to identify potential business opportunities such as inbound and outbound licensing, sales and purchases.

The current management and monitoring has increasingly moved away from the traditional approach to a more proactive approach that exploits the knowledge and technology. Therefore, the effectiveness of the IP information seeking through the components of awareness, screening and mining of IP is deemed important as it will identify areas of new technologies, new business opportunities and provide the value of the IP to the organization.

### IV METHODOLOGY

This study is exploratory in nature with the aim to explore the previous research and literature in a unique context. A qualitative approach is considered suitable as a study because it involves a relatively new phenomenon, which is experienced by a certain population using new innovation in a particular context. Qualitative research is designed to understand the people, the social and cultural context of their environment (Kaplan & Duchon, 1988). For this particular study, a qualitative approach is appropriate in exploring the research problem through the point of view of respondents describing their issues and problems with the evidence regarding the management and monitoring of IP. This research involves interviews, documents review and observations of researchers to the identified context (Myers, 2013).

A case study approach is an appropriate research method in this study as it allows researchers to obtain an insider view of the department selected, thus allowing a better understanding of the current organizational status directly from informants within the organization (Fletcher & Plakoyiannaki, 2011; Yin, 2003). This in turn leads to greater depth and comprehensive picture of the phenomenon being studied (Yin, 2003). Interviews are suitable to be used in this study because it requires techniques that include the ability to achieve the definition and interpretation of the phenomenon of the respondents (Murphy, Dingwall, Greatbatch, Parker, & Watson, 1998). As the study was designed to gather rich insights into the experience of the responsible party involved in managing IP, the interview approach will be used to understand the processes involved and the organizational context. The interviews also aim to reveal the respondent's perspective on how the IP is being managed and implemented at the university. Based on the interviews, a review of relevant documents and the findings from previous studies will assist in the actual design of a framework for monitoring and management of IP. The framework will confirm or deny some elements previously identified by the conceptual model. The framework will also identify areas of dissemination of knowledge and knowledge acquisition which will serve as a basic guideline to the development of a prototype for the IP monitoring and management system. All of the elements identified from literature and in-depth interviews that have been found important in the monitoring and management of IP will be included in the prototype to support the framework.

In addition, the IP monitoring and management prototype will also be tested by the university innovation center staff on the functions and interfaces as well as the usability and efficiency of the system prototype. This test will also be carried out to identify the effectiveness of the elements of the IP monitoring
and management as per highlighted in the actual framework.

V FRAMEWORK AND PROTOTYPE VALIDATION

Once the prototype is completed, this research will undergo a validation process in which experts in the domain of IP will confirm the elements in the framework and the IP monitoring and management prototype. A set of questions will be provided in getting feedback from the subject matter on the effectiveness of the framework. Think-aloud interviews will be used to validate the elements of the IP monitoring and management framework through the minds and knowledge of subject matter experts. There are a series of formalized procedures associated with conducting and recording the data produced from think-aloud interviews in order for the respondents from the subject matter experts will be interpreted and analyzed accurately (McDonald, Edwards, & Zhao, 2012). These formalized procedures will involve subject matters verbalizing their knowledge, beliefs and attitudes on the IP management area. Verbal analysis (Chi, 1997) is used to identify and measure knowledge structures, including beliefs and attitudes. Although there is currently no single method available that identifies the contents of a person’s mind directly, think-aloud interviews and its data source as well as verbal reports, are considered by many researchers and cognitive psychologists to be a close alternative (McDonald, et al., 2012; Olmsted-Hawala, Murphy, Hawala, & Ashenfelter, 2010; Van Someren, Barnard, & Sandberg, 1994). Therefore, in validating the IP monitoring and management framework the think aloud method will be applied and is anticipated to produce valuable information and a useful technique in obtaining expert knowledge.

VI CONCLUSION

This study focuses on the exploration of knowledge in terms of procedures and monitoring of IP in a university. Universities are where knowledge assets can be collected from various sources and stored in a knowledge repository for future benchmarking, pre-commercialization activities and quality management. As the university seeks to be more proactive in their approach to exploit a portfolio of IP, information management of IP and effective monitoring of potential IP is important to identify areas of new technologies, new business opportunities, and to assess the practicality of the innovations. The efficient process of monitoring and management of IP with the assistance of information technology is seen as an effective strategy to produce significant output and gain market attractiveness to potential collaborators, potential manufacturers or investors for research commercialization, and to improve the economic capital.

REFERENCES


