



The Improvement of Patent Translation System for Sharing Knowledge

Course Title: Knowledge Management

Course Number: ETM 567

Instructor: Dr. Weber

Term: Winter

Year: 2017

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Date: Mar 14, 2017

ETM OFFICE USE ONLY

Report No.:

Type: Student Project

Note:

Abstract

This paper aims to provide the direction of patent translational system and how to improve its system by analyzing the importance of intellectual property based on literature reviews and Patent Cooperation Treaty (PCT) reports. Additionally, the demand of patent translational system is hugely increasing due to globalization and recognizing of the importance of intellectual property such as patent. As an example, many companies have faced the patent litigation and the number of cases has risen. Current patent translation system has been developed and it is helpful, but still shows the limitation and problem in terms of time, cost, and various language barriers. Nevertheless, patent translational system should be constructed and more improvement based on accuracy; otherwise, it becomes worthless. This paper focuses on the reason of patent translational system, the limitation of current system, and the direction of improvement.

Key words: Patent, Patent translation, Intellectual property, Patent protection, World Intellectual Property Organization (WIPO)

Introduction

In the view of firms and organizations, the demand of patent translation has been increased due to the fact that the business in the most of fields especially technology is connected with other firms all around the world. Thus, it is necessary to investigate other competitor's intellectual property outside of one country for knowledge management. When it comes to considering intellectual property, patent is the most popular example among companies and organization.

As the technology develops, the importance of intellectual property increases as their asset although it is intangible. Admitting other's intellectual property is significant especially in the field of technology in terms of protection for the cost and time in R&D. Patent system varies in many different countries and they hold a patent right. In terms of globalization, firms and organizations might not only check patents in other countries but also obtain knowledge effectively. Moreover, firms are able to avoid other's patent right in the technological mechanism if patent translational system is powerful and constructive. World Intellectual Property Organization (WIPO) is founded as a specialized agency of the United Nations and devotes to patent sharing in the worldwide industries. They are constructing patent translational system as well, but it reveals its limitation and shortage. In this paper, it provides the information of patent translational system and its direction into the improvement based on the literature reviews and myself as an expert.

Literature review

The importance of intellectual property

In the perspective of industrial research and development, firms based on technology should have competitive advantages such as the use of technological knowledge, storage, and creation. In terms of R&D projects, their important technological knowledge should be stockpiled because it is related with the primary motivations of firms in the achievement of efficiency through reduced development time and cost.

When it comes to thinking patent's great significance, patent protection has been identified as a special source of benefit. Moreover, patents include valuable information in technology management globally [1].

Interestingly, the author in [2] assures that companies might regard patent protection as worthless. There is the tendency that companies in some cases did not pay attention of obtaining a patent right due to the fact that technology was progressing rapidly. Thus, the process of patent might take more time than the speed of technology at that time. That being said, some industries such as pharmaceuticals and chemicals were affected by the patent system substantially [2].

The patent facilitates to construct the infrastructure, for example, competitors conduct the further research which is related to the patentable technology and encourage rival firms to invent more patentable information. Some companies might prefer secrecy instead of filing a patent due to the cost of intellectual property protection. However, there is a risk that secrecy could be revealed accidentally and their invention is not protected in law against imitation or duplication. In 1990s, empirical studies found that firms prefer secrecy to their intellectual property than a patent and consider secrecy as a more effective method at that time [3].

In licensing and partnership, patents became a relevant and effective tool for negotiations. Companies gained profits and value from licensing based on their patent and it turned out that patent is positive signals for potential investors. As an intellectual property protection, the necessary of patents is increased in considering its importance. The patent has also strategic value in terms of the increase R&D expenditure at the most of firms.

Interestingly, some experts argued that patents are the least emphasized instrument of intellectual property protection when it comes to comparing with secrecy, lead time advantages, and the use of complementary marketing. Furthermore, the importance of patents was varied in many different types of firms. For instance, the chemical and pharmaceutical industries had the most patenting process [3].

In addition, there is a relativeness that larger companies usually conduct more R&D and it leads to file more patents than small companies. Large firms even have their own legal departments. As R&D increases, its cohesiveness with patent is arising into many firms regardless of the size and country. In the fierce competitive world, protecting their intellectual property might compensate their effort and preventing of imitation [3].

As many foreign companies increase in the U.S., the study showed the relativeness based on the knowledge-acquiring and sharing patterns of multinationals by researching patent citations especially in critical high technology industries. Foreign firms are not only exploiting their knowledge, but also constructing vast network sharing it with other parts of the organization. Foreign firms had been viewed initially as absorbers of technological knowledge, on the other hand, their interfirm knowledge exchange contributed the regional technology development as well [4].

Patent translation system

In terms of patent translation, the quality and accuracy must be fulfilled because of the foreign firms and organization for obtaining the information rapidly.

Especially, translation system for patents become an issue due to its difficulty to meet the accuracy, and satisfaction based on the time and cost.

Although many researchers have tried to improve the patent translation because of huge demands, limitations have been exposed. For example, not like general documents, patent documents face challenges to translate due to the abnormally long and complicated sentences in foreign languages [5].

When it comes to approaching word, knowledge and engine are considered in target word selection problems through machine translation. In one of cases for English-Korean patent translation system, they selected English ambiguous words with high frequency in the technical corpus, and then sorted with Korean equivalents based on frequency. As a next step, dominant Korean word was selected by human translator from the sorted list [5].

The weak point of this patent translation could be that they need the human translator to finalize the work. In other words, the limitation of selecting various categories is arising due to the fact that patent can be sorted in many fields. It is almost impossible that one expert can cover all of areas such as mechanics, chemicals, medicals, electronics, and computers. Although it definitely facilitates the work of patent translation, it still needs to improve more.

As one of the evaluation methods, the result was evaluated by 7 professional translators and below table indicated the scoring criteria as an example. Translation accuracy in various fields such as machinery, electronics, chemistry, medicine, and computer has a range between 85% to 91% [5]. It seems pretty high accuracy in normal translation. However, it brings another question mark in the area of patent translation because it means that some point could be mistranslated.

Table 1: An example of scoring criteria for translation accuracy [5]

Score	Criterion
4	The meaning of a sentence is perfectly conveyed
3.5	The meaning of a sentence is almost perfectly conveyed except for some minor errors
3	The meaning of a sentence is almost conveyed
2.5	A simple sentence in a complex sentence is correctly translated
2	A sentence is translated phrase-wise
1	Only some words are translated
0	No translation

Machine Translation System

Cross Language Patent Retrieval (CLPR) technologies are the most popular method for searching international patents based on machine translation (MT). MT systems have been developed smarter than before and higher effectiveness. Nevertheless, doubts are arising in using MT because of requiring time and computational resources. Due to the largely increasing the number of patent in many countries, patents might be published in different languages. Thus, it is important to search relevant existing patents in the perspective of patent examiners. Searching other existing patents could be helpful that patent applicants avoid to utilize existed technologies all around the world. Although standard MT systems are beneficial for patent translation, it shows limitations such as slow and computational demanding. Additionally, some languages do not have substantial data for training an effective MT system [8].

Discussion

Recently, most firms and organizations are eager to develop the patent translation or find the best way to utilize it. One of reasons could be that they want to follow rapid technology change and not being obsolete and falling behind the current trend comparing with other competitors. Patent translation systems are available through MT (machine translation) system and many companies offer the service of patent translation by experts. Nevertheless, people have a doubt whether or not its current patent translation systems are accurate and effective. When it comes to considering patent's specialty, the perfect accuracy of patent could be the key point. Because of just one wrong misinterpreted word, it may arise the litigation between firms or organization, and also lead an error in judgement.

According to the Patent Cooperation Treaty (PCT) report which is published yearly by the World Intellectual Property Organization (WIPO), the PCT system is making patent protection for inventions simultaneously in a large number of countries. Analyzing and comparing the PCT papers were published in 2006, and 2016 may bring the insightful result in the number of increasing patent internationally and plan for reaction. The one of purposes of publishing its PCT report is to reduce unnecessary duplication in different countries and patent offices, also to share the useful information.

The research method of this paper is based on the literature review, comparison of PCT papers, and my experience. Even though the experience of obtained a patent in Bachelor myself may not be eligible as an expert, it could be regarded as a factor in this paper only.

As an experienced person of filing patent, its experienced could be one of demands in the real world.

Result

The comparison of the PCT reports both in 2006 and 2016 might bring the insightful thought based on the chronicle. Especially, the point of improvement of patent including translation system globally can be discovered. Thus, it allows to trace the difference and which points in patent translation system are ameliorated from the past.

Table 2: The comparison of numbers in applicants and countries [6], [7]

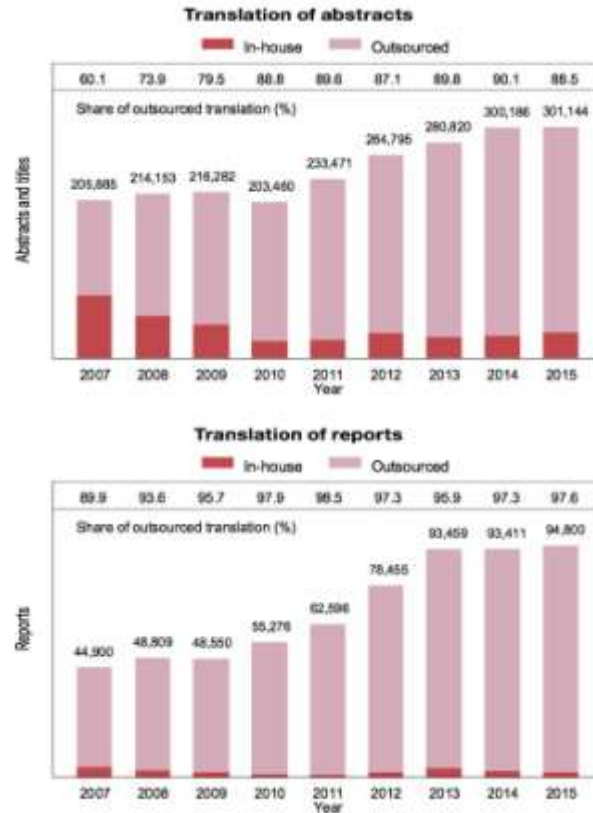
	PCT report in 2006	PCT report in 2016 (Statistic numbers in 2015)
The number of applicants	147,500 (2006)	218,000 (2015)
Top 5 receiving countries	United States of America (50,089) Japan (26,906) Germany (16,866) France (6,109) Republic of Korea (5,935)	United States of America (57,881) Japan (43,285) European Patent Office (34,302) China (31,031) Republic of Korea (14,657)

According to WIPO, patents are filed from 132 countries in PCT applicants, but, the bulk of these applicants originated in a few countries. Japan and U.S occupied almost half of applicants which is 47% as it is shown on Table 2. The top five countries including Germany, China, and Republic of Korea collectively filed about 75% patents in PCT based on WIPO statistic [6], [7].

Table 3: Languages of filing [6], [7]

PCT report in 2006	Top 10 Languages	Number and percentage	PCT report in 2016 (in 2015)	Top 10 Languages	Number and percentage
	English	89,206 (60.5%)		English	104,166 (51.8%)
	Japanese	24,542 (16.6%)		Japanese	39,706 (19.8%)
	German	16,840 (11.4%)		Chinese	20,728 (10.3%)
	French	5,174 (3.5%)		German	16,422 (8.2%)
	Korean	3,584 (2.4%)		Korean	10,616 (5.3%)
	Chinese	3,510 (2.4%)		French	6,302 (3.1%)
	Spanish	1,167 (0.8%)		Spanish	1,572 (0.8%)
	Italian	1,023 (0.7%)		Russian	939 (0.5%)
	Russian	642 (0.4%)		Portuguese	458 (0.2%)
	Dutch	506 (0.3%)		Arabic	19 (0%)

According to the PCT report in 2016, the number of patent published in English increased continuously from 1995 to 2008. However, its number of applications in English has been decreased sharply after 2008. As Table 3 indicates, the number of patent in English is decreasing, whereas the number of patent in various language is increasing in the comparison of year in 2006 and 2015 [6]. Remarkably, the number of applications in Chinses is rising exponentially so that the research of Chinese-English in patent translation has been conducted energetically.



Source: WIPO, May 2016.

Figure 1. Distribution of in-house and outsourced translation works [6]

As Figure 1 shows, most of international offices rely heavily on the outsourced translation although the whole number of applications is increasing yearly. The patent translation system may come to a standstill until today. One of reasons could be that many new jargons in various industries have been appeared as the technology develops rapidly in terms of the difficulty of translation accordingly. In fact, many international offices continued to launch the translation management system in patent application in order to make their translation process more efficient and also ensured the high level of security. Nevertheless, the increasing length of reports is one of real problems due to the fact that it involves with the budgetary impact [6].

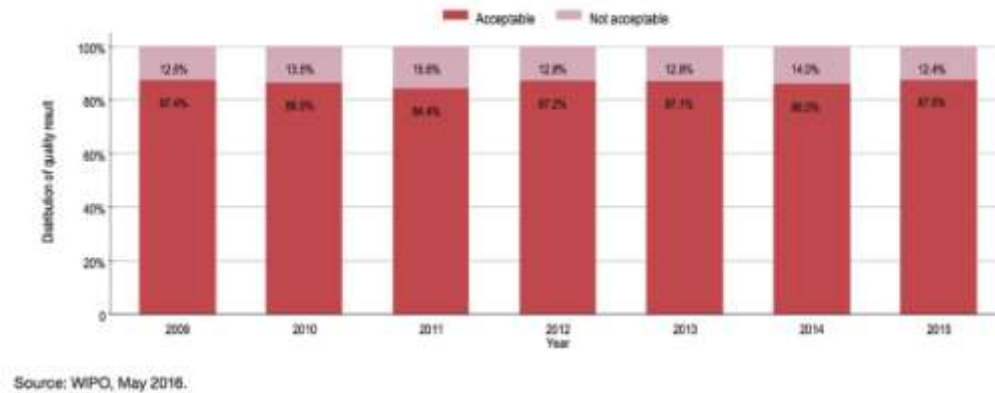


Figure 2. Translation quality [6]

Although international patent office submitted their application, that does not mean all application was acceptable. As Figure 2. shows, 12.4% - 15.6% applications were not acceptable from 2009 to 2015 when it comes to the translation quality. In other word, the patent translation system has not been improved substantially as a result based on PCT reports [6].

WIPO owns the public access database which is called PATENTSCOPE. The system is not only allowing to search all of PCT applications and a wide range of other countries, but also providing the translation system. WIPO has been improving this system, thus, many organizations and even individuals are able to approach it easily for sharing the information all around the world. In spite of the fact that it has limitations of the number of accessible languages, WIPO makes steady progress [6]. The tool is using a corpus of patent tile and abstract pairs which is translated by humans. It has also been trained on aligned descriptions and claims based on statistical machine translation. In fact, the tool is focused on patent text so that legal texts, and conversations may not be accurate.

Conclusion

As a personal experience, obtaining a patent was one of options for a capstone project in order to meet the requirement of graduation in the department of mechanical system engineering at Seoul National University of Science and Technology. Given only a year for the capstone project was not a substantial period processing the project under the goal of obtaining patent. In other word, the process of patent could take a longer time than most people expected. Mostly, searching existed patent is considered as a time-consuming task due to avoid same patent under various names or synonyms. Searching existed patent is one of important steps due to the fact that application of same patent could be denied by the patent office, and it leads to reprocess it from the beginning. The ultimate goal was supposed to get the international patent including Europe and U.S patent office. It, however, took vast sums of money and time so the aim of its plan was curtailed in patent only Korea when it comes to considering to yield the practical outcome within the limited time, budget, and lack of information about translation patent. Even though the plan was a scale-down, first attempt of filing patent via Korea patent office was deferred because analogous patent was existed in Japan. The point is the Korean patent office considered patent's new arrival, creative, and useful in prior to grant a patent in spite of the fact that similar patent was existed in different countries and the aim of patent was only Korea. It triggers the reason of why patent translation system should be improved, thus, patentees and individuals in different countries could get its information and knowledge for better performance and cutting time and budget as well.

The increase of the intellectual property's importance relates with the effective creation, protection, and management in the society in terms of social, culture, and economy.

Moreover, sharing the information in patent may bring another new innovation regardless of language. When it comes to considering the time and cost, translation by experts is not efficient because there is huge demand of patent translation. Therefore, the machine translation has been developed but it is technically imperfect for the use of patents. The application of patent needs a sophisticated translation due to the fact that it included many technical terms and new words. Additionally, the cultural barrier among various languages in the world might be the problem that the machine translation cannot overcome.

According to PCT reports, it confirms that the patent has been filed from many different countries and languages. Moreover, WIPO exerts all possible their effort such as introducing PATENTSCOPE system. Reducing the obstacle in different languages may bring more brilliant ideas in both of the intellectual property and knowledge sharing.

Suggestions for the future research

As a suggestion for the future research, there are a couple of possible directions. First, adding an empirical research will give a better result. For example, it could select a certain amount number of patents from various languages and conduct an experiment whether or not WIPO's PATENTSCOPE system works appropriately. Second, studying real case studies of developing internal patent translation system and outsourcing will be useful. The number in statistical data of PCT yearly reports shows the increase of patent applications in various languages. The patent translations system is the thing that never approaches being perfect without the aid from human experts. Additionally, many organizations including WIPO have been conducted the research with great effort to improve its system. The area of improving patent translation system has infinite potentials.

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