Patent Valuation in Universities
A Case Study in a Public University of São Paulo

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Abstract

The enactment of the Brazilian Innovation Act, in 2004, meant an incentive for technological innovation and technology transfer from universities to companies. In this context, the valuation of patents consists in a fundamental activity to assign value to technologies created by research institutes and universities. However, the valuation of patents is an incipient process in the context of Brazilian's universities Technology Transfer Offices (TTOs). Thus, the objective of this work is to analyze how TTOs use the methods of valuation of patents in the process of assigning value to the technologies of public universities in the state of São Paulo. Additionally, this study aims to: (a) identify patent valuation methods used by TTOs by public universities in the São Paulo state; (b) analyze the importance of valuation within the framework of the activities of TTOs and (c) identify which factors support and difficulty valuing patents of public universities in the state of São Paulo. The research methodology was exploratory and qualitative research, with a single case study in one of the main public universities TTOs in the state of São Paulo. It was found that the TTO analyzed the uses cost and market-based approaches, predominantly with the application of royalty rates and sunk cost methods, exclusively to support the negotiation of Industrial Property Rights to the licensing for the productive sector. It is suggested for future work, the expansion of the scope of this paper to analyze the assessment in private universities, particularly in terms of its importance in the amounts to be received by the commercial exploitation of the technologies transferred and/or patents licensed to the productive sector.

Introduction

The Brazilian Innovation Act consisted of an important incentive in the relationship between universities and private sector, through the institution of Technology Transfer Office (TTOs) in order to promote technology transfer and a patent licensing from research institutes and universities to the firms. Although the valuation of technologies and patents is a tool to support the negotiation, is still a fledgling process to Brazilian TTOs.

In order to assist innovation management professionals in the valuation of technologies, several initiatives have been brought to the public in recent years: in 2000, the Japan Patent Office (JPO) has released a tool valuation called Patent Evaluation Indexes for Technology Transfer, with the objective of creating a standard valuation for technology transfer [1]. In 2001, the Danish Patent and Trademark Office created the IPScore [2], a tool

created for assessment and valuation of technology that analyses the quantitative dimensions and qualitative information to an individual patent or a portfolio of technologies. In 2011, the Hungarian Intellectual Property Office has launched a valuation guide intended to TTOs, as a way to assist them in management technologies.

In Brazil, several works have been describing application of valuation methods [3, 4], mainly in chemical and oil & gas industries, and one of these papers [5, 6] recommended valuation of technologies in universities as a subject for future studies. However, these are few initiatives and the exploration of the patent valuation area is still incipient.

Research Problem, Objectives and Plan

Regarding the problem presented in the introduction of this extended abstract, the purpose of this study is to analyze how the Technology Transfer Office (TTO) of universities uses patent valuation methods in the technology value assignment process. Additionally, this article has the following objectives: (a) identify patent valuation methods used by TTOs of public universities in the state of São Paulo; (b) analyze the importance of valuation within the activities of TTOs and (c) identify which factors support and difficult valuing patents of public universities in the state of São Paulo. After the presentation of introduction and research problem, objectives and plan, this paper is structured as follows: brief literature review, methodology, results, conclusions and references.

Literature Review

The scope set for this work is based on concepts and approaches of valuation methods defined by Parr and Smith [7] and Boer [8] and refer to determining the financial value of technologies and patents. In general, the patent valuation methods are based on three main approaches: cost, market and income [7]. More about literature used in this work can be seen in Table I.

Methodology

The research methodology was exploratory and qualitative research [9] with a single case study [10] in one of the main public universities TTOs in the state of São Paulo. The research design involved semi-structured interview with the manager of TTO and also another two sources [11, 12]: documental analysis, gathered from the last ten valuation studies of patents licensed technologies transferred by TTO to firms and direct observation, from personal contact with TTO respondent. Thus, was adopted triangulation across three data sources in this work, the most common alternative of using multiple sources of evidence [13]. Data was analyzed using content analysis [14] in three steps: pre-analysis, analytical description and inferential interpretation [13]. The semi-structured guide used in interviews was designed based on construct [13, 15], as can be seen in Table I.

All of three constructs listed in Table I show the relationship between specific objectives and overall purpose of this paper and also are useful to achieve the main objective of this work: “Analyze how the Technology Transfer Office (TTO) of universities uses patent valuation methods in the technology value assignment process”.

Table I: Research construct

Construct	Theoretical background	Authors
Patent valuation methods used by TTO	Cost approach: accounting methods,	16, 17
	Market approach	16, 17, 18
	Income approach	16, 19, 20
Importance of valuation within the activities of TTO	Support decision making	21
	Measurement of investment and reasonable return expectations of each party involved in developing innovations	21
	Decision of licensing technologies or internal development	5
	Licensing, buying and selling intellectual property assets, element support in the event of litigation, reduce costs patents with lower return expectations and attracting investors and shareholders	5
	Brazilian Act nº. 10,973 provides the creator of an invention, minimum of 5% and a maximum of one third of the economic earnings of exploitation of the patent	22
	Increase in licensing revenue for supporting research and education future.	23
Support and difficult factors in valuing patents	Strengths and weaknesses of the cost, market and income based methods	24, 25, 26, 27
	Difficulties in measuring aspects involved with financial compensation in the context of partnership as well as definition of royalties	5
	Difficulties to fix “fair” royalty rates to be paid for commercial use of patents	5
	Assigning monetary value to a given technology is a highly complex task, which is to set correct parameters to support decision to be made about the intellectual property and its business arising	5, 28
	In the context of university-industry cooperation there are conflicts between the research purposes academic and research of interest to the company	28

Table I: Relationship among construct, theoretical background and respective authors

Results

Research results were condensed in Table II, as following.

About the valuation methods used by the TTO, the main method used by NIT investigated is the use of mean and median royalty rates charged by industry (90% of cases). However, in one of the talks we used the method of accounting valuation, based on all expenditures made by the TTO, from research, to protecting technology. The calculation took into account the investment in research for 10 years, including four master's degrees and five doctorates held throughout the project, only the costs with man / hour and depreciation of equipment used in the project. Still, it is important to note that TTO does not know and therefore does not use methods based on income.

The construct “Importance of valuation within the activities of TTO” showed that the main concern of TTO is the licensing of patents and technology transfer. In accordance with Brazilian Innovation Act, the TTO awards inventors with one third of the earned values from the commercial exploitation of technologies and patent policy.

Finally the construct “Support and difficulty factors in valuing patents” the TTO considers that the activity of valuation is not complex for the TTO, because it is based on reliable information. Moreover, the TTO has the support of the academic community to conduct its activities, with no more conflicts as reported in other studies [28]

Table II: research results

Construct	TTO results
Patent valuation methods used by TTO	Most used approach: market; Most used method: royalty rates
	Other used approach: cost; Other used method: accounting valuation method
Importance of valuation within the activities of TTO	The evaluation maps potential markets and applications of technologies
	Development costs are calculated to support patent licensing and, in one case, has mapped the expected financial return of one of the licensed technologies
	TTO calls a committee to evaluate patents, but valuation does not support decisions around licensing or more development technologies
	The valuation of patents is held for the granting of licenses
	There are a policy to reward inventors; inventors don't know valuation methods, but provide data to support the valuation performed by TTO
	One of the priorities of the NIT is to transfer technologies and patent licensing
Support and difficulty factors in valuing patents	Methods based on the cost approach (strengths): reliability
	Methods based on the cost approach (weaknesses): none
	Methods based on a market approach (strengths): TTO uses more than one information source
	Methods based on the cost approach (weaknesses): outdated
	No problems are related about royalties definition
	The data are controlled by the TTO and the inputs of technology development expenses are estimated with the help of researchers. So, the valuation isn't considered a "highly complex task" by the interviewee
	Conflicts between research purposes academic and research of interest to the company aren't related, cause the inventors and the academic community understand the role and importance of the NIT

Table II: research results based on objectives related on construct of work

Conclusion

Based on the analysis of the research data, the overall goal of the research was completed and can be summarized as follows: the TTO primarily uses the market approach, based on the royalty rate method for licensing patents to industry.

Limitations and Further Research

The main limitation of this paper consists in non-identifying the TTO. This fact deprived the work of analyzing the specific features of TTO and relates them to aspects contained in the culture of technology transfer and patent licensing, as well as university culture.

Nevertheless, further researches could apply the objectives of this work to verify the importance of the valuation of technologies and / or patents for Brazilian private universities with regard to obtaining additional sources of revenue for NITs and universities.

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