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UNIVERSITY TECHNOLOGY BUYERS A GLIMPSE INTO THEIR THOUGHTS?

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Abstract.

The university technology licensing research phenomena has mostly been addressed from seller (university) point of view while the technology buyer (licensee) has mostly been ignored. This paper reverses this research trend and addresses the university technology licensing phenomenon from the buyers' perspectives. To explore the criteria most crucial to the university technology licensing decision making process, the author undertook a national survey addressing the most influential technology licensing executive in the US. In addition, the survey also addresses several questions about the licensing of university technologies, and shed insights on why some university technologies get licensed while many others do not.

Keywords: Technology Licensing, University Technologies, Technology Licensing Survey

1. Introduction

The passage of the Bayh-Dole act in 1980 has empowered academic institutions and allowed them to retain title to federally funded research and technological innovations. As a consequence, many universities adopted policies and procedures that facilitated academic technology transfer and resulted in a rapid growth in academic technology licensing activities yielding academic institutions around \$1.25 billion in 2006 (AUTM 2006).

To shed some insights on how the university technology licensing decision making process are made, and to understand the determinants that are most critical and crucial to the university technology licensing decision making process, a national survey was used to elicit data from the Licensing Executive Society's designated licensing professionals, whose firms' activities are engaged in licensing university technologies and are active

participants in their company's technology licensing decision making process.

The outline of this research is based on the following questions:

- What technologies are universities licensing?
- Why do companies avoid university technologies?
- Why do companies license university technologies?
- How do licensees go about identifying university technologies for licensing?
- What determinants are most critical to the buyers' technology licensing decision making process?
- What differentiate university technologies that were licensed from those that were not?
- Why do university technologies fail to reach the commercialization stage?
- Do prestigious universities have better technologies?

2. The Survey

The analysis of the 108 eligible responses showed the respondents to be actively involved in the technology licensing process in different technology related fields, with the majority from companies with health and biotech related business application focus. The majority of the respondents classified their employers as either large with more than 5000 employees (45.5%) or small with less than 100 employees (26.6%) with the rest being employed by medium size companies. Yearly sales of 51% of the respondents' companies exceeded one billion dollars, while 12.4% did not exceed the million dollars mark. As to the respondents' positions in their companies, the surveys showed that 83% were decision makers in either a top executive or high ranking middle management position, and are clearly aware of their employers licensing practices and policies. 52% of the respondents confirmed their company has licensed university technologies over the last 5 years' period.

What technologies are universities licensing?

The survey analysis showed the majority of university technologies were licensed at either the embryonic or proof of concept stage, with only 6% having any commercial applications. In addition the survey showed that these technologies were associated with a very high failure rate due to its embryonic stage with only very small percentage ever reaching the advanced stages of development.

Why do companies avoid university technologies?

Although the embryonic stage has been cited as the most important reason to avoid university technology, many respondents also criticized and blamed the universities' licensing policies, their unacceptable demands, and their negotiation inefficiencies. One of the respondent accused universities' inability to recognize pressures of time and money -- "They just don't get it".

Why do companies license university technologies?

Of the respondents who confirmed their company has licensed university technologies over the last 5 years, building a relationship with the university (36%), having access to highly regarded faculty (20%), and having access to qualified students for recruitment (20%), were some of the most important reasons for licensing university technologies. Some respondents confirmed licensing university technologies for use as platforms, while others used university technologies to facilitate and expand current

research or to gain insights into new technology innovations and research to improve their competitive edge.

How do licensees go about identifying university technologies for licensing?

The survey analysis showed that for many technology licensees, personal contact with the inventors or the communication initiated by the university technology commercialization office such as mail, emails, and faxes (80%) were the primary sources for identifying university technologies for licensing, while university web sites, technology trade shows, publications, and patent search have also been also recognized as other important venues.

What determinants are most critical to the buyers' technology licensing decision making process?

To identify those determinants that are most critical to the buyers' technology licensing decision making process, a literature review process identified forty technology licensing determinants (Rahal 2005) and the respondents were asked to identify and classify the ten most important as to their importance to their company's university technology licensing decision making process. The survey results show the twelve criteria most important to the university technology licensing decision making process to be:

1. The strength of the intellectual property
2. The technology's significant identifiable benefits
3. The technology's uniqueness and superiority
4. The technology's probability of market success
5. The technology's quantifiable benefits
6. The technology's sustainable competitive advantages
7. The exclusivity of the intellectual property
8. The technology's current and immediate market need
9. The size of the technology's potential market
10. A complete, clear, and clean Patent search
11. The technology's technical feasibility
12. The technology's development time to market

What differentiate university technologies that were licensed from those that were not?

The respondents were asked to compare two different technologies, where after necessary analysis and evaluations a decision was made to license one and reject the other. The respondents were asked to share the characteristics of both technologies as they pertained to the licensing determinants addressed in the literature review process. The survey analysis shows that:

- 64% of the technologies that were licensed had a strong and enforceable intellectual property when compared to only 17% for the technology that was not licensed.
- 97% of the technologies that were licensed were perceived to have quantifiable and identifiable benefits when compared to only 73% for the technology that was not licensed.
- 87% of the technologies that were licensed offered sustainable competitive advantages when compared to only 56% for the technology that was not licensed.
- 79% of the technologies that were licensed had good to excellent market demand and growth rate potential when compared to only 37% for the technology that was not licensed
- 85% of the technologies that were licensed were addressing some kind of current and immediate market needs or deficiencies when compared to only 37% for the technology that was not licensed Uniqueness and superiority.
- 73% of the technologies that were licensed were unique and superior when compared to only 24% for the technology that was not licensed
- In 80% of the cases, university technologies were licensed with either some or no restrictions and universities were open to negotiation

Why do university technologies fail to reach the commercialization stage?

The respondents attributed these failures mainly to technology failures (43%), the technology's lag of time to market (22.5%), the inability of the inventor to transfer the know-how (7.5%) or his lack of cooperation (5%). Some licensing professionals went as far as accusing universities for technology failures due to their greed and their lack of understanding of real markets.

Do prestigious universities have better technologies?

Literature review has shown that prestigious universities have been more successful in licensing their technologies than less prestigious universities. An empirical study by Sine, Shane, De Gregorio (2003) examined the influence of the institutional prestige on the licensing of university technologies and concluded that technical attributes alone may be insufficient to explain the likelihood of technology transfer, and that prestigious universities may be better able to license their inventions than less prestigious universities

not because the technology produced is better, but because the universities that produce them are perceived as more prestigious.

To determine if our licensing professional agree with such conclusion, the survey asked the respondents about their perception of the ability of prestigious universities to successfully license more technologies more less prestigious universities, 20% of the respondents agreed that prestigious universities are perceived to have better technologies, while 30% agreed that the purpose of licensing from prestigious universities was to be associated with the university, built relationship with the faculty, or to get access to students for recruiting. While only 5% agreed that their technologies are more reliable. About 8% of the respondents credit the success of prestigious universities in their ability to license their technologies to the size, organization, staff experience, and funding of their technology transfer offices. In addition 57% of the respondents agreed that prestigious universities have better chances of licensing their technologies with their companies, while 43% disagreed.

3. Conclusions:

The survey addressed the university technology licensing decision making process from the buyers' perspectives, and sheds some insights on the characteristics of those technologies that were licensed when compared to those that were not. The survey analysis shows that pioneering technologies that are unique, superior, with sustainable competitive advantages, and strong and enforceable intellectual properties have a better chance of being licensed than those technologies that do not. As to why many companies avoid licensing university technologies, the respondents cited the embryonic stage of university technologies and their high failure rate as some of the reasons for avoiding university technologies. Others have expressed their dissatisfaction with the licensing policies of academic institutions and their lack of cooperation.

As for the success of prestigious universities in licensing their technologies, the analysis has shown that their staff is more experienced and effective and their technologies are perceived to be better than their less prestigious counterparts, and thus have better chances of licensing their technologies.

In addition, the survey shows that there is a need for a better Industry-University cooperation and understanding of each other's needs and further research is necessary to address the outstanding and unresolved issues.

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