EMERGING TECH CONFERENCE – Edge Intelligence

Volume 01, 2022, Page 348 – 352

Proceedings of Emerging Tech Conference:
Edge Intelligence 2022

The University of Patras Technology Transfer Office

Apostolos Rafailidis*, Stavria Mathiou, Nancy Tryfonopoulou

University of Patras, Panepistimioupoli Patras, 26504, Greece

arafail@upatras.gr

Abstract

The University of Patras and the University of Peloponnese produce new knowledge through research. Part of this research could potentially be developed into an invention. Should the parties so choose, the invention could be further developed into an innovation, that is, a marketable product of service. The University of Patras Technology Transfer Office project aims at improving the support provided to the academic community for improving their knowledge and information about ways and opportunities to potentially commercialize research results. The project is seen as part of a three – pronged effort, alongside a concurrent project to improve the entrepreneurial and innovative culture and an existing research support unit. No visible results are expected in the short – term and, should the projects continue, benefits will be reaped for society and for the universities.

1. The need for a university technology transfer office

The core purpose, objective, and activities of a university center around teaching and research, whilst they also function as repositories of knowledge. This core has been the case for centuries the world over. Through teaching, knowledge is passed on to future entrepreneurs, businessmen, professionals etc. This part of the University's role is well understood.

The discussion about the value of university research for society is, however, frequently a heated one. Public universities in the past did not engage in transferring new technologies and knowledge to society. Discoveries made by academics in publicly – funded universities were the property of the government that provided the funding. Thusly, these discoveries were mostly published in scientific papers and discussed in conferences, rather than being transferred to the industry or to society. This academic mentality is still very much in place at public universities today.

For many countries, the linkages between academic research and industry, or society in general, are weaker than desired. There are reasons for this, with two briefly discussed below. First, transferring technology from a university to a business is very difficult and complicated because universities exist for very different reasons from businesses and persuading one group of people to invest in ideas someone else has developed is very difficult. Second, universities are mostly engaged in pre-competitive research. That is, the research results are "too far" from being usable by industry. Such results are often at a very early stage of development, at which it is not at all clear whether the research will, at some point in time, result in something that can be further

developed into something a business might find useful. Thus, businesses prefer to “wait it out”. However, with university research being of this nature and with limited resources to develop a technology sufficiently (perhaps into an invention) to be potentially commercially useful, the probability of creating a purposeful relation with industry is limited. This is where technology transfer offices (TTOs) come into play.

2. What is a technology transfer office

Linking university research with business is difficult because the people in universities are very different from the people in business. The people have different backgrounds, different experiences, different motivations, different personalities, and different objectives. The people do not naturally trust each other; they do not know each other. When they do get to know each other, trust builds, and prejudices evaporate. University people generally interact with people from their own and other universities, they understand the culture they come from and trust them. When university people interact with people from industry and finance, they do not know the culture they come from and generally do not trust them. The same is true vice versa. The cultures are equally valid, and different. Technology transfer acts at the interface of business and university cultures, and, when done well— despite all the difficulties and barriers— good deals do get done, technology is transferred.

The fundamental justification for university technology transfer is that sometimes the commercial route is the best way to deliver benefits to society from university research results. The fundamental approach for the technology transfer office is to help researchers who want help to commercialize the results of their research.

Thus, a technology transfer office (TTO) acts as an intermediary between suppliers of inventions (university scientists) and those who can potentially commercialize these inventions (firms, entrepreneurs, various forms of funds). It also helps university scientists to exploit their inventions on their own, or in cooperation with the university, for example through the creation of a spin – off or a spin – out firm. A TTO facilitates commercial knowledge transfers of intellectual property resulting from university research through licensing to existing firms or to start – ups.

The activities of TTOs have important economic and societal implications. On the positive side, licensing agreements and university – based start – ups (spin – offs) can create an additional revenue for the university, employment opportunities for researchers and graduate students, as well as economic spillovers and technological diffusion through additional research and development (RR&D) expenditures and job creation. On the negative side, the cost of running a TTO may be higher than the revenue generated, whilst academics may divert their attention away from pre – competitive and long – term research (that will eventually form the basis of future technological development), towards short – term business and economic goals.

Regarding the cost of a TTO, technology transfer works on a time – frame that is much longer from the usual investment horizon. TTO officers argue that it usually takes five years, or more, from the point of licensing a technology to the technology becoming a commercial product or service. As a result, it takes seven to ten years for a TTO to become eligible for critical evaluation. Thus, universities need to be prepared to comply to this kind of longer time – frames and to financially support TTOs for several years. It is through this continuing support that the TTO will be able to develop the highly skilled teams of people required to competently understand the language of

science and the language of business and to develop a business ecosystem capable of absorbing invention and providing ancillary services.

3. Main requirements for a TTO to operate successfully

Technology transfer is a long-term activity, where the returns are only visible and measurable many years after the work of the TTO is done. In almost all cases, it is impossible to predict the downstream impact of technology transfer deals, and, in most cases, retrospective assessment can be exceptionally complex.

There are two main streams of returns stemming from the TTO for the host university.

Returns to society: the returns to wider society are of greater importance and substance than the returns to the university. The purpose of university technology transfer is to use commercial routes to transfer technologies out from the university for the benefit of the health and wealth of society.

Returns to the university: the TTO helps the university promote itself within the wider business, industrial, and professional communities. The deals the TTO achieves provide appealing examples of the benefits that university research can bring to companies and individuals. The TTO helps the university demonstrate to research funders that the university is committed to promoting the effective transfer of technology from its research activities. Over time, a successful TTO is likely to be involved in managing a number of other activities which benefit the university. For example, business networks and seed investment funds. These networks provide opportunities for the university to interact with local and international commercial and government contacts.

For such returns to be possible, there are three main requirements for the TTO, as well as for the host university:

- a capability for managing the quantity and quality of research conducted within the university
- a capability to align the effort to commercialize some of the research with the university main mission, and
- a capability on the part of the university to commit for the long – term to the necessary reforms to sufficiently invest in the required human and material resources

4. Main requirements for a TTO to operate successfully

The University of Patras is implementing a plan to enrich human resources and improve existing infrastructure available to the TTO. This plan aims at improving all stages of university technology transfer management. Namely, the stages of:

- identifying potential projects
- evaluating potential projects
- protecting IP
- marketing projects
- closing the deals
- managing relationships created

The final goals of the project are about channeling promising research results and inventions to businesses, linking the university to the market and the society, and helping researchers on ways to promote and potentially exploit their IP.

Working alongside the University of Peloponnese, the University of Patras is planning to highlight the potential presented by the TTO to the academic community, including academics, researchers, graduate, and undergraduate students, as well as employees.

As discussed, this will be a long – term goal with greatly uncertain outcomes. However, the first steps include increasing disclosures to the TTO. For this to start happening, the TTO is planning recurring open sessions, during which all interested parties will be able to discuss what kind of support they can expect to receive.

The general plan is aimed at three main objectives: technology transfer initiatives, improvement of TTO staffing and organization, and lastly initiatives for information and briefing sessions, training, and education, for TTO officers and for interested parties

Regarding technology transfer initiatives, the plan calls for: (a) support for submitting IP protection requests at the national, European and international levels, (b) improving documentation and designing document templates, (c) recording and evaluating research results, (d) assessing research results that are potentially innovative and/or marketable, (e) creating benchmarks, (f) supporting technology transfer deals/contracts, (g) supporting negotiations for technology transfer deals/contracts, (h) supporting the creation of business plans for technology – based startups, (i) supporting the search for external associates, potential investors and finance.

Regarding the second objective of improving TTO staffing and organization, the plan aims at attaining specialized services by outsourcing when needed, access to specialized relevant databases and similar resources, as well as participating in technology transfer networks, nationally and internationally.

Finally, ss far as the initiatives for information and briefing sessions are concerned, the plan aims at providing opportunities for attending relevant seminars and training, especially at the fields of legal practice and business planning. A second important goal is the promotion of innovative services and products of the universities of Patras and of Peloponnese, nationally and internationally.

5. Conclusion

This is the beginning of an ambitious effort to create a more entrepreneurial culture at the universities of Patras and of Peloponnese. The project aims at benefiting all members of the two universities, should they require support with their potential efforts to commercially exploit research results.

For reasons discussed, this is not an easy task. The implementation of the project is being started, with some time – frame difficulties.

However, the TTO project, alongside the concurrent ΜΕΤΩΝ project to promote entrepreneurship and innovativeness within the University of Patras and together the research support unit, will eventually provide a solid steppingstone towards greater capabilities to innovate. That is, to convert a university invention (a product or service that has not been introduced to the market) to an innovation (a new product or service that has been introduced to the market).

For these first steps to succeed in the long – term, there is a known and pressing need for continued financial support from the state for a few years. Then, a committed university will be able to take over the of operating an independent TTO.

Acknowledgements

The plan discussed in section 4 is financed through the Action "University of Patras Technology Transfer Office" (MIS 5132542), which is co-financed by Greece and the European Union (European Social Fund- ESF) through the Operational Program «Competitiveness, Entrepreneurship and Innovation, 2014-2020».

References

[1] Alumni, A. “Innovation Finance and Technology Transfer: funding proof – of – concept”, Routledge, 2019
[2] DeVol, R., Lee, J. & Ratnatunga, M. “Concept to Commercialization: the best universities for technology transfer”, Milken Institute, 2017
[3] Hockaday, T. “University Technology Transfer: what it is and how to do it”, Johns Hopkins University Press, 2020
[4] Lee, Y., S. “Technology Transfer and Public Policy”, Quorum Books, 1997
[5] Libecap, G., D. (ed.) “University Entrepreneurship and Technology Transfer: process, design and intellectual property”, Advances in the Study of Entrepreneurship, Innovation and Economic Growth, vol. 16, Elsevier, 2005
[6] Link, A.N., Siegel, D., S. & Wright, M. (eds.) “The Chicago Handbook of University Technology Transfer and Academic Entrepreneurship”, The University of Chicago Press, 2015
[7] Siegel, D., S. & Wright, M. “University Technology Transfer Offices, Licensing and Start-ups”, DOI:10.7208/chicago/9780226178486.003.0001, 2015
[8] Sifeng Liu, Zhigeng Fang, Honggxing Shi and Benhai Guo “Theory of Science and Technology Transfer and Applications”, CRC Press, 2010
[9] Veugelers, R. & Siegel, D. “Technology Transfer Offices and Commercialization of University Intellectual Property: performance and policy implications”, DOI:10.1093/oxrep/grm036, 2007