

Strategy for Technology Transfer and Research Results Commercialization in University

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ABSTRACT

In the globalization stage, there has been an increasing interest in the determinants and outcomes of successful technology transfer and commercialization of research results. In this study, An evaluation framework which crosses technology transfer services and research results commercialization in University has been created. We found that research based business idea generation increase at a faster rate for professors with private sector work experience who have more time for research in their positions. The article ends with a discussion of our empirical findings and its implications for support activities related to technology transfer and commercialization of research results.

KEYWORDS: *strategy, technology transfer, research results commercialization*

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1. INTRODUCTION

Recently it is attending the evolution of the “activities of innovation”. In fact it is moving from research results to technology transfer development. The importance of university research in contributing to economic growth is today widely acknowledged in the world. This has among other things led to that universities nowadays not only are expected to function as providers of human capital but also as growth engines to boost regional and national economies. The high expectation on universities to support research commercialization is especially evident in engineering, agriculture, bio-technology faculties as empirical evidence demonstrate a high rate of growth oriented ventures originating from these sources (Shane, 2004; Wright et al., 2008). As such, our study leans on the acknowledgement of the importance of technology transfer and knowledge diffusion from universities to the private sector for long term economic growth in national economies (Siegel and Link, 2007).

Despite the increasing interest in gaining knowledge about how to support the transfer of university

generated knowledge into the commercial domain there are surprisingly few studies that empirically examine the very early stages of research commercialization where the initial ideas for commercial exploitation are first identified and developed (Hindle and Yencken, 2004). Instead, the bulk of studies have examined the formation and growth of spin off companies (e.g., Mustar et al, 2006) which is post the decision to exploit a certain technology or research result. These studies are all of great merit as they have greatly contributed to our understanding of the later stage aspects of research commercialization. However, the early development and growth of a new venture centers on a business idea that must have been recognized and evaluated at some earlier point in time. As such, our knowledge of the very early stages of research commercialization is still scarce despite its relevance for both theory and practice.

In this article, we develop the TTO model for transfer of technology and research-based know-how from university settings to private enterprise. This has left

the issue of how personnel from the private sector to the university may influence technology transfer and commercialization of research results within academia largely unexplored. Our understanding of the effects of private sector work experience on public research commercialization is thus still in its infancy, something which we believe limits academic debate about the topic and hence call for further scholarly inquiry.

2. Literature review

Technology transfer and research results commercialization

If the most common view of technology is “a tool” (Bozman, 2000), the technology is a tradable good to be bought and sold on the market (Arora et al., 2001). The technology transfer is viewed as the movement of knowledge and technology via some channel from one individual or firm to another (Devine et al., 1987; Gibson and Smilor 1991; Inkpen and Dinur, 1998). But the technology transfer can be viewed also as an active process, during which technology is carried across the border of two entities. These entities can be countries, companies, or even individuals (Kingsley et al., 1996). The technology transfer is defined also as the know-how about the transformation of operational technologies and processes, material technologies and knowledge technologies (Hickson et al., 1969; Wilson, 1986).

Research results can be applied and used in the commercial sector without formal contractual agreements between the university and users. Examples include the traditional tasks of universities in providing research-based education and publishing research results in scientific journals. However, university generated knowledge can also be transferred to the commercial arena in a more direct manner which encompasses activities outside of the normal university duties of basic research and teaching (Klofsten and Jones-Evans, 2000). Generally framed under the broad concept of “academic entrepreneurship”, such activities include external teaching to individuals or organizations outside the university, consulting to solve specific problems, commercial sales of products developed within the university, and licensing of patents developed within the university. As such, compared to research-based education and publishing research results these latter activities are more deliberate attempts to increase individual or institutional profit, influence or prestige through the development, marketing and commercialization of research-based ideas or products (Louis et al., 1989).

Commercial exploitation of research results centers on a business idea that must have been recognized or

discovered at some earlier point in time. Thus, commercialization cannot take place without prior discovery. This view is consistent with conceptual and empirical work in the entrepreneurship field where the entrepreneurial process start with the perception of opportunities for recombining resources on the market that someone believes will yield profit (e.g., Bhawe, 1994; Ardichvili, Cardozo and Ray, 2003; Klofsten, 2005). However, despite the interest in increasing the transfer of university generated knowledge from academia to industry there is up to date little theory informing the processes whereby the initial ideas for research commercialization emerge. Instead, most studies have examined research commercialization *post* the decision to exploit an opportunity thus leaving the organizing processes leading up to the identification of a new potential business idea largely unexplored (Hindle and Yencken, 2004; Vohora, Wright and Lockett, 2004). To meet this observed gap in the literature it is the generation of research based business ideas that is the main focus in our study.

During the technology transfer process many actors with diverse outlooks and interests are involved. Cause these things its management is often conducted along unclear lines of responsibility and authority (Janis, 2003). The actors of technology transfer can be divided in two main classes: the actors that offer skills for innovation, mainly universities and research centres, and the actors that search skills, like firms, consortia, industrial zones, etc.

3. Discussion a strategy for technology transfer and commercialization of research results.

University generated knowledge is not automatically transferred into the commercial domain and the main carriers of this knowledge in the very early phases of research commercialization are academics who are directly involved in its actual production. The high level of tacit knowledge inspiring research based business idea generation often entails that such novel insights initially are subjectively constituted and created in the minds of people (Hindle and Yencken, 2004). University professors are in this respect an important group of academics for the generation of business ideas that can be developed and commercially exploited. First, they have a deep understanding of the technology underlying their research which makes them better in absorbing new knowledge and combining concepts within their particular field of expertise (e.g., Cohen and Levinthal, 1990), something which may also stimulating the generation of novel business ideas. Second, their career has provided them with opportunities to build up a network of contacts and

relationships. Third, they have reached the highest academic position, which may provide them with incentives to widen their research activities and gain recognition in arenas outside the university. Hence, it seems fair to argue that university professors can be seen as key persons in the early stages of the process where research results are transformed into ideas for new or improved products, services or production processes.

A key starting point for understanding technology transfer and commercialization of research results is to examine the initial discovery or generation of potential research based business ideas. However, individuals need to have a predisposition towards being alert to signals of commercial potential in order to spot and seize viable opportunities for potential commercial exploitation (Gaglio and Katz, 2001; Kirzner, 1973). Research within the entrepreneurship field suggests that this ability to some extent can be explained by an individual's idiosyncratic prior knowledge, the so called 'knowledge corridor thesis' (Ronstadt, 1988). The knowledge corridor refers to that the mere act of being involved in entrepreneurial activities enables the identification of additional ideas for new business that an individual could neither see, nor take advantage of until they engaged in this process. The explanation is that entrepreneurial experience seems to favor the development of a cognitive framework which makes individuals more alert to signals of commercial opportunities in their environment (Corbett, 2002; Baron, 2006). This cognitive frame can then generate ideas for new means-ends relationships as well as support assessments of the potential benefit in a perceived opportunity. As such, an experientially acquired "knowledge corridor" enables individuals to make sense of commercial opportunities in order to generate new business ideas (Venkatamaran, 1997; Parks, 2005). Consequently, if applied to academic settings, it seems fair to argue that prior entrepreneurial experience can be expected to impact the mindset and knowledge base of university professors which in turn influence their ability to generate and discover potential research based business ideas.

Activities aimed at research commercialization centers on an idea or a belief that must have been created and evaluated at some earlier point in time and thus, from a theoretical point of view, research commercialization cannot take place without prior business idea generation. We believe our focus on initial business idea generation is an important addition to contemporary theory and research on academic entrepreneurship since all new economic

activity initially starts as ideas for new business (Hindle and Yencken, 2004). As such, our findings contribute to the small but growing body of knowledge informing about entrepreneurial activities in the pre-commercialization phase of university generated knowledge (e.g., Bird, et al., 1993; Hindle and Yencken, 2004; Bercovitz and Feldman, 2008). Moreover, although previous research has examined individual characteristics and personal attributes among university scholars the issue of work experience from outside the academic sector has not been explicitly studied. This despite continuing debates about the need to support inter-sectorial mobility of experienced researchers between academia and private industry. We have in this respect provided novel empirical evidence showing how experience from the private sector may influence technology transfer and commercialization of research results within University

4. Conclusion

This study has been enhanced the motivation of researchers between academic institutions and industry, and its effects on the generation of research based business ideas. In addition we found that professors who have high private sector work experience have a significantly higher research based idea generation if they also have a high amount of time for research in their positions. These results are largely in favor of our theoretical expectations and consequently support the validity of the knowledge corridor thesis in academic environments, suggesting that when university professors' gain entrepreneurial and private sector experience this set them off a journey down a corridor through which windows of opportunity will open up around them.

References

- [1] Bozeman, B. (2000), "Technology transfer and public policy: a review of research and theory", *Research policy*, Vol.29, No.4/5, pp.627-655.
- [2] Devine, M., James, T. and Adams, T. (1987), "Government supported industry-university research centers: issues for successful technology transfer", *Journal of Technology Transfer*, Vol.12, No.1, pp.27-37.
- [3] Dosi, G. (1988), "The nature of the innovation process", in Dosi, G. et al. (Eds.), *Technical Change and Economic Theory*, Pinter Publishers, London.
- [4] Eisenhardt, K (1989), "Building Theories from case Study Research", *Academy of Management Review*, Vol.14, No.4, pp.532-550
- [5] Breschi, S., Lissoni, F. and Montobbio, F. (2008) University patenting and scientific

productivity: a quantitative study of Italian academic inventors, *European Management Review*, 5(2), 91-110.

Research Technology Management, 51(2), 26-30.

[6] Burnside, B. and Witkin, L. (2008) Forging successful university-industry collaborations,

[7] Burton R. (1998) *Creating entrepreneurial universities: organizational pathways of transformation*, Oxford: Pergamon.

