The importance of technology transfer: a bibliometric literature review

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Abstract
The technology transfer has promoted a new paradigm for the university. The University’s third mission has supposed a new form of development for the university’s region transferring the research knowledge from university to business and generating of this form the necessary capabilities for grow and compete in the technological environment. For this reason, the policy makers are promoting polities for foment the technology transfer activities, with the objective of foment the relations between the university and the company sector.

In the last years, many academic researchers had investigated the different factors, process, and regional impact of the technology transfer activities, generating a complex and sophisticated analytical frameworks and empirical studies. In this study we realised a bibliometric analysis of research articles about academic technology transfer published in Web of Science journals over the 2000-2014 period, in order to have global vision. The bibliometric analyse permit us to identify the most important authors and journals that contribute to the creation of academic technology transfer literature. The conclusion reaffirms the importance of literature of the academic technology transfer in the new paradigm entrepreneurship and development in the university and development of their environment

Keywords: Academic technology transfer, Literature review, Bibliometric analysis, Co-occurrence analysis, Geolocation.

Introduction
The technology transfer produced from the public research institutions (PRIs) such as publicly funded universities, laboratories and research centres have become an key factor for developing and sustaining regional and national economic growth.

This article analyses the Academic technology transfer (ATT) process research published in a wide range of journals over a 25-year period (1990-2014) and it attempts to use cited references to identify/provide:

1. The leading authors and journals that directly (by publication) and indirectly (by citation) contribute to the technology transfer literature.
2. The core articles that influence the international literature
3. The co-occurrence authorship, keywords and citations among technology transfer articles.
4. A map showing where the most productive authors are in the world.

Metodology
Bibliometric analysis is a research technique that uses quantitative and statistical analyses to describe the distribution patterns of research articles with a given topic and a given time period (Diadato 1994).
For the realization of this work we have search in the Web of Science (WoS) database for obtain the base of articles necessary for our analysis.

Results

In this section, we will go to analyse the result obtains in the research realized in the Web of Science (WoS). A total of 344 articles realised for 663 authors was obtained for the study period of 1900-2014.

The most articles have been published in the recent years. The year 2007 stated the boom of publication about this topic with 21 articles and reaching a maximum in 2013 with a total of 45 articles.

The most cited article was “Why do some universities generate more start-ups than others?” this work has been realised by Dante Di Gregorio and Scott Shane, and published in 2003 which obtained a total of 261 cites (with an average of 20.08). The most important article of literature in relative terms was “University entrepreneurship: a taxonomy of the literature” realised by Frank T. Rothaermel, Shanti D. Agung and Lin Jiang, published in 2007 in Industrial and Corporate Change, it has got 25 cites per year (225 in total).

More than eighty journals have published the 344 articles of our sample, the two journals with the major representation of publications are the Journal of Technology Transfer (The Netherland) and Research police Transfer (The Netherland) wit 53 and 51 articles respectively. The most productive authors were Wright (n=12), Locket (n=10).

Co-authorship is when two authors or more work together to produce a work. The figure 1 show 19 research groups with different numbers of co-authorships, the groups circled are the groups with more than two co-authorship and the first group formed by Wrigth and Locket mainly is the most important.
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The co-keywords analyse to describe and discover the interactions between different keywords in the core ATT literature, which produced three different clusters. The most important (yellow) is formed for the keywords: technology transfer, universities, innovation, Academic entrepreneurship and Knowledge transfer. These words indicate a strong co-occurrence and have a high centrality index, which indicate that they are core words in the ATT literature.

![Figure 3. Co-citation (Minimum of 10)](source: The author's own (2015))

The co-citation map provides insight into the breadth and importance of the most cited literature in the core ATT literature. The most cited articles were Siegel DS, 2003 and Cohen WM (n=58) the first article analyse the productivity of the TTO and the second analyse the paper of the public research in the industrial R&D. This articles are co-cited and this are the core of the two different groups or clusters. The third most cited was Di Gregorio D, 2003 (n=52) This work analysed university resources and why some universities generate more start-ups than others.

Conclusions

This study allows us to conclude about the point at which the ATT literature is currently at. As we have seen along the present work, the ATT is a relevant topics in the last years as reflected in the exponential increase in the number of articles about the technology transfer from university.

The most productive authors were Wright, Lockett, Grimaldi and Link (from United kingdom the two first, Italy and USA respectively). In the co-authorship analyse we have found an important collaborations among this researchers, this is the case of Wright and Lockett which form the most important authors relation of the literature.

Owing to the importance acquired by topic many journals have decided published articles about the ATT, the most productive journals of this topic have been Journal of Technology Transfer, Research policy and Technovation (all this journals are situated in the first and second quartile of JCR), corroborate the growing importance of research in this area. The most cited works have been of Di Gregorio, D; Shane and Etzkowitz, H.

The co-occurrence gives us a vision of the importance of key-words on the literature. Obviously the most important word of the literature are “Technology Transfer”, this word have been studied with other important words within the study area, such as universities, academic entrepreneurship or economic development. This conclusion reaffirms the importance of the academic technology transfer in the new paradigm entrepreneurship and development in the university and development of their environment.

The co-citation analysis indicates that researchers use literature on recourses and differences in universities when they wish to explain the Academic Technology Transfer (ATT). Two of the most important works that the literature cites are Siegel DS, 2003 and Cohen WM.
References


