Novel perspectives on university-industry knowledge transfer: A structural assessment and text mining application

Universities face increasing demands for active dissemination of their research results and are expected to contribute to knowledge development in their socioeconomic environment. Universities are expected to be key drivers promoting economic development and innovation. Consequently, knowledge dissemination, as a crucial aspect for industrial development and innovation, is politically highly desired and became a focus area for public funding of university research. Scholars, policy makers, and practitioners picked up on this increasing demand for understanding university contributions and investigate collaboration and knowledge transfer between universities and industry. However, some elements in the interaction between universities and industry that contribute to its effectiveness still remain largely unknown. Questions remain regarding especially the knowledge transfer channels and measurements of successful knowledge dissemination. The overarching aim of this PhD project is to identify novel potential measures for university-industry knowledge transfer through specifically chosen and adapted computational methods, hereby contributing to the understanding of university research knowledge transfer. First, publication data from a single technical university's publication database were analysed regarding their distributions and ratios in different dimensions, such as publication types, research fields, etc. Additionally, coverage of long-standing established publication databases was taken into consideration. The results showed that the traditional databases have skewed coverage and novel or less traditional outcomes of research (output that is not a journal article or a book chapter) often might be significantly underrepresented. It shows that additional data can increase the insights into university research in certain aspects significantly. In the second part of the PhD project, a novel approach for detecting knowledge transfer was developed and used to trace the content from university research in companies. Text mining applications were used to detect content from academic publication abstracts on company websites. The findings show that the detection of common content between universities and industry via text mining applications is possible and beneficial. In the final part of the PhD project the methods are applied to investigate the impact of Open Access publications on knowledge transfer. Using the text mining methods, I examine the differences between subscription-based and Open Access publications, assuming that the accessibility of a written item implies a different performance in terms of knowledge transfer. Here the results show that for this specific measure Open Access publishing makes a difference in terms of university-industry knowledge transfer. Given the contemporary positive assumptions regarding Open Access publications, the differences appear less pronounced than expected. Overall, this thesis finds that novel computational methods can be used to detect knowledge transfer, but that further advancements in terms of technical tools and methods are needed to improve their performance and feasibility.

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