

Advantages of Integrating Knowledge Transfer With Academic Project Management

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The imperative to commercialize academic research in the modern economic and political climate has led to universities consolidating their knowledge transfer activities in technology transfer offices. Pooling knowledge transfer resources enables universities to better exploit and protect their intellectual property. This knowledge transfer structure, separating the knowledge transfer activities from the academic research, can be detrimental to realizing opportunities for the commercialization of both outcomes and research capabilities/processes. This article reflects on the advantages of having a structure whereby the knowledge transfer professional, by having responsibility for the management of an academic project, is an integral member of the research team.

Introduction

Traditionally knowledge transfer from academia to industry was achieved through informal relationships established between academics and technology companies [1]. Whilst valuable to individual academics and specific projects, in general engagement with industry was not critical to the viability of state-funded universities. In recent times, however, the political and financial imperatives [2] for universities to commercialize their technology has required a 'system of governance' to be adopted for knowledge transfer [3]. Accordingly universities have consolidated their knowledge transfer activities in dedicated technology transfer offices (TTOs) that secure and protect their intellectual property rights (IPR). The financial benefits to universities of pooling knowledge transfer resources in order to capitalize on their IPR, witnessed by the rapid proliferation of technology transfer offices in the United States following the passing of the Bayh-Dole Act in 1980, has been well documented in literature. A tendency within many TTOs to focus on IPR rather than disseminating knowledge can, however, be detrimental to realizing the commercial potential of technology [4,5]. This article does not seek to challenge the value of university TTOs. Rather, by reflecting on the author's experiences, it considers the value added to the commercialization potential of academic research by having a knowledge transfer professional who is also responsible for project management.

Background

The SCFED Project is an EPSRC funded multi-million pound research programme led by the University of Southampton. It brings together an interdisciplinary team of twenty-eight researchers from across three leading British universities. The programme's purpose is to deliver a transformative technology for growing structured nanomaterials. This collaborative approach is extending the limits of otherwise pure scientific research to deliver a novel technology with commercial potential.

My primary role in the SCFED Project is as the programme's technology transfer officer (60%). In this capacity I am tasked with facilitating the commercialization of the final SCFED technology and promoting the programme's profile. Although employed by a university that has a technology transfer office, I am part of the science faculty and an integral member of the SCFED Project team. In addition to my knowledge transfer duties, I serve in a secondary capacity as the programme manager (40%). These additional responsibilities give me an intimate awareness of the programme's progress and direction, far more so than if my knowledge transfer activities depended on periodic briefings by the programme leaders. At a time when knowledge transfer at academic institutions continues to be consolidated, I reflect in this article on my experiences as the SCFED Project's technology transfer officer and programme manager. I discuss the advantages of implementing a knowledge transfer structure that has a technology transfer officer who, while not playing an active role in the research, is still a central member of the academic team as the project manager.

My duties as the programme manager can broadly be broken down into two categories: (i) administration and (ii) programme planning. Administration includes activities such as: scheduling and minuting meetings, collating and circulating reports/results, maintaining official records and informally tracking progress across the different research groups. Programme planning coordinates the various research activities and breaks the programme down into specific, measurable tasks whilst maintaining a focus on the strategic project goals. All of these programme management responsibilities feed positively into my knowledge transfer role. In the following discussion I reflect on how being a programme manager improves the effectiveness of knowledge transfer for the SCFED Project.

1. Benefits to Knowledge Transfer

As the programme manager I am responsible for making all data that is considered useful (i.e. worth disseminating within the team) accessible through file sharing software. I similarly review and make all presentations/publications available to the rest of the team in this way. Processing all the research outcomes from the different groups within the programme keeps me informed about the progress being made in each of the research areas. This is enhanced by my attendance at all programme meetings. These include research meetings, where results and progress are discussed in detail, and meetings of the programme leaders, where issues and progress are reviewed in a more strategic context. The understanding that I am able to develop as the programme manager of the outcomes in the different areas of research is vital to identifying commercial opportunities for our technology. It also ensures that potential industrial partners are contacted at the right stage of the development process. This timing is important as achieving the right balance between the long-term and short-term goals of academia and industry respectively is essential to building constructive relationships with potential partners [6].

Apart from tracking the research outcomes, as the programme manager I also closely follow the research processes. This understanding is a necessity for maintaining an effective programme plan. The processes involved in delivering research outcomes often require unique skills that could themselves lead to industrial partnerships. As an example, a critical component to delivering the SCFED Project is the ability to design and test complex high pressure and temperature systems. The decision to develop this capability was taken because

the necessary systems are not commercially available. It was recognized in the grant application as a process required for delivering SCFED, but was not in itself a primary research objective. As the expertise developed in high pressure systems is not stated as the project's goal and lacking an appreciation of the skills involved, this capability would probably not have been identified as a commercial opportunity by an independent TTO. As a member of the team, however, I am able to appreciate and identify commercial partnerships for this capability.

Participating in the regular research meetings and chatting with the researchers about their work over coffee – a valuable, informal working relationship that would be difficult to achieve if they did not consider me part of the team – means that I also have a good appreciation of the challenges faced in achieving the programme's goals. A thorough understanding of these challenges is critical to correctly assessing the difficulties in translating the technology from a research to an industrial environment. As an example, prior to the SCFED Project I was part of a research project that aimed to cool crystals using lasers; a technology that was pursued as a means for producing non-vibrating refrigerators. The crystals were acquired from a collaborator and the science of optical cooling developed without an appreciation of the difficulties, timescales and wastage in producing crystals of suitable purity. Although the optical cooling technique worked, failure to appreciate all the challenges proved terminal for its commercialization potential. A technology transfer office that is separated from the research brings this risk; that it can focus on the academic success without fully understanding the importance of the complexities in delivering successful outcomes.

Apart from optimizing the transfer of academic outcomes to industry, having a knowledge transfer professional who is an integral member of the team delivering a project also improves the reverse flow of information from industry to academia. Rapid reaction to the evolving requirements of industry and the emergence of rival technologies is important if the developed technology is not to be redundant. Thus this knowledge needs to be effectively brought into the project planning process. To mitigate the risk of this knowledge being lost, a strong understanding of how the knowledge applies to the research is required. As the programme manager my awareness of industrial developments is not diluted by having responsibility for a diverse portfolio of research projects. I also have the ability to informally raise issues on the margins of other discussions. My experience demonstrates that having a working knowledge of all aspects of the research and a fluid personal interaction with the programme leaders means that industrial knowledge is brought into the project far more efficiently than it would via a TTO or through informal academic-industrial relationships.

2. Discussion

A knowledge transfer professional who is part of a university TTO but has a substantial portion of their time allocated to a particular academic project could acquire a similar understanding of the science to the project manager. They would lack, however, the informal relationships that develop from being an integral member of the team or an active appreciation of the project's 'flow'. Both these informal communications and participation in the frequent meetings that advance the research objectives are central to cultivating the project manager's intuitive awareness of all aspects to the project. It is this awareness that is the fundamental advantage to having a knowledge transfer professional who is also an integral member of the project team.

This article has reflected on the advantages of having a knowledge transfer professional who is also responsible for the management of an academic research project. It is logical to consider, particularly for less well financed projects, whether a researcher having a percentage of their working hours allocated to knowledge transfer would add equal value. As with a project manager, a researcher is an integral member of the academic team. Given that traditionally knowledge transfer was based on informal relationships between researchers and industrial partners, a researcher could reasonably be expected to perform this role. This conclusion is further supported by the fact that researchers are expected to be able to feed knowledge gained at conferences back into the project. However, as with the informal industrial relationships, appointing a researcher to this role could lead to a narrow focus on the project's ultimate objectives and the specific aspects to the project with which the researcher was directly engaged. Another issue to this structure would be that knowledge transfer activities are less related to applied research than they are to project management. The pressure to deliver research outcomes would probably lead to knowledge transfer duties being neglected. Project management necessitates a working knowledge of all aspects of the project; the progress and the techniques in each research area. The duties of a project manager complement rather than conflict with providing knowledge transfer. It is this breadth of knowledge and effective combination of roles that are the fundamental advantages of having a knowledge transfer professional who is also the project manager.

Conclusion

Separating the knowledge transfer aspect of projects from the research means that TTOs are dependent on academic briefings. Thus opportunities for knowledge transfer are already filtered by the academics who must selectively present information in order to keep such briefings manageable. This can be a particular issue if the academics have a narrow focus on their final objectives. A knowledge transfer professional who is actively engaged in project management and has an awareness of the specific research tasks within the broader context of the project should be able to independently identify other opportunities. The most likely opportunities to be identified by this structure of knowledge transfer will stem from the research capabilities and processes rather than purely the outcomes. An integrated knowledge transfer professional will be able to ensure that knowledge transfer considerations in both directions are taken into account at all stages of project strategy development. They will also better understand the challenges in translating the technology to industry, thus enabling obstacles to commercialization to be pre-empted.

The Engineering and Physical Sciences Research Council actively encourages researchers to engage with their university TTOs [7]. Clearly the knowledge transfer resources that such offices bring are important to securing and developing IPR. This article, however, highlights the advantages of having a knowledge transfer professional who, by providing project management, is an integral member of an academic research team.

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