Technological Forecasting & Social Change 80 (2013) 38–49

Contents lists available at SciVerse ScienceDirect

Technological Forecasting & Social Change

# Intermediaries for open innovation: A competence-based comparison of knowledge transfer offices practices

Allen T. Alexander [a], Dominique Philippe Martin [b,*]

[a] Centre for Innovation & Service Research, University of Exeter Business School, Exeter, UK
[b] CREM UMR CNRS 6211, University of Rennes 1, Rennes, France

ARTICLE INFO

*Article history:*
Received 12 October 2011
Received in revised form 31 May 2012
Accepted 30 July 2012
Available online 29 August 2012

*Keywords:*
Transfer office
Knowledge
Technology transfer
Channels of transfer
Core competences

ABSTRACT

Universities and Public Research Organisation rely on the capabilities and competences of their transfer offices to engage with commercial partners and to manage the exchange of knowledge and expertise. This paper promotes a model that can be used to analyse the capabilities and relative strategies of these transfer offices. Based on a 'core competences' approach the model enables the precise characterisation of the different modes and methods of transfer and engagement. Findings, coming from a two-year, in-depth comparative study of two transfer offices located in France and in the UK, underline the office's relative positioning within their institutional environment and identify the relative priority given to their use of the channels of transfer. These results provide a guide for the strategic management of transfer offices that are now operating within an 'open innovation' paradigm.



## 1. Introduction

The university–industry–government interdependence model, which promotes a triple-helix of evolving networks of communication and relationships is now a classical view [1,2]. Knowledge transfer organisations have developed, according to this evolutionary interdependence [3], to intermediate their institution's relationships and projects [4]. They offer development and management services and are instrumental in bridging between knowledge providers and knowledge-users [5].

Early linear models of innovation [6] denoted simplistic relationships between knowledge supplier and knowledge users. In these models the role of intermediation was more limited — often falling to consultants and technology brokers who sought out potential partners as part of a search phase [7]. With the arrival of more complex models of innovation [8], with multiple or geographically spatial partners [9], the need for intermediation has increased as the relationships become more complex and multi-faceted [10]. The recent focus on open innovation extends the partner reach and complexity of intermediation further [11].

Large companies often develop 'knowledge gatekeepers' who search out opportunities and develop knowledge transfer [12]. This type of intermediation is resource-intensive and often smaller companies are unable to bear the cost of these dedicated roles. Large organisation still approach universities and individual academics directly, so the role of knowledge gatekeeper has proven to be an enduring one, however as the value of knowledge transfer has been more widely recognised [13,14] universities have tightened up on their governance of research partnerships [15]. For academics and companies to engage directly without using their respective transfer offices is now the exception, not the norm [16]. Universities are also encouraged to work with SMEs and micro-organisations [13] who cannot fund knowledge gatekeepers and so the scope of intermediation grows. Significant funds have been provided to intermediaries to offset intermediation costs [14,17].

* Corresponding author at: University of Rennes 1, CREM UMR CNRS 6211, IGR – IAE, 11 rue Jean Macé, CS 70803, 35708 Rennes Cedex 7, France. Tel.: +33 2 23 23 78 16; fax: +33 2 23 23 78 00.
*E-mail addresses:* a.t.alexander@ex.ac.uk (A.T. Alexander), dominique.martin@univ-rennes1.fr (D.P. Martin).

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http://dx.doi.org/10.1016/j.techfore.2012.07.013

A number of studies of intermediaries have been undertaken [7,10,18] and in particular the Triple Helix model. These are either at an international, national or regional level [19–21] and positioned from a macro perspective. Other studies have provided a good understanding of the different channels available for knowledge interaction between the stakeholders [22–25].

Currently there are no studies presented that explore the different modes of integration or differentiate between these transfer activities at a micro level. For instance, what practical actions could be employed, to create different styles of management between private firms and public research teams? Is it possible to identify and distinguish between different resource configurations and institutional strategies that affect knowledge transfer activity? This paper sets out to answer these questions.

On a day-to-day basis, knowledge and technology transfer practices are mainly organized and implemented by transfer offices (TO) and this is the focus for the research, which has two main objectives:

1. To identify different models of knowledge or technology transfer, by considering both the comparative levels of activity and the support provided by the respective transfer offices accordingly;
2. To highlight, within each model, the most important outcomes achieved by each transfer office;

## 2. A Conceptual model developed from the literature

Knowledge is a complex construct and various models – organizational, and motivational – have been identified to understand the process of generating and transferring knowledge [Cf. for instance 26]. Research institutes and universities develop new knowledge as part of their activities [27]. They do this through scientific study and also through the study of social science, referred to as Mode 2 knowledge creation [28]. Authors agree that knowledge can be a source of commercial advantage and innovation and recognise two types of knowledge, tacit and explicit, as being useful [29 etc.]. To contrast Nonaka & Takeuchi [30] suggest that new knowledge can be created within an organisation and they refer to a process of socialisation–externalisation–combination–internalisation (SECI), however other perspectives [31–33] suggest that this is not a new knowledge — just a recombination of their existing knowledge. This paper considers the flow of new knowledge between knowledge-creators and knowledge-users [34].

To establish a conceptual model an extensive literature review was undertaken that focussed around key studies of existing knowledge transfer, technology transfer and research and technology institutes. This was then further developed by exploring the motivation and key drivers for these intermediary organisations.

### *2.1. Studies on transfer offices*

Many studies have been undertaken and from an empirical perspective, there is a central focus toward identifying the critical factors that enable or impede knowledge transfer, such as academic reward or cultural barriers [35–40]. As for more conceptual approaches, these are predominately focused around the paradigm of "incomplete information". For example, within "agency theory" a TO can be seen as an "agent" that mediates relationships between politicians and scientists [41]. In the conceptual framework of "asymmetry of information", TOs enable the pooling of innovations and must focus on building themselves a good reputation [42]. The "institutional approach" underlines that the most important role of a TO is to build legitimacy for new technology [43].

With such a large body of diverse research in this area a number of papers try to synthesis research and Markman et al. [25] suggest organizing the multiplicity of "channels of transfer" by elaborating a taxonomy around the key modes of commercialization. In contrast Siegel et al. [44] focus on the more practical necessity of defining a coherent and feasible technology transfer strategy, and suggest that this is a mechanism to enable the assessment of TO performance.

Within all of this research important questions remain unanswered and without doubt the most critical is the absence of any comparative differentiation between different TO activities. Because these questions are overlooked by current research there is no clear definition of what the range of activities offered by a TO could be or how these activities might be organized.

To make progress in this field, the research has investigated some of the basic, but nevertheless central points that relate to the role and services provided by TOs. Agency theory, and more generally the "asymmetric information paradigm", help us to realise that by having better control of the actors' involvement in transfer activities we can improve the outcomes — however this does not really help to define the range of TO activities that are most appropriate.

By considering the resource-based theory of the firm, and more precisely the core competence approach [45,46] we are able to gain insight into this question. Lei et al. [47] define core competence as *"a central set of problem-defining and problem-solving insights that enable the firm to create potentially idiosyncratic strategic growth alternatives and to enact, at least partially, with its environment*" [47, p 550]. By adopting this approach it allows us to develop a conceptual framework that: enables the key mechanisms (or channels of knowledge transfer) to be allocated against the core characteristics exhibited by different typologies of TO action; makes the identification of each of these core activities easier; provides an ability to identify keys indicators to assess TO activities; and facilitates the elaboration of a coherent strategy, according to the priority given, and the resources promoted against each core competence.

### *2.2. Why do TOs exist? Toward a comparative model*

According to the resource-based theory of the firm, core competences can identify a firm's competitive advantage, but what are these core competences and how do you identify them in the case of a TO? Whilst a wealth of research on knowledge and