Journal of High Technology Management Research 26 (2015) 137–148

Contents lists available at ScienceDirect

Journal of High Technology Management Research

Institutional work in academic technological facilities: A multi-case study from the field of biotechnology in France

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ARTICLE INFO

Available online 23 October 2015

Keywords:
Shared facilities
Institutional work
Biotechnology

ABSTRACT

Purpose and design: During this financially challenging times, public labs receive government funding to create technological core facilities (TCFs), which offsets the obligation to be open to any users. In the context of Gradual Budgetary Autonomy of Universities, academic TCFs are the object of multiple institutional demands (public service mission: training, world-class research, and revenue-generating commercial activity) that can be potentially contradictory.
This article has two objectives: (1) to identify the different institutional demands at play for technological core facilities and the tensions that this could give rise to and (2) to identify the different ways in which these tensions are addressed, illustrating the institutional work of the manager.
With a qualitative analysis, ten institutional demands are identified, some of them are potentially contradictory.
Findings and practical implications: The ways in which demands are balanced help us underline three institutional works made by academic facilities directors; "conciliatory," "academic research focused," or prioritizing "research support." In the studied cases, there is a clear link between the TCFs' founding legal structure and this institutional work. By contrast, the TCF size, the capability of the manager, scientific domain, and current equipment do not differentiate response strategies with respect to institutional demands.
In financially challenging times, universities need to define precisely the different missions of TCFs and their potential complementarities, and they also need to be consistent in the selection of their legal form. At the end, this strategic vision of the TCFs activities appears to be a central issue for the university to improve its research and transfer activities.
Originality/value: The multi-level approach – institutional, organizational, and agency – gives account of the clearly contradictory nature of the institutional demands. These contradictory demands make possible an institutional work, and three possible trajectories of the TCFs could be identified. For each of them, a specific legal structure of TCF is highlighted.

1. Introduction

Technological core facilities (TCFs) are technological platforms defined as "technological building blocks, that act as a foundation on top of which an array of firms, organized in a set of interdependent firms, develop a set of inter-related products, technologies and services" (Gawer, 2009). More specifically, academic technological core facilities (ATCFs) are up-to-date instrumentation associated with competences, available to academics and to industrials in order to perform scientific research (Peerbaye & Mangematin,

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http://dx.doi.org/10.1016/j.hitech.2015.09.009
1047-8310/

2005). ATCF differs from a classical laboratory in that its equipment must be made accessible to both academic and industrial communities. In a knowledge-driven economy (Powell & Snellman, 2004), ATCFs have become central devices for the research and transfer activities.

To date, the literature on TCFs has focused on three major issues. The first of these seeks to develop TCF typologies based on the characteristics of their business portfolios. The second issue incorporates the time dimension to try to account for the trajectories of public and private TCFs and their complementary nature. These two approaches are organized, more or less explicitly, around the scientific and technological life cycles of research activities (Paradeise, Peerbaye, Aggeri, Branciard, & Le Masson, 2010). The final issue focuses on the sustainability conditions of TCFs. It enlarges the scope of analysis by striving to link the "scientific and technological life cycle" of projects, market segments, and "business models" with the study of conditions for sustainability (Peerbaye & Mangematin, 2005).

However, as underlined by Perkmann et al. (2013), research on academic engagement has rarely addressed the role of institutional environment demands. Such demands are potentially divergent because they are based not only on public values (higher education teaching, world-class research) but also on new principles linked to budgetary restrictions (commercial activity, profitability).

The two main objectives of this paper are to identify precisely the different institutional demands at play and potential tensions they could give rise to, and the different TCF response procedures illustrating the institutional work of the TCFs managers. The research focuses on biotechnology TCFs with government-funded equipment, located on a university site. In this domain, a research–industry relationship is the most common one (Ebers & Powell, 2007;.Powell, White, Koput, & Owen-Smith, 2005).

With a qualitative analysis ten institutional demands are identified, some of them with potential conflicts. Three ways of institutional work given by academic TCFs in Brittany Region (France) are underlined and suggest research avenues for differentiating factors which will allow us to predict the different response strategies.

2. Technological core facilities strategies in response to different institutional pressures: the contribution of the institutional work concept

2.1. Conceptual background

In a context of open innovation, it is more relevant to apprehend the university in term of pool of competences in interaction between public and private actors, in order to transfer an actionable knowledge, rather than seeing it as a simple place of creation and capitalization of knowledge (Etzkowitz & Leydesdorff, 2005; Etzkowitz, Webster, Gebhardt, & Cantisano Terra, 2000). Technological core facilities underline this change in the university's role.

Numerous studies have focused on identifying factors that can hamper the universities' collaborative and entrepreneurial practices such as cultural barriers, assessment criteria of academics, or academic rewards (Lee, 1996; Siegel, Waldman, Atwater, & Link, 2004). These different studies can be mainly related to empirical approaches. To address an issue of fragmentation of these studies, some authors suggest empirical integrative model. Thus, Bozeman, Fay, and Slade (2013) propose a synthesis of these studies around three poles functionally connected: the "research collaboration attributes," the forms of outputs (knowledge focus vs property focus), and the impacts of the transfer. On the other hand, Perkmann et al. (2013) underline three different levels of analysis explaining the academic engagement with other stakeholders, which are the individual, organizational, and institutional levels.

Among all of these studies, one issue remains unanswered. This is the resolution of the "embedded agency" (Lawrence, Suddaby, & Leca, 2011) paradox, that is to say the understanding of how some actors, under the pressure of their institutional environment, are however able "to play" with this environment, selecting or opening through their own arbitration, new options.

By considering the new institutional approach focusing on responses to institutional demands (Crilly, Zollo, & Hansen, 2012), and more precisely the institutional work (Lawrence et al., 2011), we are able to gain insight into this question in the case of the technological core facilities.

2.2. Existence of potentially divergent institutional demands

Although the theory of new institutionalism (DiMaggio & Powell, 1983) is often associated with the idea of organizational homogeneity, it also helps to explain heterogeneity. In their pioneering research, DiMaggio and Powell (1983) envisaged the life cycle of a field, recognizing that an emerging field (Maguire, Hardy, & Lawrence, 2004) is initially comprised of diverse organizations (DiMaggio & Powell, 1983). This organizational heterogeneity is justified by the presence of newly established institutions (Lawrence, Hardy, & Phillips, 2002; Maguire et al., 2004) and the absence of a leader to imitate. Under these conditions, each organization responds individually to the "institutional demands" to which it is subject (Pache & Santos, 2010) and thereby reinforces the heterogeneity of the field's core institutional arrangements (Battilana, Leca, & Boxembaum, 2009).

For a mature field – characterized by the presence of dominant actors disseminating demands and practices that organizations have already accepted – an institutional change (Greenwood, Suddaby, & Hinings, 2002) may be initiated to modify the existing rules. An institutional entrepreneur (DiMaggio, 1988) with a strong strategic vision can initiate a divergent change. This situation leads to field fragmentation (Pache & Santos, 2010) in which new institution practices are disseminated.

Thus, in both emerging and mature fields, a plurality of (more or less established) institutional demands is possible and contradictions between them are highly likely to appear (Battilana et al., 2009; Pache & Santos, 2010).