

# Open innovation in practice: Evidence from British universities

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31st May 2013

## 1 Introduction

The knowledge exchange between universities and businesses has always been a crucial topic. While this knowledge exchange has been present, on one way or another (e.g. student training, consultancy, etc.) for many years, the advent of the Open Innovation model has led to a renewed interest in university knowledge exchange practices.

Although the idea behind Open Innovation (i.e. using both inside and outside ideas and paths to market) is not, in itself, actually new, it was only after the term had been popularised by Chesbrough (Chesbrough, 2003) that this concept started to be applied in a strategic manner. Ten years later, thousands of companies, multinationals and SMEs alike, have integrated Open Innovation into the core of their business practices, as well as their strategic plan. New positions, such as Open Innovation Director, have been created and an increasing number of partnerships have been formed.

Among these partners are, obviously, other companies, but also universities. This, again, is not entirely new: collaborations between firms and universities have taken place long before the term Open Innovation started to be used. However, the spread and scale of such collaborations has significantly increased in the past decade and universities, just like firms, have attempted to become a part of the Open Innovation phenomenon. In fact, far from being restricted to a minor role, some universities have become major players in the Open Innovation community.

It only seems natural that universities would engage in Open Innovation practices. Indeed, traditionally, most universities have always operated as open organisations that develop ideas both internally and externally and share the resulting knowledge with the rest of the world (through publications and teaching). However, many universities are going beyond this traditional role and have been actively developing open innovation strategies.

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One of the main reasons for that is that the role (and often funding) of universities, itself, has changed. Indeed, in many countries, universities are now considered as a centre point within an innovation network made up of firms, individuals (students, then workers) and public institutions. Hence, universities, besides their traditional role of production and diffusion of knowledge, have started to transform into hubs, supporting complex Open Innovation relationships between partners.

Yet, there are many ways to embrace Open Innovation. Furthermore, an efficient management of Open Innovation activities has to be adapted to specific constraints, both local and global, that each university is facing. Depending on the particular environment in which universities evolve, the changes brought about by Open Innovation, the related strategies used and the management structures are likely to differ.

Thus, the aim of this study is to explore the particular environment in which universities engage in Open Innovation and to investigate the specific responses that universities develop to meet the constraints intrinsic to their environment. The methodology used is an exploratory study based on semi-structured interviews of Pro-Vice-Chancellors (or equivalent level) of a variety of British Universities.

The article is organised as follows. Firstly, a review of the existing literature related to university knowledge exchange is conducted. The following sections present methodology and study design. Finally, the results of the study are discussed.

## 2 Literature review

Though the concept of open innovation is relatively new, universities have always prided themselves on having a culture of open “science” (Poyago-Theotoky et al., 2002).

Some of the recent changes, however, such as the current scale of university research, on the one hand, and the increasing reliance of the industry on knowledge, on the other hand, call for more efficient knowledge transfer between universities and businesses (Geuna and Muscio, 2009). This is especially vital as the increasing number of companies downsizing and even closing down their R&D departments (Lambert, 2003) and partnerships with academia become especially important to firms (Adams et al., 2001). This has led to an increased collaboration between firms and universities, as evidenced by the raise in research joint ventures (Hall et al., 2001) and joint scientific publications (Calvert and Patel, 2003). Without university research, many innovations would have happened much later or even not at all (Mansfield, 1991).

University-industry collaborations are important for firms as it provides them with access to technology, knowledge, talent (Cyert and Goodman, 1997), network and contacts (Lee, 2000). It also facilitates recruitment, research and development and access to knowledge resources (Lee, 2000). As to universities, in addition to external funding (Harman, 2001), university-industry collaborations can provide research data, application of basic research results to industry problems (Lee, 2000) and can act as a good PR for university (Dectera et al., 2007). Yet, because of high information asymmetries between partners, R&D

cooperation between universities and industry is characterised by high uncertainty (Veugelers and Cassiman, 2005).

Governments are also encouraging collaboration between universities and industry in order to foster innovation and wealth creation (D’Este and Patel, 2007). The increase in university–industry collaboration in Europe can be traced back to 1987, when the Single European Act was established to encourage collaboration between universities and firms, with a particular focus put on rapidly obtaining tangible results. This Act led to the creation of the European Research Framework programmes, which have, since, acted as a complement to national research funding programmes (Owen-Smith et al., 2002), with the aim to bring together universities and businesses from both core countries and Europe’s periphery to engage in collaborative research (Caloghirou et al., 2001).

Yet, the degree to which universities engage with industry differs across universities and even, within universities, across individual researchers (DiGregorio and Shane, 2003; D’Este and Patel, 2007). Collaboration between industry and universities can be both formal and informal (Cohen et al., 2002; Ahrweiler et al., 2011). Formal engagements include licensing of university patents, university spin-offs, employment of graduates, collaborative R&D, co-publications and mutual secondments. In contrast, activities such as meetings, jointly attended lectures and conferences, email communication can be considered as informal relationships.

Furthermore, interactions between universities and industry can be classified according to four different categories (Schartinger et al., 2002): joint research (including joint publishing), contract research (including consulting, financing of university research assistants by firms), mobility (staff movement between universities and firms, joint supervision) and training (co-operation in education, training of firm staff at universities, lecturing by industry staff). To this respect, D’Este and Patel (2007) find that a large number of academics, especially those involved in applied research, use several types simultaneously.

Taking a different perspective, Lind et al. (2013) distinguish four forms of collaboration: specified, when research process is towards creating/improving products, distanced, when research process is towards research results, translational, when two research processes are in parallel towards product and research results and developed (a research process towards product and research results.). University-industry links can be also classified as industry-pull (e.g. such as contract research) and university-push (e.g. spin-outs) (Poyago-Theotoky et al., 2002).

Hence, industry-universities collaborations can take many forms and technology transfer occurs via several different channels. Some of these channels have been studied rather extensively. University patenting (Fabrizio, 2007; Sellenthin, 2009; Striukova, 2009; Baldini, 2010) and licensing (Thursby and Thursby, 2002; Shane, 2002), in particular, have received a lot of attention recently. Similarly, several studies have been devoted to university science parks (Siegel et al., 2003) and academic spin-off activities (DiGregorio and Shane, 2003; Gubeli and Doloreux, 2005). Yet, the question of Open Innovation between universities and firms has, so far, received less attention. This is one of the gaps that this study aims to fill.

### 3 Methodology

Universities engage in Open Innovation in various ways. The structures and procedures established to support Open Innovation not only differ from one university to another but also, sometimes, across faculties and departments within the same university. Furthermore, the practices related to Open Innovation are neither always explicit nor codified. For these two reasons, an exploratory approach was adopted for this study. The fact that this research is the first to investigate how open innovation is organised and managed in UK universities further justifies this choice of methodology, as explorative methodology is especially recommended when the research issues are evolving (Yin, 2003).

In an exploratory study, the choice of sample is particularly critical, as it may affect the results of the study (Miles and Huberman, 1994). In particular, two critical aspects are the exhaustiveness and the representativeness of the information collected during the interviews. While the former generally relates to the number of interviews conducted (sample size), the latter is often associated with sample composition (and whether it accurately reflects the diversity of the population).

With regard to the size of the sample, Guest et al. (2006) have demonstrated that saturation (i.e. the point at which no further information is gained by conducting more interviews) is reached rather rapidly. Beyond 12 interviews, saturation is generally total and already six interviews enable to collect the vast majority of critical information. Likewise, Romney et al. (1986) calculated that samples as small as four enable to capture extremely accurate information with a high confidence level (0.999). For this reason, it was originally decided that no less than four interviews would be conducted, as this would ensure a high level of capture of critical information.

It was also necessary to account for the diversity of UK universities. Beyond geographical diversity, which was naturally considered when building the sample, the type of university was also taken into account. Indeed, in the United Kingdom, universities are usually classified as either “pre-1992” or “post-1992” universities. Pre-1992 universities are generally considered as the ‘traditional’ universities. Some of them, such as the University of Oxford or the University of Cambridge, were founded several centuries ago; others (such as University of Birmingham or University of Bristol) were created at the turn of the 20th century. The most recent ones (such as Lancaster University or City University) opened in the 1960s.

In contrast, “post-1992” universities are former “polytechnics” (technical higher education institutions) or colleges that were granted the university status in 1992. Although some of these institutions also have a very long history (some were even founded in the first half of the 19th century), many were formed after the Second World War. Compared to pre-1992 universities, post-1992 institutions were, in general, specialised in providing applied and practical technical skills and, therefore, originally, seldom engaged in fundamental research. However, in the recent years, and in particular after being granted the university status, these institutions have increasingly engaged in research.

To ensure that a significant representativeness of the information obtained in the interview, it was thus decided that the sample should consist of universities from different regions of the UK and that it should include both pre and post-1992 universities. The sample of this study, therefore, consists of six

University	City	Dist. London	Founded
City University	London	–	1966
Lancaster University	Lancaster	385 km	1964
Univ. of Oxford	Oxford	92 km	c. 1100
Univ. College London	London	–	1826
Univ. of Huddersfield	Huddersfield	305 km	1992 ( <i>1825</i> )
Univ. of Portsmouth	Portsmouth	123 km	1992 ( <i>1869</i> )

Table 1: Universities in the sample

universities, four of which are pre-1992 universities and the two remaining are post-1992 institutions (Table 1<sup>1</sup>). With regard to geographical location, two of the universities in the sample (City University, University College London) are situated in London, while the four others are located at distances ranging from 92 km (Oxford) to 385 km (Lancaster) from London. Overall, four regions (London, North West, South East, Yorkshire and the Humber) out nine administrative regions in England are represented in the sample.

Since the aim of the study was to investigate the overall level of support of universities of Open Innovation activities, it was decided that interviewees should be either at Pro/Deputy-Vice-Chancellor level or, for universities that have dedicated Enterprise/Knowledge Exchange service, at Director/Deputy Director of such services. The interviews, most of which lasted for more than one hour, were based on a semi-structured interview guide, as semi-structured interviews are generally considered as one of the most effective means of gathering information (Kvale and Brinkmann, 2009) and are, consequently, the most common type of interview in qualitative research methodologies (Alvesson and Deetz, 2000). In addition, the interviews were conducted as “focus interviews” (Yin, 2003), where respondents were encouraged to speak freely, though still addressing the topics defined in the structure. To ensure the reliability of the information collected, each interview was conducted by two researchers and recorded, thereby enabling investigator triangulation (Denzin, 1970).

## 4 Study design

The study was designed around five main research themes:

1. Discourse
2. Change
3. Strategy
4. Management
5. Open innovation success

These five themes are detailed in the following sections.

<sup>1</sup>For post-1992 universities, the founding year of the original institution is indicated in parenthesis.

## 4.1 Discourse

The objective of this first aspect of the study was twofold. First of all, it enabled to provide a context for the four other research themes. Indeed, in order to interpret and understand the discourse of interviewees related to change, strategies and management of Open Innovation, as well as to understand when and how Open Innovation can be successful, it was important to understand what Open Innovation means for the interviewees. It might be indeed the case that they have a very different view or understanding of what Open Innovation is.

Secondly, the objective was to assess how universities speak about Open Innovation internally and also with external partners. Indeed, communication is a particularly critical issue, since partners engaging in Open Innovation come from different background. In particular, our goal was to find out whether firms and universities, or even members of academic communities, “speak the same language”?

Thus, during the first part of the interview, respondents were asked to:

1. Define Open Innovation
2. Describe the way universities talk about Open Innovation
3. Speak about the way the term ‘Open Innovation’ is used within their university.

## 4.2 Change

The rationale behind the second research theme was to assess the changes within the university brought about by Open Innovation. The goal was to investigate whether the recent overall increase of Open Innovation activities was reflected in universities, which by nature are prone to Open Innovation model.

This question is particularly important in light of the changes in funding redistribution and IPR laws which that taken place in the past decades. Indeed, although universities have been, from the very beginning, open to knowledge exchange, this openness, started to be challenged a couple of decades ago when universities (especially research intensive) started to patent their innovations. Thus, it was important to establish which of these two trends (greater openness, through Open Innovation, or more limited openness, through patenting) overall prevails and whether universities Open Innovation activities have increased.

Furthermore, since more diverse stakeholders (multinational corporations, SMEs, NGOs, public research institutes, charities) engage in Open Innovation, another aim was to establish whether the type of Open Innovation activities universities engage in has changed in the past years.

Consequently, during the second part of the interview, respondents were asked about changes in the level and types of Open Innovation engagements their university participates in.

## 4.3 Strategy

Although universities are naturally prone to take part in Open Innovation, the question is whether their engagement in Open Innovation is aimed mostly

at filling in knowledge or financial gaps (Chesbrough, 2003) or at stimulating growth (Chesbrough and Crowther, 2006), in other words, whether it is reactive or proactive. Proactive Open Innovation, in the case of universities, means tapping into companies, public organisations and other universities to meet potential partners and set up networks.

During the third part of the interview, respondents were asked about the university's objectives when carrying out Open Innovation activities and whether the university's engagement in Open Innovation something university was responding to or something that was actively pursued as development opportunity. Respondents were also asked to describe their Open Innovation environment.

#### **4.4 Management**

As potentially, Open Innovation practices involve more participants than 'traditional innovation', it may require a different managerial approach. Another key aspect of this study, therefore, was to investigate how Open Innovation is managed within universities. In particular, the aim was to investigate how the challenges posed by Open Innovation were addressed.

Thus, interviewees were asked to describe how Open Innovation activities were managed and coordinated within their universities and how their university was responding to the challenges of Open Innovation.

#### **4.5 Open innovation success**

Finally, in addition to investigating how universities define and talk about Open Innovation, our aim was to find out what Open Innovation practices are considered to be successful and to understand what makes these practices successful.

As a final question we asked our respondents what a successful Open Innovation practice meant for them and when in their opinion Open Innovation practices were most efficient.

### **5 Results**

#### **5.1 Discourse**

Chesbrough (2003) defines Open Innovation as follows:

“Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology. Open Innovation combines internal and external ideas into architectures and systems whose requirements are defined by a business model.”

Although most respondents were familiar with Chesbrough's definition and, thus, provided a definition very close to it, others had their own definition of Open Innovation. For instance:

“Open innovation is about relationships, integration and collaboration especially on pre-competitive issues.”

“Open innovation can help explore great new ideas, and maintaining sustainability.”

“Open innovation requires finding the way for all partners to share and yet to benefit.”

The interviews revealed that Open Innovation often has a different meaning for different people, not only across universities, but also sometimes within the same institution. Some respondents pointed out that this was due to the fact that Open Innovation does not always take place explicitly or formally.

Furthermore, some interviewees reported that, in their institution, the term “Open Innovation” was, in fact, rarely used, but that the concept matched closely with the “way they do things”. In particular, those respondents mentioned the way academics network, collaborate, use infrastructure and resources. Such activities are in the ‘spirit’ of Open Innovation, even when not branded as such explicitly. In fact, considering that universities have functioned as open environment long before the term ‘Open Innovation’ was even coined, it is not surprising that many academics engage in Open Innovation without being necessarily aware of it.

## 5.2 Change

When asked about the changes brought about in universities by Open Innovation, the interviewees spontaneously mentioned both internal and external changes.

### 5.2.1 Internal Changes

All the respondents mentioned the recent radical changes in university culture. In particular, most of them emphasised that universities are now much closer to businesses than they used to be. When public funds were readily available, only a handful of enthusiasts thought about making their research applicable, let alone building business partnerships.

Nowadays, academics are far more eager to get involved with businesses. It was clear from the interviews that this was especially the case for the new generation of academics. Indeed, when young academics join universities they often seek help to understand how to work with businesses and how to create business networks. As their professional network grows, they then take an active role by introducing businesses to their university.

Our respondents also noted that, because it is so important to promote Open Innovation within universities, some of them were deliberately bringing in people to make academics within the university more aware of Open Innovation opportunities and of the needs of businesses. This has led to the creation of “facilitators” positions within the universities, often as a part of the ‘Enterprise’ departments. The main role of such facilitators is to make academics understand businesses better.

It was clear from the interviews that universities have moved along the business chain. Nowadays, not only universities know how to ‘speak the same language’ as businesses, they have also learned how to develop investment funds, practical knowledge, added value, etc. This new culture means that universities are more engaged with business issues than they used to.

Interestingly, all respondents were extremely positive about the benefits of Open Innovation for universities. Hence the changes appear to be a positive response to opportunities, rather than negative response to a perceived threat.

### 5.2.2 External changes

With regard to changes of external nature brought about by Open Innovation, the respondents unanimously noted that the demand for partnerships has been significantly increasing in the past years, with more companies, public institutions and other universities (especially from overseas) looking for collaboration. While one could expect that this increase simply corresponds to the growing interest in Open Innovation, some of the respondents mentioned that, in their opinion, this was partially due to the recent changes in public policy, as the UK Treasury has been looking increasingly closely at the economic impact of the investments made by the research councils. This, obviously, pushes public institutions and universities to work closely together, hence the increase in collaboration requests originating from those institutions.

However, these changes of policies also had impact on university-industry partnerships. Indeed, it is now frequent in the UK that having one or several business partners is a requirement for a research grant. Some research funding programmes, such as those of the Technology Strategy Board, may even require a 50% funding match by industry partners. Other programmes offer the possibility for private entities (generally SMEs or start-ups) to receive funding alongside universities and other public institutions. Businesses, both small and large, have become increasingly aware of these changes of policies and some respondents added that their universities are overwhelmed by the number of companies who want to come and work with them, especially in technology area.

As for many organisations Open Innovation can be rather challenging, the operationalisation of the relationship with partners is particularly critical. Indeed, one of the critical issues is that this operationalisation strongly depends on the way relationships develop. If the relationship has changed, it is, indeed, possible that the way the relationship is operationalised is no longer adequate.

To this respect, the interviewees reported a change in the way external partners see their relationships with their university. In particular, there seems to be a greater variety of attitudes towards universities, which relate to the level of engagement of the partners (Fig. 1). Respondents reported that some partners still saw their relationship with universities as an ‘open-closed’ model, where universities are (and even should become more) open and share knowledge, while they, meanwhile, continue with their usual innovation practices.

In contrast, other partners do realise that they, themselves, need be more proactive towards Open Innovation and adapt their company to the Open Innovation model, for instance by creating dedicated positions within their companies (such as senior Open Innovation positions). A number of respondents noted that, while such approach was, undoubtedly, a “step in the right direction”, such partners may still have a rather conservative view of their relationships with universities and carry on scouting universities for ideas while their lawyers insist on using exactly the same contractual clauses as 15 years ago. Overall, respondents were in consensus with Ternouth et al. (2010) who argue that on order for businesses to benefit from their relationship with universities a culture

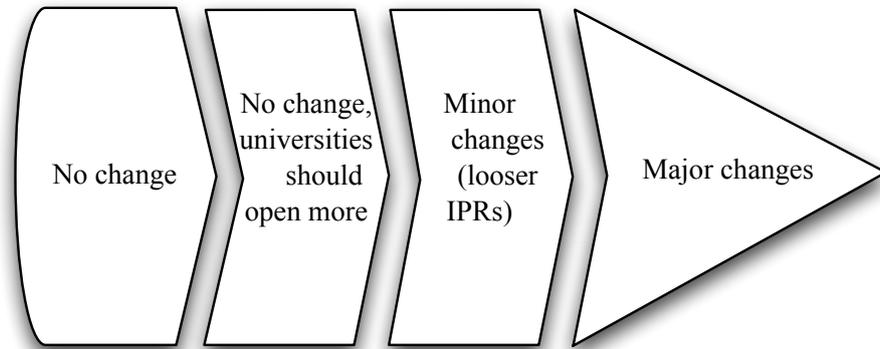


Figure 1: Gradation of attitudes towards change of external partners.

of open innovation, as well as staff who are capable of working with academic researchers are required.

Finally, respondents reported that, nonetheless, some partners had fully embraced the Open Innovation paradigm and gradually adapted their intellectual property practices more open.

### 5.3 Strategy

#### 5.3.1 “Reacher” or “settler”?

In the third part of the interview, respondents were asked about the strategies related to Open Innovation developed by their university. Interestingly, some of them reported that the increased potential value of collaboration with universities for businesses (to decrease the cost of R&D) has made the ability to engage with universities a critical competence for businesses. Indeed, businesses are *de facto* in competition to access the universities’ knowledge. Being able to turn academic knowledge into innovations that can be brought to market has become a competitive advantage. This ability is especially appealing at the beginning of the s-curve, when companies need to acquire the missing knowledge rather rapidly and when company’s technology enters the final stage of the s-curve and new ideas might be scarce (Buganza and Verganti, 2009).

In light of such demand, and because businesses themselves develop the necessary competencies, it could be thought that universities do not need, in fact, to develop a proactive Open Innovation strategy. However, collaborative agreements between universities result not only in knowledge transfer from university to knowledge, but vice versa as well (Siegel et al., 2003; Geuna and Muscio, 2009). All our respondents were very much aware that Open Innovation is a two way process which enables both universities and private sector to learn from each other. Indeed, engaging in Open Innovation enables academics to learn about the way their research is used, which, in turn, can lead to changes in the direction of their research, to ensure it has a greater impact. Understanding how research actually affects businesses helps feed business needs into the

research process. Hence, in order to maximise common benefits, universities have consciously adapted the way they conduct research.

Although this new way of organising research could raise concerns about academic research being carried out only as commissioned by businesses, our respondents declared that, in their opinion, this did not prevent curiosity-driven basic research. Indeed, some universities have chosen to only work on a company's problems if solving this problem fits their research portfolio. This strategy is actually the usual practice for knowledge transfer partnerships. Also, instead of changing the course of their original research to match business demands, some universities try to use their existing research outcomes proactively (for example by offering licensing agreements or by building spin-off companies). Thus, the collaborations between universities and businesses can, if a university chooses so, be very much university-led.

### **5.3.2 Universities as Open Innovation environment**

Open Innovation strategies of universities do not, however, solely relate to the question of the adaptation of academic research to business partners. Indeed, for most of the respondents, the role of universities goes far beyond that and universities are seen as providers of environment where Open Innovation can happen and, thereby, act as a catalyst for economic growth.

The 'vision' each university has of this environment plays a central role in its choice of partners. The interviews enabled to categorise this environment according to two sets of criteria (Fig. 2):

- virtual or physical
- local or global

For instance, some of the universities in the panel had a preference for working with partners in close proximity. In such cases, the environment provided by the universities maybe physical, in the sense that universities and businesses actually work in the same building. In contrast, other universities accept engagements with 'global' partners, in which case the collaboration is usually mainly virtual. However, a 'global' environment is not necessarily virtual only, and some universities also provide a physical environment to their global partners (albeit in a more limited manner). Likewise, a local Open Innovation environment may also be virtual.

### **5.3.3 Intra-university Open Innovation**

Our interviews have shown that universities' Open Innovation strategies do not necessarily "stop at the door of the university". Indeed, all the respondents mentioned that the application of the Open Innovation model goes beyond collaboration with external partners. Universities also use Open Innovation strategies internally, by promoting multidisciplinary research, which enables academics to learn about the research their colleagues conduct in other disciplines.

## **5.4 Management**

The interviews revealed that management of Open Innovation is a particularly critical issue, because of the multiplicity of partners and of the frequent lack of

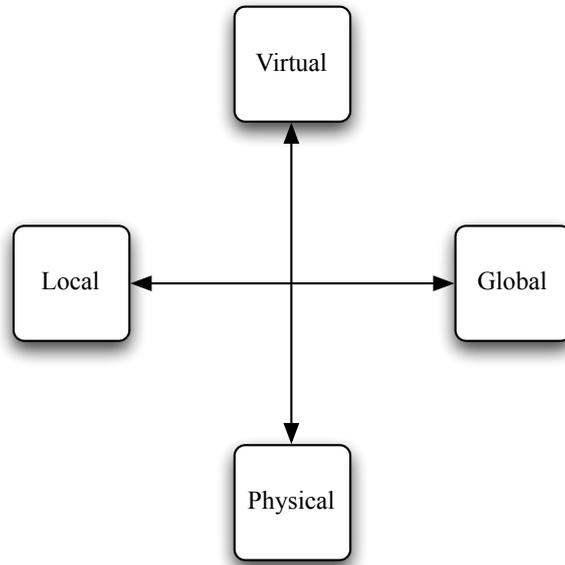


Figure 2: Typology of Open Innovation environments provided by universities

integration between them. In particular, the management issues raised by the respondents related mainly to three areas: control, managing partnerships and overcoming challenges.

#### 5.4.1 Control

Until rather recently, Open Innovation-type of activities within universities were mainly “self-managed” in a generally decentralised manner. Academics engaged in collaboration with external partners were individually managing such relationships and this seldom led to any participation of the university as institution. However, the growing importance of Open Innovation, in general, and collaboration with businesses, in particular, has led universities to attempt to manage such collaborations in a more systematic manner. Specifically, the expected key benefit of centralisation is that it would enable universities to respond to partnership requests more adequately. It is indeed rather difficult to find partners when one does not know what assets (technologies, patents, inventions, skills and knowledge) one has at hand. Hence, all respondents mentioned the necessity to “control” and monitor the output of their university.

With regard to the manner of controlling this outflow, the interviews have revealed that the specialisation of universities matters greatly. In particular, there are significant differences in the way research-intensive and less research-intensive universities approach this question (Fig. 3).

Respondents from research-intensive (pre-1992) universities mentioned that they have tried, at some point, to control the outflow of information through central repositories, Technology Transfer Offices, database of research excellence, etc. The idea was to establish a “one-stop” service for Open Innovation

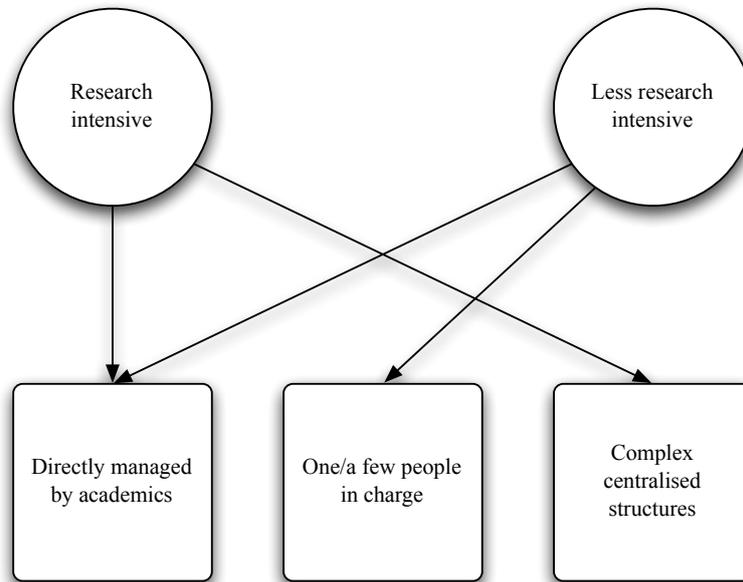


Figure 3: Forms of management of Open Innovation reported by the respondents.

activities, with the view to simplify greatly administrative and management issues related to Open Innovation.

However, the consensus is that such systems have quickly become inefficient, as controlling the output of a large number of active researchers requires a similarly large number of business developers. While such systems still remain, it is acknowledged that they only provide a partial view of the university assets. Furthermore, as noted by some of the respondents, centralisation sometimes fails, which leads to several services being in charge of different aspects of Open Innovation. For instance, it may be the case that academics and potential partners have to contact different departments or divisions depending on the nature of their relationship (knowledge partnership, research projects, etc.). This, obviously, makes it more difficult to engage in Open Innovation.

In contrast, less research-intensive universities often have less formal and/or more decentralised structures, which enable them, when an opportunity arises, to react more quickly. Furthermore, respondents reported that, in such universities, all research-active academics (and their partnerships) were usually managed by and known to one key person, for example the Head of Research. Consequently, it is rather easy for this person to spot excellences in research that need to be exploited. Interviews revealed that new relationships are actually often built through this key person's network. In such an environment, the management of Open Innovation relies more on personal relationships than on formal processes. These results support previous findings that university-industry collaborations often rely on informal and formal social links (Owen-Smith and Powell, 2004) and that variety and frequency of university-industry interactions

depend more on the characteristics of individual researchers rather than on the characteristics of their departments or universities (D’Este and Patel, 2007).

Interviews revealed, however, that there are similarities in the way some research-intensive and less research-intensive universities manage Open Innovation. Indeed, some universities have an “ad-hoc” approach to Open Innovation management. In those institutions, academics are in charge of establishing and managing relationships with businesses. If a need arises (for instance to formalise a relationship), dedicated business development units are there to help academics realise the opportunities that have arisen through their contacts. By using this “on demand” model of management of Open Innovation, universities avoid creating too many special entities aimed at connecting universities and businesses. This is particularly important, according to some of the respondents, because such entities can sweep away some very delicate and useful connections that have been already there.

Finally, respondents have reported that further control issues may arise when a university and a company engage together in several (or rather many) Open Innovation activities. Indeed, there is a risk that both universities and businesses will only be able to keep track of a few of these partnerships (the fact that some companies and universities come under different names certainly does not help). Such fairly basic issues can cause fundamental difficulties in managing engagements and partnerships. Respondents mentioned that, in such a case, it was advisable for the company to appoint an engagement manager to oversee all related activities. It was reported during the interviews that, in the case of universities, partnerships that are considered as strategic for university’s long-term research are managed by the director of corporate partnerships or someone in a similar position.

#### **5.4.2 Partnership management**

University-industry partnerships are often long-term agreements (Arora and Gambardella, 1994; Braun et al., 2000) and what is more are usually longer than projects without university partners (Hall et al., 2003), this is often because of the basic nature of the research that is carried out by partners (Braun et al., 2000). The success of these partnerships is partially dependent on partnership management.

Respondents mentioned that management of Open Innovation can be complicated by the diverse nature of the relationships between universities and its various partners. In particular, it was noted during the interviews that such difference in nature often relates to the main objective of the partnership (and to the problems this partnership aims to address).

For instance, some partners consider having a relationship with a university as being, in itself, the main driver, even if they do not have a particular problem to solve. Others partnerships are created because firms have a particular problem and would like the university to help identifying and solving it. Finally, in some cases, companies have already identified the problem themselves and are only looking for universities to provide solutions.

Interestingly, our respondents mentioned that “problem-solving” relationships do not necessarily end once the problem has been resolved. Instead, this sometimes leads to further collaboration. Firms may, at first, be interested in finding out more about the specific problem they are facing, which, in turn, may

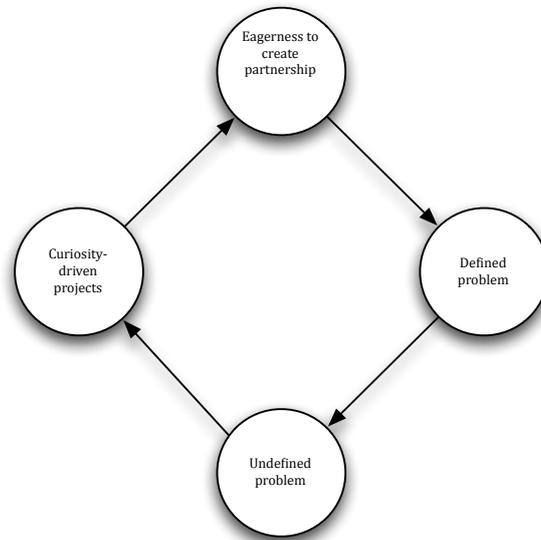


Figure 4: Motivations for businesses to engage in a partnership with university

lead to curiosity-driven projects. As mentioned in the interviews, there is generally a tendency to grow initial relationships into larger strategic partnerships.

To this respect, some of the respondents indicated that they attempt to behave strategically when deciding what kind of partnerships to form. If potential partnership involves research that has a long-term strategic interest for the university, they may offer the partner to invest jointly and create a centre of excellence. On the other hand, if potential partnership requires research that does not align well with the university’s research strategic plan, they may instead offer a licensing out agreement.

### 5.4.3 Overcoming challenges

A critical issue mentioned by all respondents was how efficient management of Open Innovation can help overcome certain challenges. The main issues mentioned during the interviews are: understanding needs, fairness and sustainability of relationship, resource management and inertia.

**Understanding needs.** Respondents indicated that, although understanding their partners is crucial for successful Open Innovation, it is still one of the main challenges. Some respondents suggested, as a solution to this challenge, to adopt a proactive attitude and ask partners about their needs and offer not only solutions but also an environment where these solutions can be put in place.

In addition to communications problems, different expectations can create barriers to university industry collaboration (Feldman and Desrochers, 2003; Dectera et al., 2007). In particular (Feldman and Desrochers, 2003) argued that disregard for applied work and especially its successful commercialisation may cause some departments losing touch with practical problems. On the

other hand the increasing focus on commercialisation activities may go against university mission to support curiosity- driven research. Interestingly, according to our respondents, although parties do not necessarily always look for the same outcome, different expectations should not to be a problem as long as the partners' aims overlap at some point. After they have achieved something together, all parties can go their separate way to pursue their long-term goals. Indeed, the main objective of partnership is the advancement of knowledge and such knowledge can even be shared later on with other partners.

In addition to having different goals, partners may have different timescale. Universities often have rigid administrative processes, which are different from companies' generally more flexible structure. Some of our respondents mentioned engagement mechanisms were put in place to mitigate this.

**A fair and sustainable relationship.** Once the needs of the partners are understood, the next challenge is to create fair and sustainable relationships. Interviewees reported that some partners do not understand the universities' Open Innovation ecosystem and its goals and are mainly concerned with maximising their own value (often through Intellectual Property). To make sure that everyone gets a fair value out of the partnership, respondents believe that it is essential to define mechanisms that allow all participants to get fair returns. In particular, SMEs are often reluctant to let their IP go, in particular when large corporations are also part of the Open Innovation partnerships (as they often see large corporations as "vultures"). Respondents pointed out that universities, when acting as a hub, can change this culture to a more collaborative one, thereby facilitating the establishment of a sustainable relationship between all partners involved.

**Resource management** Limited resources, on both university and businesses side, were mentioned by all respondents as a challenge to overcome. With regard to universities resource constraints, scarcity of academics' time was mentioned as a challenge by several respondents. However, some have a view that this issue can be overcome with adequate management. Indeed, several respondents suggested that this was essentially not a time issue, but rather a problem of time management (e.g. "academics reinventing the wheel", overly bureaucratic processes).

On businesses' side, interviews revealed that most of the concerns were related to SMEs, in particular the difficulty for small firms to practice Open Innovation. Numerous social and cultural differences can potentially create gaps between SMEs and university departments, which are less likely to appear when SME participants and university researchers are connected through pre-existing social ties of trust (Bjerregaard, 2009). Our respondents mentioned that even initiating collaborations might not be always easy for SMEs. A company has to have significant resources to phone up 120 UK universities to find out whether the research they are doing at the moment is something they are looking for (considering that universities might not always know about everything they are doing). Also, it might be more difficult for SMEs to understand how to work with universities and how to respond to university's demands, since they can rarely afford to assign dedicated staff to monitor university-company relationships. According to the respondents, universities are trying to introduce pro-

cesses and mechanisms that would make this process easier for SMEs, business incubators being of examples.

**Inertia.** The rigidity of administrative processes in certain institutions was mentioned as a challenge during the interviews. Respondents were unanimous in suggesting that administrative structures need to change in order to respond to the challenges brought by Open Innovation practices.

## 5.5 Success factors

In the final part of the interview, respondents were asked what successful Open Innovation meant for them. The general view was that it meant a good collaboration that would take place across multiple research projects, as well as consultancy, studentships, co-presenting at academic and trade conferences. Long-term partnerships were deemed the best ones, which implies that partners should be selected carefully.

Of course, not all projects work the way partners intended. When projects fail, though, it is very often because of unsuccessful personal relationships. As one of the respondents said:

“You don’t do open innovation through contracts, you do it through contacts”.

Geographical proximity was also named as an advantage, although some respondents added that it cannot guarantee in itself a successful relationship. Many respondents emphasised that Open Innovation “works better” when happening for a reason, for example when there is a common challenge that could be addressed by companies and universities across different sectors.

## 6 Conclusion

For a long time, the two main missions of universities were teaching and research. While knowledge exchange did, of course, take place, it was often seen as a by-product of these two fundamental activities. In the past few years, the role of universities as a vector of knowledge exchange has been increasingly moved forward, to the point that it now can be considered, in its own right, as a third mission of universities. This new mission is not, however, just an additional separate activity. It is an integral part of the mix, without which the other two missions cannot run successfully.

One of the key findings of this study is the diversity that prevails in the UK with regard to Open Innovation. There is indeed diversity in terms of understanding of what Open Innovation is, in terms of how universities communicate about it. There is also diversity in terms of the internal and external changes that Open Innovation has caused. There is diversity in terms of the attitudes towards Open Innovation and with regard to the motivations to engage in it. There is diversity in terms of the type of environment provided by universities for Open Innovation. There is, finally, diversity with regard to the management structures of Open Innovation.

However, despite this diversity, universities have been able to effectively communicate internally and externally and form partnerships. Despite this

diversity, the challenges faced by universities are perceived as very similar. More importantly, the interviews have revealed that all universities seem to ‘think the same’ when it comes to finding solutions to these challenges. Interestingly, the perception of what successful Open Innovation is was also very similar across universities.

Another key finding of this study relates to the ‘new’ role of universities, who are becoming a central actor within the Open Innovation ecosystem. Indeed, universities can act as a trusted intermediary to bring together multiple parties and allow them to collaborate in a hosted and trusted way. Universities can show the way to other partners, especially when it comes to controlling and sharing one’s intellectual property.

Open innovation is not a prescription about something that universities should do. Instead, it is more a description of a landscape that universities need to shape and in which they operate.

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