

## The role of Higher Education Institutions in supporting innovation in SMEs: university-based incubators and student internships as knowledge transfer tools

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### Abstract

*Universities are increasingly expected to develop links with the business community. At the same time, SMEs need to improve their skills and knowledge base so that they can develop their innovation capabilities and improve their competitiveness. Universities and other Higher Education Institutions (HEIs) seek links with large businesses for reasons of prestige and possibly access to funding. Hence, the links between university departments/research centres and SMEs may have been side-lined although they can be beneficial to both sides. This paper reviews how links between SMEs and academia can foster the innovative potential of SMEs. We focus on two initiatives: university-based business incubators and student internships. Such initiatives enable knowledge transfer from HEIs to small firms while the HEIs benefit from building links with local communities and improving their objectives regarding student employability. University spin-off companies are additional evidence of links between universities and SMEs.*

### 1. Introduction

HEIs operate in an increasingly competitive environment where they need to cater to diverse stakeholders. In the UK, employability is emerging as a key concern in Higher Education policy [1], particularly since the recession and the increase in student fees. In addition, research evaluation increasingly takes into account the impact of university research outside academia. It is suggested that the development of stronger industry links can enable universities to improve the employability of their graduates. However, it has been identified [2] that academics working with SMEs face hindrances within existing structures. Simultaneously, SMEs need access to external expertise so that they can improve their knowledge base and their long-term competitiveness. Yet, universities tend to seek linkages with larger firms that are more likely to have an extensive knowledge base of their own. Increased collaboration between SMEs and universities can help foster the innovative potential of SMEs and at the same time enable universities to improve the employment prospects of their graduates. Characteristics of the SME such as size and sector may affect the nature of the relationship to universities. This paper reviews different types of university initiatives that enable knowledge transfer to

SMEs. Firstly, we consider the role of university based incubators/business hubs. University spin-off companies that operate within incubators demonstrate the commercialization of university research through the establishment of small firms. Secondly, the role of internships in building employability skills and in promoting innovation in small firms is discussed.

## **2. University based Incubators: a tool towards effective clusters?**

This section discusses how universities attempt to promote small business development through the establishment of business incubators. Such incubators are meant to act as a knowledge transfer mechanism. Business incubators are a particular form of organisation that aims at developing clusters of connected businesses. The concept of business incubators/business hubs is introduced before addressing how the involvement of universities may improve their potential to enable innovation. Examples of incubators established by UK universities are presented to illustrate good practices for their operation. The evaluation of these structures should consider benefits to the university, the SMEs and the local economy.

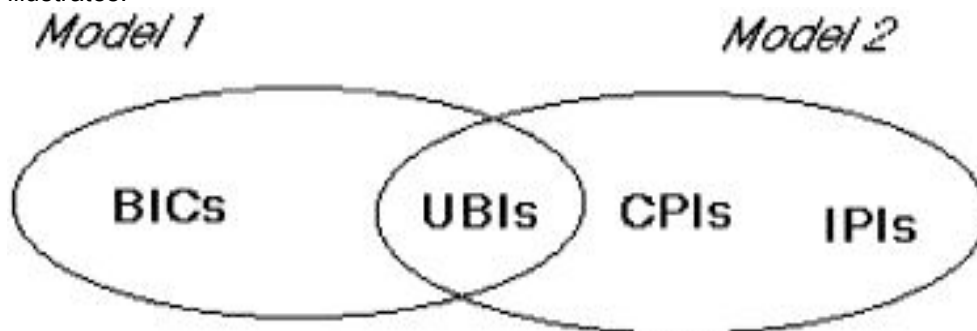
The use of incubators as a tool to promote innovation derives from the fact that the environment where entrepreneurs are based affects their potential to identify and act upon opportunities to innovate [3]. Hence, the idea of incubators is supported by evidence from the success of industrial districts/clusters: incubators were conceived as a policy measure that could replicate the success of clusters that have developed organically and aid regional regeneration. However, research indicates that clusters developed through policy are not as successful as those that have developed organically [4]. Science parks, technopoles and incubators/business hubs form part of the infrastructure that supports small business development [5]. The development of university based incubators also relates to the question on the use of space: there is evidence to suggest that universities do not use space as efficiently as possible due to relatively short teaching years. Business villages and incubators may allow for a more productive use of university space (lecture rooms, offices, even laboratories/testing facilities) throughout the year.

The following types of incubator have been identified [6]:

1. Business Innovation Centres: these are publicly funded centres that offer basic services to their tenants such as space, IT infrastructure and information about finance
2. University Business Incubators (UBIs) which form the focus of this section
3. Independent Private Incubators (also known as accelerators): founded by individuals in order to support small businesses usually at the growth stage
4. Corporate Private incubators: these are set up by large companies to support the emergence of corporate spin-offs

UBIs are public incubators which are in some respects similar to Business Innovation Centres, although they emphasise knowledge transfer from universities

to industry. In this sense, they also operate as a research commercialization mechanism [6]. It was argued that the existence of different type of incubators results from changes in the needs and requirements of businesses and they describe two models that account for the role of business incubator [6]. Model 1 is more conventional and is usually adopted by publicly funded Business Innovation Centres and regional incubators. It focuses on the provision of tangible assets and basic services. According to Model 1 the advantages of using an incubator are mainly logistical, along with access to external expertise and increased visibility. Model 1 is mostly directed towards the needs of business in traditional sectors. On the other hand, Model 2 emphasises more the provision of finance and access to higher-value intangible assets and operates on a shorter term orientation. Model 2 is driven by the rise of knowledge based companies that are active in more volatile environments. Incubators adopting this model also act as mediators connecting firms with other sources of support. The role of incubators as mediators touches upon a central question regarding small business support: should public business support services provide specialist advice or should they act as a co-ordinator that can guide businesses to other sources of support, possibly from the private sector [7]. Interestingly, UBIs operate at the intersection of these two models as Figure 1 illustrates.



**Figure 1: Two incubating models: [6] p.114)**

We examine UBIs in the context of co-location of small firms in Higher Education Institutions. We refer to the cases of InfoLab 21 at Lancaster University [8] and of Staffordshire University Business Village [9]. We aim to address the universities' motivation towards investing in an incubator and why small firms choose to be based in this environment.

UK government policy has sought to increase the involvement of knowledge transfer initiatives. However, there is limited research on how these initiatives have worked out in practice [8]. InfoLab 21 was established at Lancaster University as a high-profile centre of excellence for the commercialization of ICTs in the Northwest of England. Hence, it is an example of an incubator that focuses on a particular industry. Its facilities are shared by small businesses, academic staff and students and it houses the following activities:

1. ICT research
2. Training and development for ICT professionals
3. Knowledge transfer undertaken by the Knowledge Business Centre. Emphasis is placed on creating start-up and spin-off companies from academic research

Interviews with the small businesses located in InfoLab 21 found that the firms identified the following benefits resulting from their links with the incubator.

1. Increased strategic focus: this is an important finding as strategic focus is something small businesses struggle with.
2. Awareness of the core-competences: also, the businesses could identify their own limitations and when they needed external resources.
3. Enhanced R&D activities
4. Importance of combining technical and business support
5. The need for knowledge databases to enable knowledge transfer. Such databases can form part of a virtual infrastructure for SME support. In fact, examples from different countries included the use of databases as part of the support measures [10].

Hence, small businesses can gain more than direct practical benefits (facilities, access to academics) though their location in an incubator. Following this account, it emerges that InfoLab 21 operations fit more with Model 2 in the classification suggested earlier [6]. Businesses mentioned that they gained strategic advantages through their location in the incubator rather than mere access to resources in a more cost-effective manner. It was also suggested that knowledge transfer activities should acknowledge that entrepreneurs' needs change along the business lifecycle [8].

Staffordshire University Business Villages provides use of space and facilities to small firms: these services are linked to Model A of UBIs [6]. The business village was developed taking into account the particular characteristics of the area: closure of the mining industry had led to unemployment but low rents provided a competitive advantage. There are three locations for the business village in Stoke, Stafford and Lichfield hosting a total of 101 office units. Stoke Creative Village offers additional 16 units that are tailored to the needs of designers/makers rather than office space ([http://www.staffs.ac.uk/for\\_business/officespace/](http://www.staffs.ac.uk/for_business/officespace/)). One of the aims was to contribute to graduate retention in the area. The provision of high quality facilities has led to the profitability of the Business Village for the University (personal communication). Graduate employability and entrepreneurship was a specific motivation for Staffordshire University. Employability goals were not explicitly considered in either of the two models of incubators suggested earlier [6]. However, it can be argued that incubators are not solely a mechanism for knowledge transfer but they can also act as a pedagogical tool: they provide the opportunity to students and graduates to develop their entrepreneurial ideas in a more supportive environment.

In the case of the Staffordshire University Business Villages the links to student employability and graduate entrepreneurship become clear through the university's involvement in project SPEED (Student Placements for Entrepreneurs in Education) [9]. Project SPEED involved the identification of student entrepreneurs and the development of viable businesses. Unlike typical student placements, placements under the SPEED programme were actually new business ventures. The scope of the project was not limited to business school students as it was

acknowledged that entrepreneurial attributes can also be nurtured through the curriculum in other disciplines. There is evidence from the 14-19 year olds that practicing start-up business ventures removes the fear and uncertainty associated with entrepreneurship; the creation of student businesses within the context of a university operated business village is a further step towards enabling students to exercise their entrepreneurial ideas in a less threatening environment [9].

As the examples suggest UBIs may also host university spin-off companies. Evidence from the US suggests that the proportion of university spin-off companies is higher in research parks (incubators) that are older and closer to the university main campus [11]. In addition, the networking capability of university spin-off companies is associated with improved performance [12]). Hence, the policy for UBIs should envisage them as tools that enable networking among businesses.

### **3. Student and graduate internships: SMEs and the employability agenda**

Internship programmes for students and graduates can prove mutually beneficial to universities and small businesses. Internships incorporate work-related experience into graduate education through a scheduled and supervised programme [13]. The previous section mentioned how student internships may also take the form of a self-employment project. Besides universities, other educational institutions can also be active in such initiatives. Internships can contribute to the development of the absorptive capacity of small firms through the use of students' skills. This section considers the role of internships in SMEs in enabling both employability and knowledge transfer goals, mainly in the UK context.

Another study [14] mentions that most research on internships has focused on the benefits to students and employers rather than to the HEIs. This research draws on the extant literature to summarize benefits for all three parties. Among some benefits to the students are more and earlier job offers, and higher starting salaries so the contribution to employability is clear. Internships are also said to improve job searching skills and develop networking opportunities. The employers (businesses) gain through improved hiring practices as they have access to a higher calibre of potential staff, networking and exposure to new ideas. We can argue that the latter point is more pertinent to the development of innovation. Benefits for the university include improved reputation, improved student recruitment, practitioners' input to the curriculum and networking to the local community. The improved links to the local community suggest that universities form part of a regional innovation system. The study's survey to the deans of US business schools showed that 87% felt stronger links to the community while 34% reported that internships motivate students to start their own businesses. Evidence from the UK [15] also identifies the role of universities in a region's economic success.

Some reservations on the use of internships regard the commitment of the student and the appropriate use of academic staff's time; on the other hand internship administrators often feel undervalued (ibid.). Universities have not yet established how best to manage internships as a way of enabling transition employment. A further point is that internships traditionally were hosted by larger businesses;

however, recent government initiatives have encouraged internships in SMEs [16]. A report for the Department of Business, Innovation and Skills [17] considers internships/work placements as a measure that increases engagement between graduates and SMEs: graduates develop an understanding of working in the SME environment and SMEs develop an appreciation of how graduate level skills can benefit the business. SMEs frequently have a lack of understanding of graduate level qualifications [18].

The UK government has launched the Graduate Talent Pool Programme in partnership with the Federation of Small Businesses in order to fund 10000 internships in small and micro enterprises [18]. However, more should be known about the recruitment processes in SMEs in order to promote graduate employment (ibid.). The report *Generation Crunch: the demand for recent graduates from SMEs* [18] identified that the demand for graduates from the public sector and large businesses was clear but very little is known about demand from SMEs. In fact only 11% of the surveyed SMEs have employed a recent graduate in the past year and only 12% mentioned the intention of doing so in the following year (ibid.). On the positive side, two thirds of the SMEs who had employed graduates mentioned good return on the financial investment and a good retention rate. This report also identified that the limitations of graduate employment on SMEs result mostly from the demand side. Still, there is need for more focused effort in order for SMEs to be seen as a feasible destination for graduate employment.

As a science-based industry the lifesciences sector has a particular interest in graduate internships. Evidence is presented from the ORBIS (Overcome Recession: Bioscience Investment in Skills) programme which targets bioscience graduates [19]. ORBIS provided a 26 week paid programme of internships to 60 recent graduates. Out of the 60 projects 39 were hosted by SMEs. It was complemented by training days both for the students and their line managers that focused on skills deficits in the area. These training days help develop a community of learning. It emerged that the programme contributed to the employability of graduates. Placements (informal, industry or university led) are well established in the lifesciences sector. Although companies were initially drawn to the programme for affordable labour, they appreciated its developmental aspects at later stages. Evidence from ORBIS suggests that both the firms and the graduates need training in order to organise mutually beneficial internships. This point may be even more pertinent to sectors with lower use of internships.

#### **4. Conclusion**

The paper reported on two measures that may improve the links between universities and small firms: university-based incubators and internships. It is acknowledged that policy measures in the UK encourage stronger links between academia and the small business community. In order for collaboration to be fruitful both sides should appreciate the potential benefits as well as have suitable training. There are examples of initiatives that have nurtured student

entrepreneurship and encouraged graduate employability in SMEs; however good practice from these examples has not been widely disseminated.

## 5. References

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