

## STUDY ON THE AVAILABILITY OF UK ACADEMIC “GREY LITERATURE” TO UK SMEs

### Report to the JISC Scholarly Communications Group

December 2008

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## EXECUTIVE SUMMARY

This report documents the findings from a small study on the availability of academic grey literature to SMEs (small and medium sized enterprises) in the UK.

Universities provide a set of services and training to SMEs as part of the 'third mission'. Services include consultancy, project work, student placements, business facilities and networking opportunities; training may take the form of academic study, professional accreditation or short courses. Although these help to transfer knowledge and skills to the economy, the main university-sourced activities that do this remain informal contacts, the supply of graduates, publications and conferences. This project set out to find out more about the role of the grey literature in the process of transferring knowledge to SMEs.

The project specification required that representatives of 20 SMEs were interviewed. In the event we interviewed 23 people from SMEs across a number of areas of the manufacturing and service industries. The companies ranged in size from one to over 100 employees. Some were research-based. The companies were contacted directly or through recommendations from universities.

During the course of the study we also talked with some other organisations to better understand the context in which university-SME interactions take place, the main one being Business Link. We did this because the universities told us that referrals from these organisations, and from Business Link in particular, are the main way that SMEs engage with them.

From universities, SMEs seek the opportunity for collaborative research, specific expertise, training, advice, consultancy, published research literature and an opportunity to recruit new graduates. None of the ones we interviewed had ever sought grey literature from universities, though the research-based SMEs had discovered doctoral theses via Web search engines from time to time.

SMEs do require access to grey literature of various types and would welcome the chance to use reports, survey results, theses and datasets that universities could provide. The problem is discoverability. SMEs turn to trade or professional bodies for this sort of information as a rule, or search the Web, and do not think of the higher education community as a possible source.

The visibility of university-produced grey literature is very poor. Universities must make clear what they have on offer and manage the dissemination of it better if it is to be of help to the SME community. The Web provides the tools for this task.

The other main finding is that some SMEs – and not just research-based ones – do need to use the published journal literature on occasions. They find this difficult because of subscription barriers and because only limited access is available through their local university (if at all).

The recommendations we make are as follows, under three main headings:

### Key Perspectives

## How SMEs can learn that relevant literature exists and discover its whereabouts

**Recommendation 1: Scoping the development of a simple toolkit for discovery of the grey literature should be considered.** SMEs need a means to discover the grey literature that is simple to use and which delivers immediate results. A study should scope the features and possible deliverers of such a service.

**Recommendation 2: Information for SMEs on existing means of discovering relevant grey literature.** Currently, SMEs use Google (or similar) to locate grey literature of interest, but this will fail to find content not on the Web. Universities should be encouraged in their quest to interact further with SMEs and, in particular, to develop routes to the grey literature for SMEs and signpost them to the SME community nationally, including the EThOS service (which may act as an exemplar for other grey literature types).

## How universities can deliver grey literature to SMEs, and in the right time frame

**Recommendation 4: An estimate of the grey literature currently available on the Web should be calculated.** We know that a proportion of grey literature potentially useful for SMEs already exists on researcher personal websites and, in small measure, in institutional repositories (e.g. theses). A study scoping the extent of this availability, and estimating what proportion of the total relevant grey literature output from universities, would help to describe what more can be done in improving availability of the grey literature.

**Recommendation 5: Universities should be encouraged to make grey literature openly accessible on the web.** The JISC is well-placed to advise universities on the potential usefulness and value of the grey literature to SMEs – and thus for the efficacy of innovation in UK plc – and should encourage them to develop ways of ensuring that its availability is maximised.

**Recommendation 6: The optimal means of making grey literature available from universities should be determined.** It is not clear from this preliminary study which might be the best way for a university to ‘show off’ grey literature outputs – or even whether a federated solution to this might be the best, providing a national view on all academic grey literature (as there now is for academic theses). Further work on this is recommended, particularly in the sense of what discovery service might best fit SMEs’ needs.

**Recommendation 7: Universities should be encouraged and helped to describe the value of their research better to the small business community.** This is a natural consequence and product of the implementation of recommendations 5 and 6 and essential if SME take-up is to be maximised.

## How SMEs can learn about accessing the published literature without cost

***Recommendation 8: Advice should be provided to the SME community about Open Access research literature.*** The research-based SMEs should be properly informed about ways to discover the Open Access published literature. They do use Google, but would benefit from familiarity with Google Scholar, OAlster and other discovery and search services focused on the Open Access corpus.

### **Acknowledgments**

We thank all the contacts in the SMEs that participated in this study. They did so under promised conditions of anonymity so they cannot be identified here. Some people to whom we spoke in universities would also rather remain un-named but we are grateful for discussions that provided us with context for the study. We thank those people in universities who helped us identify SMEs and who *can* be identified: Leah Corr (Centre for Environmental and Safety Management, University of Middlesex), Vanessa Ascough and Maureen Costelloe (Centre for Leadership Studies, Exeter University), Helen Fogg (Institute for Entrepreneurship & Enterprise Development, Lancaster University), Rosemary Campbell-Blair (Corporate Information Services, The Library, University of Leeds) and Audrey Songhurst (Centre for Enterprise & Business Development, Canterbury Christchurch University). We also thank Dr Richard Bolden (Exeter University) and Dr Stuart Macdonald (Sheffield University) for helpful advice and information.

## 1. INTRODUCTION

This project was focused on the provision of grey literature by universities to SMEs, but it is helpful to begin with some context with respect to what universities are in general currently offering to the business community. The 'third mission', outreach to the community outside academia, is satisfied in two main ways – through training and by services.

Training offered by universities to businesses takes various forms:

- Academic courses (e.g. BA in Business, Master of Business Administration)
- Professional accreditation (e.g. Institute of Directors diploma)
- Short courses on specific topics (e.g. Doing Business in Europe, Finance for Small Businesses)
- In-company programmes
- Work-based learning programmes

Services that universities offer to the business community include:

- Consultancy
- Project work
- Knowledge transfer advice and practical help
- Work placements for students (particularly using students from business schools)
- Space for start-up companies (sometimes)
- Forums and events for networking (business clubs)

Over three decades now, universities in the western world have been under directives from governments to become first of all innovative, that is, to attempt to instil in its researchers an outlook that is positive towards the kind of research that may have direct applications; and secondly to become entrepreneurial, that is, to align with the values of the commercial world and to assume risk-taking behaviour to be part of the expected norm.

Strengthening the 'third mission' has, then, helped universities fulfil these government expectations. Providing training services to businesses and exploiting the intellectual property generated within the institution have generated some income for universities that have done these things relatively well. But with thirty years of hindsight it is becoming apparent that the thrust to encourage innovation and provide economic advantages to society by formal technology transfer mechanisms has not quite succeeded in the way expected. Only 167 of 27,322 patents held by 194 US universities, for example, have made over \$1 million in revenue to date and the most frequently-cited university-sourced activities that contribute to innovation by SMEs remain the traditional ones of informal contacts, supply of graduates, publications and conferences (Cosh et al, 2006).

The supposition that universities have knowledge or skills that can aid the business community is logical. The famous statement from the then Chairman of Hewlett Packard (HP), Lew Platt – “If only we knew what we know at HP” – was recently developed to fit an 'entrepreneurial' academic context by David Livesey, Secretary-general of the League of European Research Universities (LERU), thus: “If only Stanford knew what Stanford knows, if only HP knew what Stanford knows, if only Stanford knew what HP knows, if only Stanford knew what Cambridge knows, if only

Cambridge knew what Stanford knows, if only Cambridge knew what HP knows”.... (Livesey, 2008). There is, in other words, a well-founded supposition that universities possess a wealth of useful knowledge but that the challenge of making that *usable* knowledge has not yet been fully met.

The literature on the interaction of SMEs and universities is rich and extensive (Bolden & Petrov, 2008) and it is outside the scope of this report to review it to any great extent here. Besides, it is mainly focused on the way that universities have provided consultancy services or invested in developing technology transfer expertise. There is little on the interaction of universities and SMEs at the level of provision of information in the form of literature, whether the literature was formally published or not, though repeated surveys in the UK and across the EU have flagged up published articles as an important source of codified information transferred to the business sector and contributing to innovation (Cosh et al, 2008; European Community Innovation Statistics, 2004).

This project therefore moved into an area of relative novelty. It has uncovered some important facts and explored some interesting issues with respect to the needs of SMEs for information, some of which could be supplied by universities given the right procedures in place.

## 2. METHODOLOGY

### 2.1 SMEs interviewed for the study

The project specification required us to identify and interview 20 SMEs. In the event we secured interviews with 23 SMEs in total. Our aim was to include in the study a sample of SMEs of various types according to the following bases:

- Size: our sample included SMEs ranging from sole traders to companies with over 100 employees
- Basic activity type: we included both service and manufacturing companies
- Research-orientation: the sample included both research-based and non-research-based firms
- Industry sector: the breakdown of the SMEs interviewed is shown in Table 1

SME business	Sector*	Activity type	Number of employees	Research-based?
Software licensing and sales	Wholesale and retail trade	Service	11-100	No
Marketing consultancy	Professional, scientific and technical activities	Service	1-10	No
Design and marketing services	Professional, scientific and technical activities	Service	1-10	No
Optical telecoms equipment design and manufacture	Manufacturing	Manufacturing	11-100	Yes
Maternity and baby products	Wholesale and retail trade	Service	11-100	No
IT services and training	Professional, scientific and technical activities	Service	1-10	No
Business consultancy (2)	Professional, scientific and technical activities	Service	1-10	Partly
Charities (2) (wildlife charity; charity for children in the developing world)	Professional, scientific and technical activities	Service	1-10 (1) 11-100 (1)	No
Medical polymers and films	Manufacturing	Manufacturing	11-100	Yes
Construction engineering	Construction	Service	11-100	Partly
Legal services	Professional, scientific and technical activities	Service	101-250	Partly
Food and drink producers (2) (flour miller; alcoholic drinks producer)	Manufacturing	Manufacturing	11-100 (1) 101-250 (1)	No
Food and drink distributor	Accommodation and food service activities	Service	1-10	No
Licensed trade	Accommodation and food service activities	Service	1-10	No
Florist	Wholesale and retail trade	Service	1-10	No
Kitchen & bathroom supplier	Wholesale and retail trade	Service	1-10	No
Translation services	Professional, scientific and technical activities	Service	1-10	No
Printers	Manufacturing	Manufacturing	11-100	No
Pharmaceutical software development	Manufacturing	Manufacturing	11-100	Yes
Computer and software design	Manufacturing	Manufacturing	11-100	Yes

**Table 1: SMEs interviewed for the study**

\* Classifications from the UK's Standard Industrial Classification of Economic Activities 2007 (SIC 2007)<sup>1</sup>

<sup>1</sup> [http://www.statistics.gov.uk/methods\\_quality/sic/downloads/sic2007explanatorynotes.pdf](http://www.statistics.gov.uk/methods_quality/sic/downloads/sic2007explanatorynotes.pdf)

## 2.2 Identifying and gaining the cooperation of SMEs

The project specification required that SMEs chosen for interview were “known to be interested in the outputs from UK academic research”. This meant that we could not use a random sample of SMEs but instead had to take steps to make contact with SMEs that were known to universities or which we identified as possibly having some reason to use outputs from universities. We made contact with suitable SMEs in two main ways:

### ▪ ***Via universities***

One of the routes for identifying suitable SMEs was to approach universities to obtain lists of SMEs that had been in contact with them for information or assistance. During this process we found that there were several ways into universities for this sort of information, namely:

- the library (if it offers a corporate information service)
- the service that manages technology transfer and relations with external (and internal) businesses
- academic departments, particularly in business schools
- units specifically established to fulfil part of the ‘third mission’ (interaction with the community)

### ▪ ***Directly with SMEs themselves***

SMEs were identified directly through:

- Personal contacts
- Web searches
- Recommendations and leads

## 2.3 Consultation with universities

We also solicited the help of universities and some of them felt able to talk with us about how they interact with SMEs. A variety of university points-of-contact with the business community participated and helped us:

- A university library which offers a corporate information service
- A university technology transfer unit
- A university academic department
- Two university enterprise development centres
- A university centre for technology application

## 2.4 Other organisations consulted during the course of the study

It became apparent when we were trying to identify suitable SMEs that there are a number of players in the arena supplying SMEs with information they need besides the universities. As a consequence, and to get a complete picture of the situation, we also spoke to three of the most-often mentioned non-university players:

- BusinessLink
- SWRDA (South West England Regional Development Agency, as a representative of the Regional Development Associations spread nationally)
- The Federation of Small Businesses

We did this to ascertain their roles: these organisations said that they provide business and management advice and help (such as how to write a business plan) and pointers to where a business can go next for help that is more specific than they can offer. It is through this latter activity that businesses arrive at universities.

### 3. INTERACTIONS BETWEEN SMEs AND UNIVERSITIES

Universities certainly do come into contact with SMEs, and in a number of ways. Contact may be initiated by either party. As reported in section 1, universities offer a raft of services and products to SMEs and in so doing they promote their offerings more or less effectively and vigorously into the small business community. In turn, SMEs may proactively approach universities for their own purposes. An SME may be up and running and wish to have training in some aspect of management (e.g. financial control for small businesses), for example. The kind of area in which businesses wish to acquire help is usually finance-, marketing- or human resource-related. It is almost always case-specific and is thus the sort of information that is best delivered by consultancy of some type (in-house student placement, for example, or as advice on practice).

#### 3.1 SME-initiated contacts

We asked our SME interviewees how they had interacted with universities and why, and whether they had obtained what they needed as a result of the exercise. The main reasons SMEs gave as reasons for interacting with universities can be grouped into the following categories:

- Approached a university with a view to setting up some collaborative research and/or testing research-based ideas and developments. Collaborative research initiatives can work extremely well and indeed recruiting of students as employees can be one of the results of such undertakings. We heard of some positive interactions on both of these things. We also heard of failed attempts
- To obtain scientific expertise on a consultancy basis
- Continuing professional development training and events
- With a view to providing a service to the university or working with the university to provide a new service to the business community. Attempts to provide a service for the university, or working with the university to provide a service to a particular business community, are obviously dependent upon need and resources in the particular case. They are also a specialised type of interaction with a limited amount to tell us in the context of this project and need not concern us further here
- To identify potential recruits to the company
- For short courses on business-related topics. Short courses can be very successful: of course, SMEs come in a multitude of guises and each has its own set of needs, so designing short courses to satisfy those diverse needs can be a challenge: we spoke, however, to several people who had very positive things to report about how short courses offered by their local university had helped them
- To obtain advice on specific business-related matters (e.g. health and safety legislation). SMEs who did this were using a route into specific advisory units within universities, units whose services had been widely promoted to local business communities
- To attend lectures. This was only cited by one SME and was only possible because the SME had established contacts with individual members of academic staff who then facilitated the attendance at lectures of interest
- To use university facilities (AV services, printing services)
- To use the library holdings. The use of the library by SMEs discussed in Section 4.3.

### 3.2 University-initiated contacts

Universities make efforts to interact with SMEs as part of their third mission raft of activities. Sometimes the focus is on incubation services and spinning-off companies from the university's research programme, sometimes a university puts more effort into supplying consultancy or training services for business. In the former case the primary client businesses are from within the institution, making initiating contact and developing relationships relatively simple. In the latter case, though, universities have to reach out into the local community (or beyond). The challenge lies in identifying businesses and interesting them in what the university has to offer.

In general, universities still feel they are probably better in tune with the public sector and its needs than with the private sector, mainly because in general it shares their models of practice. Over the last few years, however, there has been an attempt to move away from the extant model ('if only we could make universities interact better with businesses') to trying to encourage SMEs to see universities as a resource.

Developing 'niche communities' is regarded as essential. Through these, a university can deliver various kinds of consultancy and clients may return again and again if the offering is right. Word of mouth is a strong driver of businesses to a university: small businesses are often networked together informally in a local community and if a university has provided one with useful advice or practical help then this will become known by other potential client businesses. In such ways, communities of practice can be built, but it is hard and slow work. Referrals from organisations such as Business Link help a great deal.

Other ways to reach into the business community have been by CASE awards<sup>2</sup> and the STEP Programme<sup>3</sup> and others like them.

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<sup>2</sup> <http://www.case.org/container.cfm?CONTAINERID=104&CRUMB=2&NAVID=67>

<sup>3</sup> <http://www.step.org.uk/>

## 4. INFORMATION TRANSFER TO SMEs

At the outset here it needs to be made clear that none of the businesses we spoke to claim to have sought 'grey literature' directly from universities. Some of them have sought *published* information, with greater or lesser degrees of success in obtaining it. We describe this process in Section 4.3. Here we give an overview of the type of information the SMEs told us they require in the course of their business activities. We sought this information to help us understand the general information needs of SMEs and the behaviour they exhibit when trying to satisfy those needs.

### 4.1 Types of information required by SMEs

Businesses need information of two basic types – business/management-related information and technical information.

Specific examples of **business/management-related information** given by the SMEs for illustrative purposes were:

- Import regulations for particular markets (e.g. China) for exporting companies
- A list of potential distributors in Australia for a product made by an SME
- A list of businesses in a particular geographical area
- A list of businesses that expert to particular markets (that might need translation services)
- Data on specific markets – market size, characteristics, etc
- Regulatory requirements and how to comply (examples given were information on employer and employee rights, waste management rules, health and safety issues, foods standards information)
- Data on the state of the world's children
- Literature giving examples of sales commission schemes that might be adopted by a small business
- Literature on how companies survived previous economic downturns
- Information on what a business plan should include
- Details of how to go about choosing a company name (avoiding picking one that is already in use)

**Technical information** covers very specific issues such as engineering data, the characteristics of building materials and details of new laws on tax-related matters, but companies may also hunt for information less specifically. For instance, the research-based SMEs told us that they would like to browse as well as specifically search for published literature.

### 4.2 Responses to SMEs by universities

We spoke to a number of universities about their response to the needs of SMEs and one major issue raised its head immediately we began work. The invitation to tender specified that we contact SMEs known to be interested in research outputs from universities. We therefore began our search for SMEs with the universities, intent upon obtaining from them names of SMEs that had approached them for information.

Finding the right person to contact in universities, however, proved quite difficult for us – and we are people who are very familiar with universities, their activities and structures. Websites can be out of date or difficult to navigate. Business-facing units

can be called by a number of different terms and it is not always clear where to look within a university's offerings to find someone who is appropriate to speak to. This can be off-putting for businesses, especially those run by people who are not familiar or confident with the higher education world. A couple of them said this to us during our discussions. We talked also to two academic researchers who work on SME-university interactions and they had a message on this – that businesses needing information or advice want to make direct contact with the (one) person in the university who is the expert on their problem, and that is rarely achievable for a variety of reasons. Indeed, one of the SMEs told us of a time when he had planned to develop a new range of products and wanted to bring into his team a researcher who was an expert on a particular health issue: he identified the right individual in a university in the midlands (by using Google) but *'just couldn't ever get hold of him. In the end I gave up on the whole idea and did something different'*.

That said, some of the university contacts we spoke to did report being able to help SMEs in various ways. These people were mainly in units specifically set up to provide outreach services for businesses. They are sometimes called business services, technology transfer units but may also have other names. Whatever the label, their role is to form relationships with people wishing to start up a business, provide incubation services, advise on growing a business, provide specific management skills or match up business needs with student work experience/consultancy supply.

These people told us that the initial contact with a company, unless the start-up is an institutional spin-off, is almost always through Business Link, a local Chamber of Commerce or other such organisation. A new scheme being introduced across the UK is designed to ensure that Business Link will be the key one-stop-shop for businesses wishing to access support.

Some universities said that they try to provide online forums for SMEs to network and access information that they could use but that businesses rarely take this up. 'Real' networking forums are, conversely, rather popular if set up in the right way. Some universities have local enterprise networks that have members numbering into the hundreds. They hold regular networking events and sometimes university staff disseminate information to the businesses through these events by giving presentations.

Some businesses appreciate a (business school) student being placed in their company for a period of time and we heard several reports of successful ventures of this kind that had produced a lasting benefit for the SME.

### 4.3 The published literature

Next, there is the issue of the published journal literature. Amongst our sample – deliberately chosen – were a few research-based SMEs. These particular companies are in the business of computing design work, medical technologies and specialised software development. We were expecting to hear that they need access to the journal literature and that was confirmed in the interviews. As an aside here, what was a surprise was that some other SMEs also said they would find some of the journal literature useful as well. An example of this was a software re-seller whose small management team is very professional, educated to MBA standard, and keen

to keep abreast of and apply current management thinking, thus needing to keep up with the literature and be able to seek out specific articles of interest. The manager we interviewed related her wish to learn about what incentive schemes are appropriate for small sales forces like the one she managed. Another SME manager said that she would like to be able to access the published literature on how small businesses had survived previous recessions. Further instances cited were the need for published articles on engineering (construction engineering SMEs), on issues in management science (the business consultancies) and a requirement specifically for access to the *Harvard Business Review* (several SMEs).

The two SMEs mentioned above had not attempted to access the journal literature, even though they suspected that it contained the information they needed, because they knew that a cost is associated with it. The other SME examples, though – the research-based ones – do access the journal literature through their local university library. They pay an annual fee for walk-in access to the library: through this arrangement they can read journal articles online at terminals in the library building. They cannot print them or download them onto portable storage devices. If an article is useful to their business activity they order it from the British Library. One SME buys “about 10 to 15 articles a month” and “would like many more if we could afford it but we can’t”. She went on, “Sometimes we can’t even see the abstract [presumably this is for articles in journals whose publisher licence does not extend to walk-in users] so we have to buy it if the title sounds good, and hope...”.

The other research-based SMEs all had similar stories. This is nothing new, of course, and applies to SMEs all over the world struggling to innovate using publicly-funded research whilst denied access to it<sup>4</sup>. It is also formally outwith the scope of this project, but since it was raised by each of the research-based SMEs interviewed for this study (without prompting) it seems appropriate to note it here.

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<sup>4</sup> “With a small oncology company ... it is imperative that I have access to the literature. But small companies do not have the ‘deep pockets’ necessary... The for-profit journal publishers have effectively barred access to key scientific information except to those who can afford their outrageous fees. Much of the most innovative work is being done at companies like mine that cannot afford to pay \$30+ per paper or pay per-search charges in abstracts or journal collections.” (Terence Dolak, CEO, SDR Pharmaceuticals, USA)

## 5. THE GREY LITERATURE

### 5.1 Do universities try to supply grey literature?

None of the universities we spoke to had ever supplied (or been asked for) grey literature to SMEs. Supplying published literature – or some kind of access to it – is one challenge, and this can be met to a degree if SMEs know what they are after (see account in Section 4.3). The grey literature is another matter. The universities we consulted said that they had never been asked to provide any grey literature for companies. The only exception to this was those libraries that offer specialised corporate information services. In this case they are asked for database searches (e.g. Dun & Bradstreet, Companies House data, etc) or for help in identifying business-related reports. The SMEs may then purchase these from the publisher (e.g. Plimsoll Publishing's market research reports<sup>5</sup>). In this type of instance, the library is providing an intelligence service using its business information databases rather than supplying grey literature directly.

In general, university responses on the issue of grey literature were pretty unequivocal: they felt they had little to offer SMEs in this respect. This is not completely true, as we discuss below, but the problem as universities perceive it can best be summarised by directly quoting what one of them said: *“The average SME in [city name] is a car dealership or a white goods importer. What on earth have we got that they could possibly want?”*

### 5.2 Might SMEs want any grey literature?

In fact, universities *do* have some grey literature that SMEs want (and know they want). During our interviews with SMEs we encouraged them to think about the sort of 'grey literature' information that they would need to seek out during course of their business activities, and to consider whether some of it might reside in universities. The examples they came up with are listed below. They are very specific in places because of the way we asked the interviewees to consider this matter, but are provided for illustrative purposes:

- Theses (the research-based SMEs all mentioned these)
- Information on anti-dumping legislation
- Past occurrences of windfall tax and how well they succeeded
- Legislative/regulatory guidelines
- *Management Today* and other general business/management magazines
- Market research information (e.g. results of surveys)
- Market research reports (e.g. on specific market sectors or products)
- Student projects (one of the research-based SMEs had commissioned one and is 'sure' there must be other companies that would find it useful, and is equally sure that there are other project reports in existence that her company would find useful)

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<sup>5</sup> <http://www.plimsoll.co.uk/>

### 5.3 Grey literature successfully located and accessed from universities by SMEs

Just a few of the SMEs had searched for and accessed grey literature from universities. The examples we found in this study were:

- Reports and articles that form freely-available background reading for students from SMEs on short courses. In this case the university actively provided pointers to the material
- The web pages from a university covering human resource issues that an SME used in her own business (employment rules, employee rights, etc). In this case the university did not realise its literature was being used productively by an outside business

In addition:

- Doctoral theses and master's dissertations. In addition, the research-based SMEs had sought out theses, with a reasonable degree of success, but in doing this they had used a web search engine to discover the existence and the location of the theses. In other words, although the source of a thesis was a university, the route to it was a web search.

### 5.4 Sources used by SMEs to find grey literature

The first thing to note under this heading is that, just as the universities claimed not to have ever supplied grey literature to SMEs, so did the SMEs claim never to have sought grey literature from universities. That is not to say that they did not recognize that universities might have the sort of unpublished research outputs that they could use: rather, they all said that they would never think of turning to a university – at least directly – for this kind of information.

Although they do not normally think of universities as potential suppliers of grey literature that they need, SMEs do seek it from elsewhere. The sources they use are mainly:

- professional or trade associations
- the press or broadcasting media
- and the Web. Many said that they began (and often ended) most searches for information with Google (or other web search engine): the Web is their first port of call unless they know that a trade association will be able to help. It is through this sort of discovery process that the research-based SMEs generally locate theses, for example

For reactive, as opposed to proactive, hunts for information, the press or broadcast media are often the spur. A number of SMEs, particularly the charities and those engaged in activities that respond to very current events, tend to follow up reports that they are alerted to by media coverage. These reports *may*, of course, be published by universities, though with respect to the cohort of SMEs studied here it is government or professional publications that predominated in this category.

The list of sources for grey literature and similar information that were cited by the SMEs is given below:

- Royal Institute of British Architects

- British Computer Society
- Law Society
- UNICEF
- City of London Revenue
- Baby Products Association
- Food From Britain
- Institution of Engineering and Technology
- Australia House
- Chamber of Commerce
- Local authorities
- Department of Trade and Industry (as was)
- Government reports
- Suppliers<sup>6</sup>
- Chartered Management Institute library
- Business Link
- Association of Project Managers
- Banks, lawyers, insurers
- Personal contacts in universities
- News reports – TV, radio or papers
- Trade magazines and journals
- General scientific press e.g. New Scientist (and follow up from there if there is a source report to be found)
- Networking channels (e.g. business clubs)
- Web (Google, etc)
- Conferences - for up-to-the-minute technological advances
- Taste of The West, South West Food and Drink
- Food and Agriculture Organisation (UN)
- Marine Science Institute
- NERAC (a research/advice service for innovative companies)
- Specialist blogs
- Trade shows (where they talk to consultants)

### 5.5 The value of grey literature to SMEs

We asked the SMEs to try to put a value on their business activities of the grey literature that they mentioned. Clearly, the value will depend on exactly what the particular literature is, but the responses are represented by the list below:

- It is imperative to know market developments and these influence business decisions
- The information is critical because of the legal requirement to have a permit to operate (ref. pollution prevention control)
- Timely advice from a local university saves businesses money and time
- Understanding research and evidence out there early ENOUGH can help inform business decisions
- SMEs 'need help all along the way', including help with interpreting information when they find it (this referred to a case where an SME had obtained information

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<sup>6</sup> This parallels the findings to successive European Innovation Surveys which show that suppliers consistently represent one of the top sources of information for innovation in companies

on legislation and subsequent guidance on implementation of a system to comply with it)

There is a distinction between 'nice-to-have' and 'must-have' information. Clearly must-have information has high value, but is any must-have information covered by the grey literature? The answer is yes in two kinds of instance. The first is where research findings are a critical element of a business's raw material. This applies to the research-based SMEs, but the greatest part of the research findings they need is in the published journal literature rather than the grey literature. As reported in Section 5.3, however, theses and dissertations can represent mission-critical grey literature.

The second case is where there is a legislative requirement with which certain types of SME must comply. One of the universities that collaborated with us in this study specialised in providing advice and help to local SMEs in this type of issue, so we were able to get a good understanding of how that system works. Many local SMEs depend on the service this university is offering in this respect, providing specialised knowledge of legislation on particular issues and practical know-how on implementation within a business. The SMEs appreciate knowing precisely where to turn for such advice and are confident of getting it swiftly and authoritatively. The grey literature in this case takes the form of the legal requirements codified in official documents and the university is providing a consultancy service rather than the literature itself

Some interviewees also took a wider view of the question of value of information to their businesses, framing their responses in a way that can be summarised thus:

- The information is critical for economic generation or regeneration of local area. Whilst this is extending the analysis of the value of grey literature to an extreme, it is also undoubtedly true in the sense that the UK's economy depends heavily, predominantly, on SMEs and a healthy small business sector means prosperity for any local economy and society.

## 6. DISCUSSION

This discussion develops around three core questions that SMEs raised during the study. They are central to the purpose of the exercise and to developing a set of recommendations to follow it.

SMEs do need information that falls into the category of 'grey literature'. In the main, the type of information that SMEs require can be supplied by trade or professional associations or by local business advice organisations. We are talking here about management information or sector-specific technical information of some sort. There is, however, another tranche of grey literature of potential usefulness to small businesses that universities probably do hold. In this respect we might think of the results of surveys, of certain kinds of market data, of reports of particular studies not suitable for the journal literature, of student project results and of periodic trend-analysis exercises. The issue is how to marry up the information source with the information seeker, especially if the information seeker may not be especially proactive in information seeking in the first place. The grey literature is simply not adequately visible to the SME community.

Despite the fact that SMEs reported not knowingly searching for grey literature information from universities, deeper probing revealed that some of them do spend considerable effort seeking out literature of the type that universities might be in a position to provide. The main problem is that SMEs do not instinctively see the higher education sector as a resource. As regards information, they first think of their trade or professional bodies as a source – even for technical information that certainly could be a research output from a university.

Some of them, particularly the research-based small companies, do suspect that universities may have more to offer than the SME knows about. And this is the crux, really, and brings us to the first core question. We were challenged frequently in interviews by the question “**How would I know that unpublished information I could use is there?**” The grey literature resource in universities largely falls into the category, in Donald Rumsfeld's famous terminology, of 'unknown unknowns'.

There is more to it than just lack of awareness, though. Although this is a generalisation, universities are in the main fairly inaccessible to the small business community. Some entrepreneurial individuals in small businesses may recognise that universities may hold some expertise or information they need, and may even take steps to locate these things, but in many cases this process is daunting, complex and frequently disappointing. The level of awareness in SMEs of what universities have to offer is not high, however impressive university websites may be. Moreover, SMEs think that they need to know that a university can solve a problem for them before they approach it.

Newer thinking from the universities on this interaction favours universities and SMEs – and others in the knowledge base – coming together in 'niche spaces' but this implies much effort and hard work on the part of universities to create the spaces and build up communities of practice in the SME community. This is not without a significant cost to the institution and for which some return on investment calculations

may well be done given the environment in which the UK's modern universities are required to operate.

One university representative we interviewed said that the real question is not 'how can SMEs get information from universities' but 'how can SMEs and universities find a point of contact in the same space?'. Arguably, the best tack to take may be for universities to strive to be seen primarily as partners in the small business world, at least in the first instance, rather than suppliers (which implies a cost). SMEs need reassuring that if they approach universities the outcome will not be problematic for them in terms of costs or procedures that they would find unsuitable. Eventually a business relationship may develop, but that should be down the line rather than the first mode of interaction.

Universities do need to find more effective ways of making clear what they have on offer and of presenting themselves as a resource to the small business community (if that is what they wish to be). The main route into a university to tap its resources remains a referral from a business advice service, Business Link being the primary one. This process appears to work well: Business Link is good at identifying where a university can help an SME with a particular, specialised problem, and referring the business to the right person in the university. This process smooths out the bumps that an SME manager encounters if s/he tries to make direct contact with a university itself.

That said, the process is set up to work only within relatively small geographical communities. An SME in Dorset seeking help through Business Link will not normally be referred to a university in Scotland: it will be a university in the vicinity that will be the target of the referral, necessarily limiting the potential of the process: it becomes a matter of luck whether a local university has the right expertise for the SME's problem. Besides, this referral system is usually geared around the provision of advice and consultancy rather than grey literature.

The grey literature should be a resource offered and sought on a far wider scale than this local type of help from universities. The nub is discoverability. And SME managers do what most other people do when they wonder if there is 'something out there' on a topic they need information on – they use the Web. This is an early port of call for most SMEs and in many instances the first avenue taken to reach information that can be described as grey literature. Almost all of our interviewees mentioned Google as a tool for information discovery, unsurprisingly given the ubiquity of its usage in everyday lives anyway. It is through such web searches that the publication and whereabouts of theses is discovered by research-based SMEs ('known unknowns') and that the existence of data that they were not aware of at all ('unknown unknowns') comes to light. The SMEs we spoke to had not heard of the EThOS service, for example, which may be of huge benefit to them when it comes fully on-stream.

The other main route into grey literature is by following leads discovered in the media. The role of the media is clearly important in this respect but it is played haphazardly as far as university/SME interactions are concerned. Someone in an SME *may* happen to read a newspaper that reports the findings of a survey by a university that applies to their information needs, or *may* happen to be listening to the

radio news at the right time, but these are happenstance encounters rather than organised information discovery. Obviously, there is considerable room for improvement and one question is whether universities might better use the media in this respect. Not a day goes past without the results of some academic study that is of actual or prurient interest for the business community being reported in the media proving that many universities have mastered the knack of getting media interest at least in the spectacular: the more mundane, but probably more useful, reports and surveys and other grey literature outputs need a different tack, since the media will only cover items of significant 'human interest'. Managing the dissemination of the grey literature is a challenge that universities have yet to meet really well.

The other aspect to the provision of information by universities to SMEs is that at the moment SMEs perceive a mismatch between the way in which they and universities operate, at least in this specific sense of information. It is the focus of the second core question – **how, in practice, can universities deliver the information SMEs need, even if the right information solution can be successfully matched to the information need?** Many of the interviewees emphasised to us the need for speed. If they realise they need information for their business, they said, they want it fast. They perceive universities as working to a less immediate timescale. In the words of one interviewee (and many paraphrased this), "SMEs need information when they need it, not three months later".

This may sound unfair, and it is probably an exaggerated misperception, but nevertheless it pays a part in why SMEs do not routinely think of the higher education sector as a useful resource, at least not directly. They do not, by and large, feel that universities share their values, particularly in respect of response-modes. SMEs usually work 'on the line' with respect to both resourcing of their operations and reaction time. Running a small business requires nimbleness and SME managers are by definition imbued with a sense of urgency, agility and fleetness of foot, characteristics which they told us they do not necessarily associate with universities. With respect to supply of grey literature, then, they tended to feel, when asked to consider how the system might be made to work for them, that universities are unlikely to be able to provide a service with the characteristics they expect. One said "We are not looking for this kind of literature from universities. We're looking for something much more basic, fast".

Other comments in like vein were, "SMEs don't have the time, energy or know-how to access and search the literature" and "Most SMEs are run ragged, with very little time. Time is the most precious commodity".

This thinking reflects the fact that the assumed *modus operandi* is that an SME would turn to a particular university to ask for a known – or enquire about the existence of an unknown – piece of information. The Web, however, does provide the means for universities to supply the grey literature immediately (and proactively). What needs to be put in place, then, is a process for doing that – repositories for grey literature as well as the peer-reviewed literature, maybe? Universities are very poor at describing the business value of their research outputs – perhaps because they don't themselves understand the potential value to the SME community – and SMEs don't have the time and resources to investigate this for themselves. Large businesses have their own resources and expertise in working out what they need from university

research and how to access it, but small businesses do not. They need help in this respect.

There is a final question and this is not to do with the grey literature but with the published literature. It is not insignificant and it also pertains to the grey literature in that many SMEs harbour the notion that *any* information delivered through a university will have a cost attached to it: **“How do you get at published information you DO know is there?”** We have related the stories of the research-based SMEs’ trek towards the published literature: it is not encouraging reading for anyone interested in maximising the chances for innovation in the UK (it is the SME sector that carries out the bulk of innovative work). The SMEs acknowledged that access to the published literature is ‘becoming better’ but they are mainly referring to online availability rather than free availability. The quest for access to the journal literature continues to be thwarted by toll and permission barriers, hampering SMEs in their endeavours. In the words of one interviewee, “Locating stuff is *a/ways* the problem. Finding it is difficult. The Web has helped over the last five years but access-fee barriers are an annoyance”. It is not the subject of this study, so no more will be made of this issue here, but the findings we have reported are a reminder of the problem and that it might profitably be revisited at some point.

## 7. RECOMMENDATIONS

The recommendations we make are as follows:

### 7.1 How SMEs can learn that relevant literature exists and discover its whereabouts

**Recommendation 1: Scoping the development of a simple toolkit for discovery of the grey literature should be considered.** SMEs need a means to discover the grey literature that is simple to use and which delivers immediate results. A study should scope the features and possible deliverers of such a service.

**Recommendation 2: Information for SMEs on existing means of discovering relevant grey literature.** Currently, SMEs use Google (or similar) to locate grey literature of interest, but this will fail to find content not on the Web. Universities should be encouraged in their quest to interact further with SMEs and, in particular, to develop routes to the grey literature for SMEs and signpost them to the SME community nationally, including the EThOS service (which may act as an exemplar for other grey literature types).

### 7.2 How universities can deliver grey literature to SMEs, and in the right time frame

**Recommendation 4: An estimate of the grey literature currently available on the Web should be calculated.** We know that a proportion of grey literature potentially useful for SMEs already exists on researcher personal websites and, in small measure, in institutional repositories (e.g. theses). A study scoping the extent of this availability, and estimating what proportion of the total relevant grey literature output from universities, would help to describe what more can be done in improving availability of the grey literature.

**Recommendation 5: Universities should be encouraged to make grey literature openly accessible on the web.** The JISC is well-placed to advise universities on the potential usefulness and value of the grey literature to SMEs – and thus for the efficacy of innovation in UK plc – and should encourage them to develop ways of ensuring that its availability is maximised.

**Recommendation 6: The optimal means of making grey literature available from universities should be determined.** It is not clear from this preliminary study which might be the best way for a university to ‘show off’ grey literature outputs – or even whether a federated solution to this might be the best, providing a national view on all academic grey literature (as there now is for academic theses). Further work on this is recommended, particularly in the sense of what discovery service might best fit SMEs’ needs.

**Recommendation 7: Universities should be encouraged and helped to describe the value of their research better to the small business community.** This is a

natural consequence and product of the implementation of recommendations 5 and 6 and essential if SME take-up is to be maximised.

### 7.3 How SMEs can learn about accessing the published literature without cost

***Recommendation 8: Advice should be provided to the SME community about Open Access research literature.*** The research-based SMEs should be properly informed about ways to discover the Open Access published literature. They do use Google, but would benefit from familiarity with Google Scholar, OAlster and other discovery and search services focused on the Open Access corpus.

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