

The Lambert Review

Response to Consultation Opportunity

The Robert Gordon University, Aberdeen

Institutional Background

There are no doubts about the importance of close links between higher education and industry. These links are essential to translate academic advances into practical benefits for industry and in turn society. Industry input can ensure that academic education at an undergraduate and post-graduate level can provide the developments and skills needed to retain and increase industrial competitiveness in the global environment.

The Robert Gordon University has a strong history of such links. We are continually seeking to build upon these with our portfolio and the results we achieve indicate success. These include

- A number of courses accredited by various professional bodies
- Over 38% of our full time undergraduates will participate in a placement this year alone.
- Higher industry funding per full time student than any other UK University
- Consistently the highest graduate employment percentage of any UK Universities.
- Where available University's PG research students have external collaborating establishments.

The formation of 3 Intermediate Technology Institutes in Scotland is an important new development in forming business/industry links. With their proposed technology foresight and investment in research to fill technology gaps, combined with a portfolio approach to university technology input this will support Technology Transfer in Scotland.

The University will be seeking to make a very active contribution to such work and to take advantage of the opportunities created, individually or in collaboration with others.

Set against this environment the following are the responses from The Robert Gordon University to the questions put for consultation. However alongside the questions there was one area of concern, which arose. This relates to the role seen for Universities when linking them with businesses.

Universities are not commercial organisations seeking to meet the needs of UK businesses. Academically their primary focus is to teach accredited courses and to carry out pure and applied research while supporting and enabling technology transfer.

To benefit higher education, industry and society the aim should be to strengthen links with industry to ensure the skills needed for commercial competitiveness are available and through research activities to identify leading edge innovations and new discoveries, support transfer to a commercial environment as quickly as possible.

We do not feel that Universities should merely replicate or displace commercial consultancy or training organisations but should add real value to industry by supporting the development and transfer of leading edge advancements.

QUESTIONS FOR CONSULTATION

1. Potential Examples of Best Practice and Excellence in business-university collaboration in the UK and abroad.

What do Businesses & Universities regard as good practice?

What activities are potentially the most fertile for knowledge exchange?

Examples of opportunities that have arisen and who took the initiative.

Examples of successful joint ventures.

Looking at this University our strong relationship with industry provides a firm and frequently used base for encouraging input into course development and research. In terms of courses there are a number of specific examples which, with businesses acting on a consulting basis or as end users, illustrate some success in this area.

Example 1

Our e-learning programme, the Virtual Campus, has developed the services it offers in response to business needs, expanding from its original goal of supplying standard University courses to individuals. In response to demand it now offers a portfolio of c.p.d. modules actively used by corporate clients for staff development as well as individual students. As a result of the relationships built with businesses we are now offering them a customised mix of components of our academic courses to meet their needs. Academic skills are being used to help such organisations develop their own courses. The success of this e-learning project has developed to the extent that organisations are now using the University's web-based facilities as a learning platform for their own in-house training.

We feel this is a good example of the University building strong links with client organisations, listening to feedback and in response developing services to meet businesses needs. Organisations currently involved in our e-learning services include Chevron-Texaco, the IMES Group and NHS Grampian.

Example 2

Collaboration with business can arise internationally. A wholly owned subsidiary of The Robert Gordon University works to link University expertise and industry requirements on a revenue generating basis. It has established strong links with Nigeria and based upon a commercial contract University expertise assists

- Nigerian graduates to attain MSc qualifications to upskill the Nigerian oil industry
- Nigerian graduates to update their skills to meet recruitment needs in Nigeria
- Nigerian training institutes to meet the needs of staff/students and industry
- Nigerian college management in benchmarking themselves against current UK standards of education provision.

Example 3

The University's School of Pharmacy illustrates the diverse nature of work with different businesses and the benefits involved. The School undertakes particle size analysis for Corex (UK) Ltd. This service has been provided for 2 years. The University gains income for re-investment in research while the company receives a fast and accurate response utilising the School's expertise and instrumentation. The school also has long-standing associations with commercial chemists - both Boots and Lloyds. Each company sponsors one teacher-practitioner post, benefiting the pharmacy practice aspects of the MPharmacy course. Input by the teacher-practitioner goes some way to ensuring that our graduates are equipped and have current knowledge of community pharmacy.

Example 4

Our distance learning portfolio includes postgraduate certificates and diplomas in management. The content of this has proved valuable in the commercial environment. These courses are currently being delivered, under contract, to three companies, Abbey National, British Airways and the NATS with a fourth company, the Tussauds Group recently having joined them. Their staff progress through the course in cohorts, timed to suit individual company needs. With advice from University staff the companies select modules from the course portfolio which again best meet their own needs. For each module a workshop is held on company premises with University staff travelling to each. This highlights the opportunity for packaging accredited courses in ways which meet business needs, while retaining the academic control.

The Robert Gordon University's links and collaboration with businesses is not restricted to course development. We are currently building and strengthening our research base and as a result have a considerable number of new opportunities for collaboration or collaborative work in its early stages. To encourage this, the University has a Commercialisation Reward Policy

Our refocus on research and the opportunities to develop links with businesses and industry is evidenced by recent success in approval of Proof of Concepts and in our ongoing success with TCS Programmes. However there are also a number of notable research activities which the University has already achieved from collaboration with business. These include:

Example 5

Research work with one local manufacturer has recently looked at the use of different materials and refining designs to meet architectural criteria. Assisted by 3D computer images of the resulting designs and models using the University's rapid prototyping machine, the designs produced to date are highly innovative and propose some fairly radical ideas.

Example 6

A collaborative opportunity actively sought by the University involves SMEs. By taking a complementary approach real life scenarios can inform research activities which results both in the development of fundamental understanding of the research by the University and in bringing forward new products to the market by the SME. This in turn is used to refine the final product which the business involved can then use. This joint working

both enhances the quality of the research and the Scottish economy. We feel it overcomes many of the barriers faced by SMEs interested in new research but unable to afford it. However it does place the onus on the University to provide some internal funding of the research element.

2. Identification of the main barriers to establishing and strengthening such relationships.

Access - to the appropriate people? The use of intermediaries?

Values and motivation of universities and their people?

Marketing - Knowing what Universities have to offer? What business needs?

Business-like behaviour for universities and their people?

The primary barrier to businesses and universities working together, albeit in a range of ways, is communication. This largely takes two forms.

- There are significant problems in achieving effective communication between businesses and universities.
- For businesses and universities to work effectively together the differences between them need to be understood, recognised and addressed. This requires good communication not only between such organisations but also within them.

There are a number of interlocking issues causing such barriers and which have to be overcome to remove them.

Opportunities for Communication

With some exceptions, there is a poor awareness within both businesses and universities of what they can do for each other. There is a lack of natural opportunities to mix and communicate making it difficult to overcome such awareness problems. Universities can and do try to create such opportunities but the ability of any organisation to maintain interest and to be in the right place at the right time requires resources, time, skill and presents a challenging balance. These relationships require to be nurtured over an extended time period to establish understanding and trust.

In a business environment where mutual awareness is being maintained, regular contact and ongoing informal discussion on a one to one basis is common and often skilled staff are involved e.g. commercial account managers. With the diverse range of areas covered by most universities and the wide range of business sectors that can benefit from university expertise, the maintenance of active business relationships in this style on any significant scale is beyond the resources available.

Perceptions

Linked to awareness many businesses see actual or perceived issues, which prevent them, trying to make contact with universities. Examples include the expense involved and the distance between Universities and a real commercial environment. Whether perceived or real, universities seeking to establish new relationships with businesses have to overcome these barriers. This again needs opportunities to raise awareness and where the barriers are real, find ways of overcoming them. One example of this

within The Robert Gordon University (see Question 1) is where we actively work with SMEs it is often a collaboration with the SME contribution being made in kind. With some research projects an SME will use a prototype providing a significant amount of data from active rather than artificial use. In return the SME can be given rights to use the final product.

These issues are especially valid for most SMEs, i.e. the majority of businesses. In such cases there is the additional barrier of the scale of Universities, making any approach a daunting prospect. One way of universities highlighting the opportunities available and overcoming immediate communication problems is through joint projects with sector representative bodies. While such projects can be constrained by commercial competitiveness within a sector, they do help raise awareness and overcome some barriers for both types of organisation.

University Structures

Due to its range of subject areas and high degrees of specialisation, the work carried out by a university is complex and diverse. In contrast academics within the University are employed as specialists and as such can have a relatively narrow focus. The infrastructures supporting this diversity and a university's primary focus of teaching and research, are as a result usually complex. These factors make it difficult, if not impossible, for even university staff to be aware of all the areas of work being undertaken or possible.

In universities diverse specialisations can make it very difficult for a business with a relatively specific query to quickly identify a contact point. The results can often be frustrating for businesses and can lead to delayed responses or business looking elsewhere for more easily accessed input. The University is addressing this issue by developing a web enabled database of expertise to inform both internally and externally.

Where success is achieved it is not unusual for individuals or natural clusters of staff to emerge naturally as contact points. This can be due to combinations of communication skills, past experience or previous work with businesses in a specific area. Such relationships are usually on a one-to-one basis, created by opportunism rather than design and difficult to identify or control. As informal contact points with a limited knowledge of what the university can do, they can restrict the extent of potential business/university relationships.

Complementary Priorities?

To perpetuate one of the recognised strengths of the higher education system researchers in Universities should be making an active contribution in the teaching environment. In such circumstances it is rare to find University academics who can devote all of their time to commercially linked research or consultancy work without the ability to plan this some months ahead.

On this basis the differing priorities of the two types of organisations can cause conflict and frustration. The business community often feel that Universities take too long to react to market demand while academics can feel that the business community demands are unrealistic. Universities are increasingly trying to commercialise aspects of their work. However they do not and, to preserve their strengths, cannot focus all activities upon meeting business needs. A compromise must be reached.

Employing academically skilled staff to only work on commercial research is counter productive. A strength of universities is the diverse specialisations which they offer and academic research thrives from interaction between peers. Having a dedicated research team removes some academic strengths and risks creation of another competitor in the field of basic commercial consultancy.

University Staff and Skill Requirements

The primary focus for universities and their academic staff is teaching and research. The skills required to gain a commercial perspective and appreciation of commercial priorities and needs are not naturally built up in a university environment. It would be unrealistic to expect individuals employed for their academic skills and specialisations to also gain skills in business communication, marketing and commercial project management, as well as having a cross University knowledge of the expertise and services that can be offered.

Similar situations do exist in a business environment. In such cases while they can be actively involved in the delivery of a service, highly skilled specialists are rarely the individuals in the front line point of contact with other organisations.

Universities can offer training to academic staff. Like The Robert Gordon University they may create opportunities for some academics to spend time working with or in companies to build awareness and skills. However not all staff may be willing to pursue this route and opportunities may be limited.

Employing or training staff to act as the initial point of contact between Universities and businesses is expensive and due to the range of skills and knowledge of a university required, it can be very difficult. As diverse, non commercial organisations many universities are still trying to find an effective way of doing this. However it takes time, resources and exposure to the business community.

Part of the commercial perspective which is especially relevant in university/business relationships is the need for tight and effective project management. While researchers' skills enable management of academic research projects, the perspective is vastly different from commercial priorities. Issues arising include costing, budgeting and financial management; planning; control; risk management; delivery to predetermined specifications; co-ordination of input from a range of sources and effective time management to ensure deadlines are met. The skills involved need to be developed or brought in by universities. Without them results again can be the cause of conflict and problems in business/university collaborations.

Cultural Barriers

Evolving in different environments universities and businesses have developed different cultures to meet their environmental needs. Within Universities there is a culture involving academic freedom and a degree of autonomy to facilitate effective research. This contrasts with the culture within most businesses where practice, roles and approaches are much more controlled and focussed. There is a large overlap area where these organisations work together. However as their main business is still based in different environments, it is unrealistic to expect a total change in culture in either. If conflict is to be avoided the first step in overcoming this barrier is to raise awareness of the cultural difference. When providing a commercial service, universities must make themselves able to meet business priorities and motivate their staff to think this way.

However when working in a collaborative partnership, both universities and businesses have to be prepared to accept the differences, work around them or compromise.

There is a cultural issue within UK and Scottish businesses, which universities can play a part in addressing but should not be held responsible for. Statistics clearly show that the level of research and development expenditure in UK companies is well below that of global competitors. While universities can work to establish links and seek opportunities for research collaboration, businesses must see the need for and be prepared to fund this type of investment. As detailed under question 4. UK businesses may not appreciate the market value of what universities can provide. If realistically costed many would not be prepared to provide the finance required. It is often left to universities to find other financial contributions, non-financial contributions or to compromise on pricing.

Are Intermediaries the Answer?

In most of the cases highlighted above, the problems can be overcome with a mix of universities adapting their cultures, developing their staff to an extent and finding an effective intermediary for at least some areas of their portfolio. In an ideal world this would take the form of clearly identified contact point, staffed by those with academic knowledge and business orientated awareness and skills, which is able to actively promote and market the University and its expertise and help deliver the results in a way which satisfies business needs. However in reality can this work?

In terms of the span of university interest, based upon experience at this University market forces prevent a single intermediary covering all areas of interest. Some time ago The Robert Gordon University established a wholly owned company to fulfil this role on a University-wide basis. However using business principles such as the most commercially attractive areas of the market where there was greatest demand, instead of a University-wide perspective this company has evolved to focus largely on one subject area. This supports the argument that no single intermediary can represent the diverse expertise of a University in the diverse industry sectors it can work with.

In seeking to overcome communication barriers external intermediaries can be put forward as a potential solution. However the same issues arise. Knowledge of the expertise within UK universities and the relationships that such an individual or organisations can establish with a range of business types will be limited. The result would be expected to be biased towards specific subject areas, specific universities and larger organisations.

Ideally a university would require a network of internal teams, with good communication links between them, to act as the contact points for specific subject groups. The aim would be for team members to have the academic knowledge and the skills needed to establish effective links with external organisations and businesses, to seek and develop opportunities for joint projects, or collaborations and to work with them as an intermediary, managing the project while this work is being carried out. Linking the commercial intermediary with the support of the research function within the University results in a broader ability to identify industry needs and opportunities with ongoing research interests but requires a shift in skill sets for the traditional University administrators. There is a shortage of people with the appropriate experience and skill sets available within current University resources. 3rd leg funding does assist but significant investment will be required to create a professional and effective service. This cannot be easily or quickly fixed.

Conclusion

In conclusion the problems involved in building strong business/university relationships on a widespread basis are extremely complex. The two types of organisation carry out the core of their work in different environments, with different priorities and skills. Meeting the needs of their immediate environments has created barriers between businesses and universities. However each type of organisation has a different role to play and to change either significantly would be detrimental to their contribution to UK society. The result is a need for compromise and finding ways to fill the gaps between them. On examination, effective solutions are not easily found but work is being carried out and must continue to find and build bridges between the UK business and higher education sectors.

3. How can businesses attract the best graduates and postgraduates with the skills that they require, especially in technology.

Opportunities for participation of businesses in course development with work placements and the careers service

Assisting businesses to market themselves to graduates?

Business expectations of graduates - short and long term?

Expectations of Graduates - feedback?

Generating Interest

The first stage in ensuring businesses can attract those with the necessary skills is to ensure that students enrol on the relevant courses at universities. It is becoming widely accepted that when deciding upon a University course school leavers are now increasingly focussed on their employability on completion of the course. This means that the starting point for raising awareness and ensuring skills needs are met begins in secondary education.

To help attract more young people to study technological subjects there is the opportunity for universities to develop new courses using existing core technological elements but combining them ways that are more immediately appealing to young potential students. Two recent examples which have proved popular for this University have been our undergraduate courses in Forensic Science and Artificial Intelligence and Robotics. The former majors in areas of chemistry and chemical analysis, little different from many Applied Chemistry degrees, while the latter has considerable overlap with Electronic Engineering.

Interaction with businesses

The involvement of businesses in the content of academic courses and feedback on how graduates meet their needs is an obvious route to ensuring the skills required are provided. The Robert Gordon University approaches this from a wide range of routes, all of which contribute to the reputation which we have established for our close links to industry. Examples of the active involvement of businesses or representatives of professions had already been illustrated. There are other examples.

- Our emphasis on course placements to help prepare students for work has also already been highlighted. This can show students the career opportunities and the type of work available not only in their placement organisation but also in that subject area or sector as a whole.
- The University has a number of honorary professors or lecturers who are

employed in industry themselves or who work with representative bodies. They assist the University with input into course development, ensuring course contents meet industry needs and when lecturing, provide students with an opportunity to hear from an individual actively using, in a business environment, the knowledge the students are gaining.

- On a more structured basis we are currently looking at establishing working groups made up of employers and academics to examine courses and the scope for their development in subject specific areas.

One of the problems which this and other universities can face is persuading businesses to take the time to participate in these ways for no obvious direct return. Finding sufficient companies willing to take student placements can be one problem area.

Feedback on Results

There are limited opportunities for universities to gain feedback from the businesses which employ their graduates. The opportunities must be created. The Robert Gordon University is currently undertaking its first survey of employers to obtain feedback on how they feel those graduating from University courses meet their needs. This will become an annual occurrence and the results will be actively used to make improvements where possible. Another example of less formal feedback on a local basis are the sector specific dinners held by the University. These give senior staff the opportunity to mix with business representatives, encouraging discussion and feedback and giving the University scope for better meeting business needs.

Meeting Employers

The need to raise awareness of the specific employment and career opportunities available is an important element of ensuring businesses can attract the graduates they need. This University takes a number of steps to assist in this. Like many others we actively organise and encourage student involvement in careers fairs. Employer presentations to final year students are a regular and popular occurrence. Employment opportunities are also actively promoted in a bulletin and on-line.

A Longer Term Approach

For full time students increasingly conscious of their career opportunities, businesses trying to attract top level students should provide information on longer term prospects and the support available for continuing personal development. This approach can also assist retention of existing staff and meeting a growing business need.

With the loss of employment for life, the promotion of technically experienced staff to management positions and academic advances there is a growing need for businesses to ensure their employees have the knowledge and skills required. This creates a growing market for lifelong learning and CPD.

Universities must meet these needs on a competitive, user-friendly basis. The Robert Gordon University's approach to e-learning, described earlier is a good example of how universities can adapt and do this.

This type of higher education presents the same need for proactive communication and marketing by universities and the need to make businesses aware of how assisting staff to access academically accredited courses can motivate existing employees as well as providing a potential competitive advantage in the employment market.

Realistic Expectations

A significant problem for universities is the time difference between businesses identifying a skills gap and the time it can take for an HEI to fill that gap. Completion of an undergraduate honours course takes four years and a postgraduate course takes at least one. The quality controls which protect the reputation of UK higher education mean that even during participation in a course, time is required to e.g. insert even a new topic. In contrast, in the often fast moving business environment it is rare for businesses to be able to predict their needs months or years in advance. For this reason academia often appears out of synchronisation with or behind business demand but faster reactions could threaten the reputation for quality which UK higher education has built up.

4. Do financial considerations currently help or hinder the relationships between business and universities.

Costing and pricing - real, subsidised and value for money?

IPR - problems?

Influence of R&D Tax Credits - has this stimulated demand for the services of universities? How?

The True Cost and Return

Universities are relatively well equipped organisations with a high level of expertise. However they also have high overheads and with current funding, limited spare resources. If costed on a realistic basis or priced in line with commercial peers (where they exist) universities are not a cheap option to businesses as a service provider or a collaborative partner. With few commercial peers it is also unusual for businesses to have a benchmark to help judge the value of what universities can provide.

In practice there is often a tendency for universities to undervalue their expertise and their work. Not exposed to a commercial environment most academics are not aware of the commercial rates being charged for comparable work or the cost of university input - whether this is in the form of academic courses or research expertise. This presents another situation where an intermediary within universities who is aware of the market place can bring benefits by acting as the link between specialist academics and businesses.

Business Funding Support

In reality businesses often come with the perception that as a substantial amount of university income comes from government funding, any work with a university should be heavily subsidised or has already been paid for via taxes. As a result businesses can be reluctant to pay for the services universities can provide. However there are ways around this. One example already given is in collaborative research projects where the business provides a contribution in kind, i.e. mutual benefit without a direct and obvious financial cost.

There is a range of government funding available to businesses wishing to work with universities. However experience suggests that the business community seems largely unaware of this and when contact is made it is often the University which informs businesses about government funding initiatives. At this early stage there has been no real evidence of awareness of R&D tax credits or opportunities to suggest to businesses that it might be of interest.

University Funding Support

Looking at HEIs overall, the public sector funding provided for research is largely based upon RAEs. Due to the scale of such funding and the resulting emphasis on improving RAE results this can create a disincentive for working with businesses as applied research is not as valued from an RAE perspective. Also an impact has yet to be seen from the changes outlined in the recent English white paper. This impact may vary significantly between the universities directly affected and the others - e.g. Scottish universities, with a negative end result.

Risks to Universities

It is worth examining the financial issues surrounding relationships with specific types of businesses. The Robert Gordon University provides substantial technical transfer support to micro companies. However with this type of company there is always a high risk that the companies cannot pay for the support they receive. They require University expertise to facilitate growth and while they are willing to pay, they are often not able.

Supporting the development of spin-out companies can cause financial problems for universities. As with any start-up business the risks of failure and hence financial risks in the early stages of establishment are high. This has to be considered and with demands on university capital, the risks may prove unacceptable.

A Legislative Problem

The second financial problem surrounding spin-out companies is a very real, legislative one. To establish a spin-out company and share the risks a university will seek funding from investors and will often be facilitating the direct involvement of members of staff. In both cases if universities become directly involved they are open to the risk of breaching the Financial Services Act and the controls it contains on giving investment advice. If they recommend staff or potential investors seek professional advice, the cost of doing this discourages involvement.

Intellectual Property Rights

The University recognizes that there is a balance to be made between protecting its intellectual property rights to enable ongoing research activity and potential spin out company activity against the need for industry to retain exploitation rights for collaborative work.

Having had issues in the past with disputed ownership of IPR the University is moving towards greater transparency both internally and externally with clear policies and greater attention to the terms of both commercial and partnership agreements.

As such the University has developed standard legal documentation and contracts for use when working with industry and has introduced a mechanism to enable negotiation on specific terms in a timely and cost effective manner.

Step 1 - The University has a Contracts Administrator who monitors any research contracts entered into by the University. This includes identifying any potential problems or areas of conflict, which may arise and ensuring that Researchers and Heads of School are appraised of their rights and obligations.

Step 2 - A 'legal clinic' has been set up involving the University's internal Legal Advisor, the Research Commercialisation Manager and the Contracts Advisor. In its regular

meetings this forum examines issues arising and seeks to resolve them. It allows discussion and in most cases resolution of such issues from a legal and commercial perspective, sharing experience and expertise in the process. Where necessary cases are also identified which need expert external legal advice. This group advises on what areas of agreements can be negotiated identifies aspects that are non-negotiable.

Step 3 - Legal queries that cannot be resolved internally are passed to the University's solicitors for their expert advice.

This process raises awareness of academic staff on the importance of intellectual property rights in work they are doing with the commercial sector. It builds in-house experience and expertise in this area and ensures that the University is protected in any industry-related agreements it enters into while ensuring any scope for negotiation is identified.