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Executive Summary

This report presents the findings of an industry and business mapping exercise conducted for the Scottish Graduate School of Social Sciences (SGSSS) by Cloud Chamber. The aim was to understand and map the extent of private industry links across the SGSSS Doctoral Training Partnership among current and recently completed PhD Students, and supervisors; developing examples of successful collaborations. This report provides a platform through which the SGSSS can enhance capability for private sector engagement, increase the understanding of the businesses benefits of collaboration, and help to respond to national funding opportunities related to industrial strategy.

Further to this report we are producing a series of case studies that explore examples of successful collaborative doctoral projects.

Methodology

The research was delivered in four phases, all of which were supported by an initial review of relevant policy and strategy documents. A short interim report was also produced in early September. The research involved the following phases:

- **Documentary review**: we reviewed relevant strategic and operational documents from SGSSS and key partners, including consideration of UK and Scottish economic strategy.
- **Academic and doctoral survey**: we conducted a survey of academics and current and completed doctoral students. The focus of the survey was on private sector business and academic collaborations. We received 131 responses from academics and 97 from doctoral researchers.
- **University knowledge exchange interviews**: 8 interviews were conducted with university officers responsible for knowledge exchange policy and delivery from a range of institutions across Scotland, to better understand doctoral collaboration with industry and business.
- **Stakeholder interviews**: we undertook interviews and completed additional desk research with four key organisations working nationally in Scotland.

Key Findings

The key findings from this work include the following:

- The UK and Scottish policy and operational landscape provides a **positive environment** for business and industry engagement with academic researchers and universities.
- Barriers to collaboration are mixed but often start with a **lack of knowledge within the business community** about the value of social sciences and a lack of confidence to speak the language of business on the part of researchers.
- There is a greater level of engagement between business and social scientists than what was expected although **most collaborations are with the public sector**.
- Where doctoral students collaborate with the private sector, commonly the business is based in the UK with **over a third in Scotland** and the relationship came about due to the doctoral students’ own professional networks.
- Private industry is **open to working with social scientists** if the value of social science research is communicated to them.
o The **time taken to develop strong and lasting relationships** with business partners is usually significant and shouldn’t be underestimated. Often partnerships develop on a very small scale first and build to larger collaborations as trust is established.

o Where **flexible funding options** (e.g. 1+3) and delivery models for doctorates that reflect the diversity of the Scottish resident and business population have been in place, they have been well received, thus enabling businesses to engage.

o Where doctorates have involved business or industry the research is seen to be relevant and informative suggesting that once engagement and collaboration is secured the **relationship is beneficial** to all parties.

o Much of the research carried out at doctoral level was considered by those undertaking the research to be of **relevance to public policy** as well as industry.

o Some sectors were highlighted where **future opportunities for more engagement** could be found. These include opportunities within accounting business finance and management; interdisciplinary research in health and medicine; and artificial intelligence.

o A number of other industries and research themes were highlighted by academics and doctoral researchers as having potential for future collaborations although the scale of the potential partnerships and research opportunities was not always clear (e.g. Robotics including social robotics; Genealogy; Dementia; Speech recognition/machine learning; and others).

**Recommendations**

We made a series of 16 recommendations relevant to policy makers, funding agencies, universities, and SGSSS. These are summarised as follows:

**Universities**

o Continue the implementation of training programmes to support doctoral students to engage with business as well as communicate with industry, policymakers and the public.

o Better understanding of the research strengths of social science departments and research centres.

o Replicate initiatives such as Academic and Industry Meetings (AIM), currently run by Edinburgh, at other universities.

o Universities should actively raise awareness of IP issues and challenges with academics across the social sciences spectrum, given the threats this poses.

o Universities should identify academic champions to promote the advantages of working in collaboration with business and industry.

o Seed corn funding should be made available to support collaboration development.

**SGSSS**

o Act as a facilitator and space for social science academics across Scotland to come together and build partnerships and speak in a coordinated way to policy practitioners.

o Continue to promote enterprise training and provide realistic advice and support to PhD students regarding future career options.

o Provide a gateway or facilitation role to engage with industry bodies to help improve engagement.
- Run events to engage business and generate new projects which may include doctorates, incentivised using 'seed corn' funding
- Enhance relationships with existing Innovation Centres to promote the value of social science doctorates within key industries
- Fund more ‘bottom up’ research proposals from prospective doctoral students who have existing business links.
- Facilitate consortia of businesses to fund post-doctoral students, reducing the financial burden on individual businesses and increasing the impact and applicability of the research

**Policy**
- UK Industrial strategy and other significant policy drivers (e.g. REF) should be reviewed to maximise the incentives for academic engagement with industry

**Funding agencies**
- Flexible models for PhD delivery should be explored to increase delivery options for business and industry as well as academics and potential students.
- Further expansion of 1+3 PhD funding would help ensure a diverse range of doctoral students with associated benefits for business and industry
**Introduction**

“It appears to me that within the global context of generalised uncertainty, social scientists’ opinions are increasingly more valued by industries. It seems as if industrial prestige is now slowly being built through the inclusion of social scientists (or at least pseudo-social scientists) as part of their committees, spokespersons teams, crystal ball gazers, and so on. There is hope, but we need to separate good and bad social science.”

*Doctoral Candidate, September 2018*

This report describes the findings of research undertaken to map the nature and extent of existing and recent business and university doctoral research collaborations in Scotland. The report was commissioned by the Scottish Graduate School of Social Sciences (SGSSS) as part of their Doctoral Training Partnership (DTP). The SGSSS receives funding from the Economic and Social Research Council (ESRC), the Scottish Funding Council (SFC) and Skills Development Scotland (SDS) and it has a focus on delivering effective business and industry collaborations through a Scotland-wide doctoral programme.

The SGSSS sits within a wider economic and policy landscape which provides the framework driving greater business and industry collaboration. Most notably the Dowling review of Business-University research collaborations (2015), the emergence of industrial strategy from the UK1, and the REF Impact agenda2 are driving shifts in approaches to knowledge exchange and business engagement across disciplines. This extends right across the academy, including the social sciences. Previous research into business and academic collaborations demonstrate some of the benefits of academic engagement with business. It also highlights the benefits of PhD students in promoting links between academia and industry, notably bringing new ideas to organisations, translating between the worlds of academia and industry, and the use of subject-specific knowledge to grow businesses.

It is within this strategic backdrop that this study is situated. SGSSS wanted to understand and map the extent of private industry links across the SGSSS-DTP partnership among current and recently completed PhD Students, and supervisors, developing examples of successful collaborations. This report outlines the findings from the research and provides a platform through which the SGSSS can enhance capability for private sector engagement, increase the understanding of the businesses benefits of collaboration, and help to respond to national funding opportunities related to industrial strategy.

The report has the following structure. Firstly, it examines previous research in more detail, outlining the conclusions reached which provide initial background and context to this study. The report then explains the methodology of the study before reviewing the policy and strategic context in which the SGSSS operates. This is followed by outlining the local delivery and operational context before outlining the findings of the mapping exercise including an analysis of the survey of Scottish social science academics and doctoral students. The report concludes with key findings and recommendations for future action.

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1 [UK Industrial Strategy](#)
2 [REF Guidance September 2017](#)
**Methodology**

The research was delivered in four phases, all of which were supported by an initial review of relevant policy and strategy documents including examining previous research into business and university collaborations, the Scottish Economic Strategy and the UK Industrial Strategy. An interim report was provided to SGSSS in early September. The phases of the research were:

**Documentary review**

The first stage of the research was a documentary review. We reviewed relevant strategic and operational documents from SGSSS and key partners. The review included a review of UK and Scottish economic strategy.

**Academic and doctoral survey**

Given that the SGSSS has both a good understanding of and record of supporting public sector engagement by social scientists the focus of the research and survey was to examine private sector business and academic collaborations. In addition, the survey explored how business collaborations are perceived, any barriers or challenges to the relationships as well as current levels of institutional support, ideas for enhancing the support and the role of SGSSS in this activity. Survey distribution was via the SGSSS networks and those of their university partners. Valid responses were received from 131 academics and 97 doctoral researchers, of which, the vast majority (93%) were currently studying for a doctorate.

The online survey was available for four weeks from 13th August 2018. Promotion of the survey was primarily through direct mailings by SGSSS as well as via partner university networks. In addition, the survey was advertised via social media.

The survey was split into two “routes”. Social science academics at Scottish universities completed the first route with the second route completed by current or former social science doctoral students. The analysis of the survey reflects the two routes.

Both surveys collected demographic information relating to university affiliation, disciplines, nature of collaborations and how any business collaborations came about. The surveys also explored:

- The support available to academics and doctoral students to develop business collaborations
- The value of collaborations from the perspective of supervisors, academics, students and businesses
- Relevance of doctoral research to business and industry
- Features of successful collaborations
- Barriers to successful collaborations
- Business and industry engagement (post doctorate)
- The role of SGSSS
- Potential future industrial collaborations
University knowledge exchange interviews

To understand what types of knowledge exchange activities take place across the higher education sector in Scotland, interviews were undertaken with university officers responsible for knowledge exchange policy and delivery. The interviews explored knowledge exchange activities within institutions with a focus on the social sciences. Eight interviews were undertaken with the following institutions:

- University of Edinburgh
- University of Aberdeen
- Scotland’s Rural University College
- University of St Andrews
- University of Highlands and Islands
- University of Glasgow
- University of Stirling
- Abertay University

Stakeholder interviews

The SGSSS operates within a wide policy and strategic environment. Within Scotland, there are policy and delivery mechanisms designed to drive innovation, economic development and collaborative work between universities and the private sector. To understand this wider context, we undertook interviews and completed additional desk research with four key organisations including:

- The Scottish Funding Council
- Skills Development Scotland
- Interface
- Edinburgh Futures Institute

The stakeholder interviews confirm that SGSSS operates within a proactive policy and delivery environment which has an increasing emphasis on industry and academic collaborations. This policy approach is reflected at UK, Scottish and regional levels.
Business and University Engagement – Previous Research

Previous research into engagement between business and universities highlights some of the opportunities and challenges faced by SGSSS and universities within the Doctoral Training Partnership (DTP). The Dowling review of Business and University research collaborations (2015)³ highlighted the following challenges and potential solutions:

- Forming connections with business at the outset of an academic career path could significantly enhance the environment for collaboration over the longer-term. To enhance doctoral training:
  a. Universities should ensure that all PhD students in appropriate subjects receive IP awareness and wider business skills training; b. The Research Councils and other major funders of PhD studentships should support students in appropriate subjects to spend some time in business as part of their doctoral training; and c. Universities should play an active role in facilitating industrial placements for their PhD students

- The perception that collaborating with industry, or spending time in industry, is damaging to an academic career path persists and detracts from the attractiveness of such activities for academics

- There is an ongoing challenge to engage those companies that have never participated in collaborations but could profit from doing so. A campaign raising awareness of the benefits that companies have derived from university collaboration could play a helpful role in stimulating a broader base of demand

- Funding bodies and universities should do more to promote examples of researchers who have derived benefit from collaborating with industry

This research, commissioned by SGSSS, responds directly to these recommendations including the creation of case studies that can be used to promote the benefits of research collaborations between industry and academia. More specifically previous research has recognised the challenges faced by the social sciences. These were examined in research undertaken at the University of Cambridge (Bullock and Hughes, 2016)⁴; Knowledge Exchange and the Social Sciences: A Report to ESRC from the Centre for Business Research. This study found that:

- Social scientists are more likely to engage with charitable and public sector organisations (49 per cent) than with private sector businesses (30 per cent)

- The perception of relevance to the non-commercial sector was high across all social science disciplines with ‘Sociology’ academics most likely to report this (86%) and ‘Business and management studies’ academics the least likely (60%)

- The proportion of academics undertaking applied research was greatest within ‘Social work and social policy’ at almost three quarters (72%). In contrast, under a quarter (24%) of academics in ‘Politics and international studies’ reported undertaking applied research

- Within the social sciences, professors are more likely than average to report that their work is in a general area of commercial interest to business and/or industry

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³Dowling review of Business and University Collaborations
⁴ Bullock and Hughes 2016
The proportion of academics reporting that their research was in a general area of commercial interest to business and/or industry was highest in ‘Business and management studies’ (65%) and ‘Architecture, built environment and planning’ (54%).

Academics in ‘Business and management studies’, ‘Architecture, built environment and planning’ and ‘Sport and exercise sciences, leisure and tourism’, were most likely to report that their research had been applied in a commercial context with proportions ranging from 20% to 30%.

Consultancy formation is the most frequent social science commercialisation form. It was most frequent in ‘Sport and exercise sciences, leisure and tourism’ (13%), ‘Anthropology and development studies’ (13%) and ‘Business and management studies’ (13%). It was least frequent (<6%) in ‘Sociology’ and in ‘Social work, and social policy’ and ‘Law’.

Research undertaken by the University of Hull, in conjunction with Cloud Chamber, in 2013 addressed the business impact of PhD students which can be summarised as follows:

- Doctoral students can bring new ideas to the organisation through using the skills developed through the PhD to offer new and innovative ideas to a company, e.g. ‘thought leadership’, ‘testing and developing new research ideas’
- The relationship can engender a strong sense of credibility, expertise and employability. Employing an individual with a PhD acts as a ‘selling point’ for both the individual and their organisation to external commercial organisations or potential clients
- Translating between the world of industry and academia. Some graduates felt they were able to keep up to date with the latest research findings and more importantly translate and use these findings to grow the organisation
- Using subject-specific knowledge to grow the business by using the findings from their PhD or the subject-specific knowledge they developed to enhance the work done within their role
- Using high-quality work skills. Some graduates felt the work skills they had developed through their PhD such as project management, report writing, communication and time management were very beneficial to their employers
- PhD programmes are seen by academics and students alike as being primarily concerned with training future academics, with ‘impact’ having a generally low profile. However, some impact stories have emerged from former PhD students who have moved into industry, highlighting the potential importance of PhD funding and training as a driver of business impact

The 2015 evaluation report exploring the Impact of the Scottish Knowledge Transfer Partnership Programme highlighted the following:

- Associates going onto a PhD was a considered a benefit by stakeholders
- 23% of KTP associates surveyed had a PhD (50% were masters students, 26% were undergraduates)
- But only 2% of KTP’s were cited in social sciences, 2% in education, 11% in business and management, - most were in engineering (36%), computer science (16%), health and life sciences (15%)

These previous research findings provide the contextual backdrop to this study. The final recommendations provided reflect these and the findings of this study.

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5 UoH Cloud Chamber Business Impact of Social Sciences
Policy and Operational Context

This section explains the key drivers for business and industry collaboration with universities at the UK, Scottish and regional levels. A number of key specific operational initiatives that SGSSS have direct links to are described. We present an overview of the strategic landscape in Figure 1 below.

Figure 1: Overview of the strategic landscape

**Overview of national policies**

**Growing Potential**
- Demonstrator projects: Biomedical and Life Sciences, Cyber, Data, and Quantum Tech

**Innovation Centres**
- Centre for Sensor and Imaging Systems (CENSIS)
- Construction Scotland Innovation Centre (CSIC)
- Digital Health and Care Institute (DHIC)
- Industrial Biotechnology Innovation Centre (IBiSC)
- Oil and Gas Innovation Centre (OGiC)
- Scottish Aquaculture Innovation Centre (SAIC)
- Stratified Medicine (SIMsIC)
- The Data Lab

**UK Economic Strategy and Policy**

The UK government launched a new Industrial Strategy in 2017. The strategy, designed to boost the growth and productivity of the UK economy, has five key foundations to transform the economy:

- **Ideas**: the world’s most innovative economy
- **People**: good jobs and greater earning power for all
- **Infrastructure**: a major upgrade to the UK’s infrastructure
- **Business Environment**: the best place to start and grow a business
- **Places**: prosperous communities across the UK.

The first two foundations are critical to the higher education sector in the UK. UK universities have a key role to play in research and development (R&D) and the translation of outcomes to aid productivity and growth. In addition, the development of people, including the nurturing of talented researchers through doctoral programmes, will help to underpin any economic transformation. The primary funding sources for SGSSS are the ESRC, SFC and SDS.

The higher education sector in the UK receives significant funding from UK Research and Innovation (UKRI). The objective of UKRI is to work “in partnership with universities, research organisations,
businesses, charities, and government to create the best possible environment for research and innovation to flourish.”

Scotland’s Economic Strategy

The economic strategy for Scotland\(^8\) provides the framework for industrial development and policy. The strategy, published in 2015, has key actions which relate directly to the work of Scotland’s universities and their partners. These are:

- Encourage more of Scotland’s diverse business base to engage in innovation and research and development as part of their day-to-day activities
- Continue to support the high-impact, world-class research of Scotland’s Universities and improve levels of commercialisation of academic research

The strategy goes on to identify key sectors of the Scottish economy which have a comparative advantage. These are:

- Food & Drink (including agriculture & fisheries)
- Creative Industries (including digital)
- Sustainable Tourism
- Energy (including renewables)
- Financial & Business Services
- Life Sciences

The priorities of both the Scottish Funding Council (SFC) and Skills Development Scotland (SDS) are drawn directly from the Scottish economic strategy. As key funders in the Scottish research and innovation landscape, SFC and SDS priorities drive significant operational delivery within Scotland’s universities.

Outcome agreements

Before the development of the latest economic strategy, the Scottish Government started implementing Outcome agreements in 2012. The Scottish Funding Council oversees the agreements which are renewed annually. They outline funding to be made available to universities and colleges in Scotland with specific conditions and priorities included. The outcome agreements mandate three priorities for the HE sector:

- access to higher education for people from the widest possible range of backgrounds
- improved collaboration with industry and the more effective exploitation of research
- a more coherent pattern of provision.

The current outcome agreements for each institution in Scotland are available [here](#).

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\(^7\) UKRI

\(^8\) Scotland Economic Strategy
Delivery and Operational Context

This section outlines the local and regional economic development context in which SGSSS partners operate. Significant regional and national initiatives are included.

Local/regional economic development

Edinburgh City Region Deal secured:
- £300m for world-leading data innovation centres
- £25m regional skills programme to support improved career opportunities for disadvantaged groups

The Edinburgh Futures Initiative (EFI) has been recently established at Edinburgh University. The EFI responds directly to the challenges and priorities agreed the Edinburgh City Deal and it is in the process of setting up a Multi-disciplinary space for research and teaching.

The EFI will run CPD and Masters Courses with research priorities to be developed. It will sit outside of schools at the university but be a space for people and academics and industry to work together. They will also have a focus on improving employability and enhancing the student experience through industry collaboration. There are three broad priority industries/areas for them to focus on in the first instance – these are:
- Future of capital markets and economy through financial services and financial technology
- The Public sector and improving public policy
- Creative industries

Stirling and Clackmannanshire City Region Deal has a focus on:
- The creation of a new International Environment Centre that will draw together academic expertise from across Scotland, the UK and the world. It aims to connect environmental research with business opportunities and training and will take full advantage of the natural environment and heritage of the region
- New Aquaculture Innovation Hub developed
- Development of a Digital District programme of investments in digital skills, training and business development, alongside the creation of Digital Hubs in Callander and Alloa

Glasgow City Region Deal has a focus on:
- Supporting further growth in the life science sector through the establishment of world-class R&D and commercialisation facilities in the city
- Enabling more small and medium enterprises to grow by providing additional business incubator and grow-on space for entrepreneurs across Glasgow and the Clyde Valley

Aberdeen City Region Deal has a focus on:
- Oil and Gas Technology Centre (OGTC)
- Hubs for Innovation in Food and Drink, and Life Sciences - £30m
- Creation of a digital infrastructure fund (£5m)

Inverness and Highland City Region Deal has a focus on:
Northern Innovation Hub – the hub will provide tailored support for high growth small and medium-sized businesses as well as encouraging new start-ups. It aims to accelerate business growth through measures to improve business competitiveness at the UK and international level. Focus on life sciences, tourism, food and drink and creative industries.

University of Highlands and Islands School of Health and Life Science: addresses issues with the innovation and commercialisation of health and care products and services.

**Growing Potential**: Scotland’s Innovation Step Change was established in early 2017 as the legacy implementation phase of the Growing Value Scotland (GVS) Taskforce (2014-2016). It aims to drive a unified recognition for the need to transform the innovative capacity of Scottish businesses by mobilising the wealth of knowledge from fundamental research in Scotland’s world-class university sector. The ambition is to implement real change for Scotland, which will look to position the Scottish university, business and public sectors and foster genuine transformation in the creation and delivery of innovation while demonstrating the broader economic benefits of collaboration.

Growing Potential’s current programme of work is centred on designing and delivering a small set of innovative demonstrator projects. These are Biomedical and Life Sciences; Cyber; Data; and Quantum Technologies.

**Innovation centres**: Funded by the Scottish Funding Council with support from Scottish Enterprise and Highlands and Islands Enterprise, the Innovation Centre programme was first launched back in 2012. Since then, £120m (2013-18) has been invested in eight Innovation Centres across a range of key sectors. The common aim of every one of Scotland’s Innovation Centres is to help businesses large and small increase the pace of innovation and, in turn, help both the economy and people to flourish and prosper. The centres are:

- **Centre for Sensor and Imaging Systems (CENSIS)**: CENSIS enables industry innovators and university researchers to collaborate at the forefront of market-focused sensor and imaging systems (SIS) innovation, developing products and services for global markets to create sustainable economic value in the Scottish economy.

- **Construction Scotland Innovation Centre (CSIC)**: Construction Scotland supports Scotland’s construction-related businesses to innovate, collaborate and grow by matching innovation requirements with academic and business support. Focusing on business, product, process and service forms of innovation we offer advice, funding, facilitation and access to the appropriate expertise.

- **Digital Health and Care Institute (DHI)**: The institute brings together people and organisations in the health and social care, charity, technology, design and academic sectors to develop new ideas for digital technology that will create economic impact and improve the delivery of health and care services for the people of Scotland.

- **Industrial Biotechnology Innovation Centre (IBioIC)**: IBioIC bridges the gap between education and industry and is at the hub of a growing network where industry freely interacts with academics and other business leaders to generate new business ideas.

- **Oil and Gas Innovation Centre (OGIC)**: OGIC connects oil and gas companies with new ideas to world-class research expertise within Scotland’s universities. OGIC boosts projects with funding, technical know-how, project management resource and provides confidentiality and commercial agreements.
Scottish Aquaculture Innovation Centre (SAIC): The centre promotes industry success through research partnerships. SAIC connects industry with academia, supporting collaboration on key sector issues and opportunities, and helps drive growth towards 2030.

Stratified Medicine (SMS-IC): Stratified Medicine creates a unique and sustainable capability to serve the health needs of the Scottish population. StratMed aims to improve the treatment of acute and chronic disease in patients and provide new tools to enable healthcare providers to diagnose and treat, by supporting the development of new and better.

The Data Lab: The Data Lab enables industry, the public sector and academics to innovate and develop new data science capabilities in a collaborative environment. The Data Labs core mission is to generate significant economic, social and scientific value from data for Scotland.

**Interface**

Interface, established in 2005, aims to be the central hub connecting organisations from a wide variety of national and international industries to all of Scotland’s universities, research institutes and colleges. Based regionally throughout Scotland, Interface works with businesses of all sizes, in all sectors, to match them to Scotland’s world-leading academic expertise to help them grow. The impartial support offered to business by Interface supports a wide range of companies drawn from all industrial sectors. Interface has the freedom and flexibility to respond to any industry need, directly contributing to the Scottish Economic Strategy and government priorities. Notably, in terms of helping organisations to become more innovative and internationalised.

Interface works across all Scottish universities, research institutes and colleges, and supports businesses access academic expertise, research, technologies, specialist facilities and funding. The service is free and impartial and has helped organisations solve problems and challenges, enabling them to become more competitive, increase their profits, maximise their export potential and ultimately become more sustainable.

Interface will help organisations identify a range of funding options to offset the cost of their project. Small pots of funding, through the form of SFC Innovation Vouchers, are available as seed corn money to start research collaborations between industry and academia. Standard Innovation Vouchers have a value of £5,000 and are usually used to buy academic time whilst follow-on Innovation Vouchers can support projects of up to £40k through a grant and cash contributions from the collaborating company.

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9 **Innovation leading the way to Internationalisation**
Mapping Industry and Academic Collaborations

This section outlines the findings from the primary research which focused on the knowledge exchange activities taking place in Scottish universities as well as collecting information and views from social science academics and doctoral researchers.

Strategic stakeholders and the role of knowledge exchange activities

This section is informed by twelve interviews with key stakeholders and Knowledge Exchange (KE) professionals based at eight different Scottish Universities. Most of those interviewed had Knowledge Exchange and/or Research Development in their remit.

Telephone interviews were completed. Knowledge Exchange professionals were asked to describe how KE is organised at their institution, KE priorities, good practice and success factors for PhD-Business collaborations and priorities for supporting KE going forward. Stakeholders were asked to describe their organisations position in the research and innovation landscape, their experience of collaborations and the benefits of business and academic collaboration as well as exploring future priorities for delivery. This section summarises the key messages emerging from these interviews.

1. Increasingly, private sector engagement is viewed positively by institutions

All institutions report an increased attention towards KE driven by several factors including:

- the impact agenda associated with the Research Excellence Framework (REF)
- opportunities for commercialisation and income generation
- opportunities to support students (undergrad and postgrad) with employment opportunities

KE is interpreted slightly differently between institutions with some placing more emphasis on ‘enterprise’ and others looking at ‘research use.’ Edinburgh University actively engages with private sector partners through Academic and Industry Meetings (AIM) which aim to nurture and explore potential collaborations for research and joint working. The EFI advocates this approach as a way of developing effective business to academia relationships although it is clear from wider stakeholder and KE experience that it can take a number of years for initial collaborations to lead to larger research projects or doctorates.

To support increasing collaboration some stakeholders and KE professionals suggested that SGSSS could play an active advocacy role to bring together consortia of businesses or to represent the social sciences to industry bodies with the objective of raising the profile of social science research.

2. Public sector KE is more prevalent than private sector KE in social sciences

KE professionals and stakeholders are commonly more aware of private sector engagement within science, technology, engineering and maths (STEM) subjects compared with social sciences. When asked to explain good practice of KE amongst the social science disciplines, public sector examples were much more commonly cited than private sector examples. One institution (The University of Glasgow) completed a mapping study of the institution’s strategic partners and found that the most significant strategic partners for the University are Scottish Government and Glasgow City Council. The experience of Interface indicates that around 70% of partnerships with the private sector require expertise from STEM subjects with the remaining 30% being with disciplines such as arts, humanities and social sciences. Several KE professionals and stakeholders noted differences in the
way that engagement with private sector is viewed compared with engagement with third / public sectors by academics in the social sciences. These differences are somewhat driven by ideological viewpoints as to what ‘causes and issues’ academics feel aligned to support through their work. For some social scientists there may be an inherent ideological conflict with supporting certain businesses.

3. **Private sector KE takes place ‘under the radar’ in social sciences**

In most institutions it is acknowledged that there is KE activity which takes place ‘under the radar’ of the institution. That is, there is no paper trail or centralised database recording KE activity amongst academics and PhD students. This is especially the case for smaller KE initiatives. It was described how social science interactions with the private sector usually take place on a one-to-one basis between an academic and a business person and the academic ‘just gets on with it’ without involving the KE team. Another institution reflected that much of the KE activity social sciences takes place informally – there is no financial flow and therefore no paper trail/record of the work. For example, a PhD candidate may be sent to work for 3 months with an external partner but there is no official contract in place. This means that KE colleagues and HR colleagues at the University are often unaware of the extent of KE activity. This ‘under the radar’ activity can lead to challenges including:

- Intellectual property issues – without a contract it can be unclear who the IP belongs to during and after a research collaboration
- Human Resource issues – without a contract in place it is not clear who is responsible if the researcher needs HR support such as sick leave, annual leave or grievances etc
- Strategic alignment for the University – without a database of collaborators, it is difficult for the University to understand who the University is working with and which relationships and networks are worth developing

KE professionals reflect that for STEM subjects this is less of a problem as there is a culture to ensure that IP is protected, usually due to the requirements of the grant bodies funding the collaboration and/or the equipment/facilities required. As STEM disciplines usually attract more research funding there is often more financial accountability and more of a paper trail when compared to social sciences.

4. **Intellectual Property – a priority for KE teams**

In social sciences there is less awareness/thought given to IP issues when compared with other disciplines. Social scientists often don’t see the risk (e.g. HR issues, IP issues, other) of working with external partners so don’t put contracts in place. One institution runs training for PhD students including intellectual property but take up is low indicating lack of appetite for IP training and a feeling that it is not an issue of relevance. KE professionals report that they would like to increase awareness of IP amongst social scientists at their institution – as one put it “it is ok to give IP away, but they [academics] need to understand the implications. This is something we are keen to work on”.

5. **Lack of shared language between social scientists and business**

When describing the challenges associated with academic and business collaboration, a lack of ‘shared language’ was commonly described, notably difficulties of academics to understand business challenges and how these can translate into research projects. One institution describes how PhD candidates are not always skilled at dealing with business – “PhD students can go in with 2 left feet
sometimes!” KE professionals from several institutions talk about how “businesses struggle to see how social science research can help with their bottom line – they can’t see the commercial value”. Commonly cited support needs for academics include: training on how to chair meetings, how to reach a shared language, how to sell the benefits of their research and how to understand business problems. Interface, as a brokerage service between universities and businesses, help to translate and find common language between parties. This helps to clarify expectations early on, thus increasing the chances of a successful collaboration.

### 6. Interdisciplinarity and ‘pockets’ of social science collaborations

Some examples of social science collaboration are hosted within other disciplines – for example:

- The University of Aberdeen have Health Economists based in Life Science and Medicines. These Health Economists are working with NHS, charities and clinicians
- The University of St Andrews are working on a Smart History project with computer science. A historian worked on virtual reality displays of abbeys, museums, and castles making these sites accessible for visitors
- The University of Edinburgh has developed a website specifically for the construction sector to explain the benefits of academic collaboration. This is predominantly for the engineering departments but there is scope for interdisciplinary work with social sciences

This suggests that there are ‘pockets’ of social science academic collaboration with the private sector taking place outside of the mainstream social science discipline and their faculties but rather, as complementary to other disciplines. Working interdisciplinary also gives academics a chance to practice sharing a language with those who are not familiar with the discipline – as one KE professional put it “it gives practice at selling what you do” suggesting that interdisciplinary working is a useful precursor to private sector collaboration.

### 7. Perceived barriers to academics and PhD students

A number of barriers were described as potentially deterring academics and PhD students from engaging with KE activities. These barriers include:

- Not much reward for KE collaboration under the career path whereby peer-reviewed journal articles are traditionally well respected and KE engagement can be regarded as a ‘distraction’ from focusing on more traditional research. Institutions describe how PhD students are more likely to attend training based on the traditional academic career path as opposed to consultancy skills and working with business
- Interpersonal skills including the ability to interact with business, understand their problems and work collaboratively to find research solutions. Further to this, communication skills more broadly were often cited as a problem for both academics and PhD students. This is not necessarily unique to the social sciences
- KE professionals report that businesses often have a problem they want solving within a specified time-frame. The 3-4 year PhD duration is, on occasion, too long for a business and they are likely to prefer a ‘consultancy’ model of academic input. This view was not reflected by all stakeholders. If the right business collaboration is established the timeframe of any subsequent PhD is not seen as problematic
- Academics, including supervisors, often report not having enough time to invest in developing relationships with business
Perceived conflict amongst supervisors that working on KE activities can distract PhD students from getting their thesis completed within the desired timeframe

Individual mindset of social science academics – due to the way that social science research is funded - means that little thought is given to developing the skill set of PhD candidates and junior academics. This can be compared to STEM where there is a research ‘group’ mentality and Principal Investigators see it as their responsibility to expose PhD candidates to a range of opportunities and see this as beneficial to the wider research group. This ‘group’ culture rarely exists in social sciences

8. **No clear route or support space for PhD students interested in business collaboration**

In some cases, it is not clear where a PhD student seeking support with business collaboration could receive support from the institution, particularly if their supervisor does not have the time nor skills to help. For example, KE offices often focus on supporting academics with large research projects often in STEM subjects where IP is a prominent issue. One KE team describes how PhD students have asked their team for support as their supervisor was unable to help with business development but the KE team are primarily there to help academics rather than PhD students. It is possible that PhD students with an appetite for working with business could ‘fall between the cracks’ in the University structure when it comes to receiving support with business development.

9. **The importance of supervisors from a range of backgrounds**

Feedback suggests that PhD candidates who have multiple supervisors, including a non-academic supervisor, are more likely to have fruitful relationships beyond academia. Skills Development Scotland provide mentors to support students who are undertaking doctorates funded by them. This support is invaluable to students and ensures relevant policy recommendations are developed during the doctorate.

One KE professional shared an aspiration for “*all PhD students to have a non-academic supervisor*”. KE teams report an increasing awareness of the challenging career path facing PhD students post-completion and the responsibility of their institution to prepare them for a variety of career paths including non-academic options. Several KE professionals envisage business collaboration as a sensible way to “*future proof*” a PhD candidate’s career – exposing them to a wider network and enhancing their skills. Having a mixed team of supervisors “*gives a wider perspective to the student*”.
Survey

The results of the survey analysis are included below. The analysis is split between academic and student responses.

Academics

Introduction

The survey ran for 4 weeks from 13th August 2018. We received 131 responses from academics working in Scottish Universities.

The majority of respondents were connected to the University of Glasgow (57%) or the University of Edinburgh (15%).

Figure 2: Respondents by institution

<table>
<thead>
<tr>
<th>Institution</th>
<th>Respondents</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glasgow Caledonian University</td>
<td>6</td>
<td>5%</td>
</tr>
<tr>
<td>Queen Margaret University</td>
<td>5</td>
<td>4%</td>
</tr>
<tr>
<td>Robert Gordon University</td>
<td>8</td>
<td>6%</td>
</tr>
<tr>
<td>Scotland's Rural University College</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>University of Aberdeen</td>
<td>4</td>
<td>3%</td>
</tr>
<tr>
<td>University of Dundee</td>
<td>7</td>
<td>5%</td>
</tr>
<tr>
<td>University of Edinburgh</td>
<td>19</td>
<td>15%</td>
</tr>
<tr>
<td>University of Glasgow</td>
<td>75</td>
<td>57%</td>
</tr>
<tr>
<td>University of St Andrews</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>University of Strathclyde</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>All institutions</td>
<td>131</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Cloud Chamber 2018

Just over a third of respondents were professors (34%), with associate professors / senior lecturers accounting for over a quarter (27%) and assistant professors a fifth (22%) of respondents, respectively.

Figure 3: Respondents by position

<table>
<thead>
<tr>
<th>Position</th>
<th>Respondents</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor</td>
<td>43</td>
<td>34%</td>
</tr>
<tr>
<td>Associate Professor / Senior Lecturer</td>
<td>34</td>
<td>27%</td>
</tr>
<tr>
<td>Assistant Professor / Lecturer</td>
<td>28</td>
<td>22%</td>
</tr>
<tr>
<td>Reader</td>
<td>5</td>
<td>4%</td>
</tr>
<tr>
<td>Research Fellow</td>
<td>9</td>
<td>7%</td>
</tr>
<tr>
<td>Teaching Fellow</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>Research assistant</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>All positions</td>
<td>127</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Cloud Chamber 2018
Respondents indicated the broad disciplines their posts were connected to, chosen from 15 disciplinary 'pathways' that define activity within the SGSSS. These are shown in Figure 4 below. Every disciplinary grouping is represented in the survey respondents, with the most common discipline represented in the sample being Accounting, Finance, Business and Management (18%).

![Figure 4: Respondents by discipline](image)

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Respondents</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting, Finance, Business and Management (AFBM)</td>
<td>27</td>
<td>18%</td>
</tr>
<tr>
<td>Economic and Social History</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td>Economics</td>
<td>10</td>
<td>7%</td>
</tr>
<tr>
<td>Education</td>
<td>13</td>
<td>9%</td>
</tr>
<tr>
<td>Health, Families, Relationships and Demographic Change</td>
<td>5</td>
<td>3%</td>
</tr>
<tr>
<td>Human Geography, Environment and Urban Planning</td>
<td>12</td>
<td>8%</td>
</tr>
<tr>
<td>Language-based Area Studies and International Development</td>
<td>4</td>
<td>3%</td>
</tr>
<tr>
<td>Linguistics</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td>Politics and International Relations (PIR)</td>
<td>10</td>
<td>7%</td>
</tr>
<tr>
<td>Psychology</td>
<td>10</td>
<td>7%</td>
</tr>
<tr>
<td>Social Anthropology</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td>Social Work and Social Policy</td>
<td>8</td>
<td>5%</td>
</tr>
<tr>
<td>Socio-Legal Studies and Criminology</td>
<td>7</td>
<td>5%</td>
</tr>
<tr>
<td>Science, Technology and Innovation Studies and Information and Communication Studies</td>
<td>7</td>
<td>5%</td>
</tr>
<tr>
<td>Sociology</td>
<td>7</td>
<td>5%</td>
</tr>
<tr>
<td>Other</td>
<td>22</td>
<td>15%</td>
</tr>
<tr>
<td><strong>All disciplines</strong></td>
<td>148</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Cloud Chamber 2018. Note: Multiple responses accounting for multinter-disciplinarity

Other disciplines or areas of study, falling outside the SGSSS disciplinary pathways, included Law (7 respondents), cultural policy, journalism studies, Tourism, Events Management, Community Development, migration, public policy and speech and language therapy. For most respondents these were additional to a social science discipline as defined by the SGSSS pathways. We excluded 5 responses on the basis that they were outside the Social Sciences.

Most respondents had supervision responsibilities (81%), as shown in

![Figure 5](image)

Of those who had such responsibilities, on average academics were primary supervisors for 2.36 students (n=87) and were second supervisors for 2.39 students (n=86).
Most academics do not collaborate with business

After receiving a pre-amble stating our definition of business/industry collaboration, just under a third of respondents (32%) were aware of industry or business collaboration that is currently taking place or had occurred in the past.

Most collaboration includes provision of data, placement and KE activities

The most common type of collaboration was participation in research (provision of data or interview participants for example), with under a third of respondents stating this as a common type of collaboration. Just over a fifth (21%) said that the doctoral student conducted an internship or placement with the business and 19% said that the business was involved in knowledge exchange activities related to doctoral study.
The sector collaboration took place in were varied, most commonly noted sectors included:

- Education (6 respondents) – 7%
- Banking and Consumer Lending (5 respondents) - 6%
- Healthcare services (5 responses) – 6%
- Financial Services (4 respondents) - 5%

**Over a third of collaborations take place within Scotland**

Over a third of respondents said that collaborations occurred in Scotland (34%). Collaborations also took place elsewhere in the UK, EU and elsewhere quite uniformly as shown in Figure 8 below.
Within Scotland, the most commonly cited locations included Glasgow City (29%), Edinburgh (23%), East Dunbartonshire (6%), East Lothian (6%), Scottish Borders (6%) and Highlands (6%).

Of all respondents who noted they were aware of a collaboration (n=38), 50% noted that collaborations were still ongoing (19 respondents).

**Three typologies of value**

Respondents were asked what the value of doctoral/business collaborations were to social sciences. Responses fell into three main categories: value to doctoral research (that is the individual research project); value to doctoral researchers (that is personal benefits to the researcher); and value to institutions. Common responses are shown in the table below.

<table>
<thead>
<tr>
<th>Value to Doctoral research</th>
<th>Value to doctoral researchers</th>
<th>Value to institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaping/honing research questions</td>
<td>Work experience/employment opportunities</td>
<td>Contributions to Impact agenda</td>
</tr>
<tr>
<td>Access to data</td>
<td>Experience of real-world settings</td>
<td>Marketing for prospective students (e.g. executive education)</td>
</tr>
<tr>
<td>Contextualising research</td>
<td>Helping to provide an alternative career route for PhDs</td>
<td>Reducing time taken to operationalise knowledge</td>
</tr>
<tr>
<td>Non-expert perspectives</td>
<td>Communication skills with non-experts</td>
<td>Co-creation of knowledge and an interface on behalf of the university</td>
</tr>
</tbody>
</table>

**Figure 9: Value of doctoral/business collaboration**

Source: Cloud Chamber 2018

Notable verbatim responses included:
“They offer cutting edge skills and expertise to established and emerging industries, the social enterprises in particular benefit from such ‘evidence based’ approaches, it helps them with further policy change and funding, but also to produce innovative outputs and deliver to their client base.”

“Looking at real issues under real conditions using real data, acquired through the collaboration as primary data. On this basis the results of any analysis might be expected to have wider validity, without it, the work might amount to little more than a case history.”

“There are far more PhDs than permanent job openings. The main value is therefore to provide an attractive alternative for PhDs to pursue research beyond academia, increasing transfer of new skills/techniques from academia to business, and reducing the oversupply of PhDs in ECRland, which has toxic effects on the academic environment overall.”

Some respondents noted caution/constraints in terms the potential value of collaborations. One respondent noted that business interests affected the impartiality of research. Another noted that the value of a collaboration is directly linked to the understanding of what a PhD can offer in the context of a business.

**The importance of building relationships**

Many respondents emphasised the importance of true partnerships/close relationships (3) and overlapping interests between partners (3). Being explicit about outputs and expectations was important, as was a common understanding between partners and institutional support. See Figure 10 below for full data.

**Figure 10: Common features of successful collaborations**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>True partnership/close relationships</td>
<td>3</td>
</tr>
<tr>
<td>Stability of relationships</td>
<td>2</td>
</tr>
<tr>
<td>Shared vision</td>
<td>1</td>
</tr>
<tr>
<td>Reverse placement at universities</td>
<td>1</td>
</tr>
<tr>
<td>Regular communication</td>
<td>0</td>
</tr>
<tr>
<td>Reducing incentives to overspecialise</td>
<td>0</td>
</tr>
<tr>
<td>Overlapping interests among all stakeholders</td>
<td>0</td>
</tr>
<tr>
<td>More than one link to the partner institution</td>
<td>0</td>
</tr>
<tr>
<td>Explicit about outputs and expectations</td>
<td>0</td>
</tr>
<tr>
<td>Engagement and interest from host organisations</td>
<td>0</td>
</tr>
<tr>
<td>Embedding the student within an organisation</td>
<td>0</td>
</tr>
<tr>
<td>Continuity of industrial supervisor</td>
<td>0</td>
</tr>
<tr>
<td>Common understanding</td>
<td>0</td>
</tr>
<tr>
<td>Clear vision of anticipated outcomes</td>
<td>0</td>
</tr>
<tr>
<td>Reverse placement at universities</td>
<td>0</td>
</tr>
<tr>
<td>Buy-in from key non-academic liaison</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Cloud Chamber 2018

Fewer respondents were able to comment on lessons that could be learned from other academic disciplines.

One respondent noted approaches in another European country which uses consortium funding to encourage PhD collaborations to share the financing of student placements between organisations.
and the state. “The French have a great model of state and org co-funding. Consortium funding can be a way that organisations could put in a little or matched funding options so that organisations are not overwhelmed with fees.”

Other respondents noted the importance of engagement with industry issues:

“Be clear from the outset what the aims and resources and expectations are - what constitutes success needs to be defined for each party (and understood) from the outset”

“Thinking of end product and consumers”

“Engage with business/industry on their terms - work to their timetable and make sure that outputs from the work appear when they are expected as part of the collaborator’s decision-making timetable if you want to have an immediate impact on practice.”

One respondent noted that structuring doctoral studies more along the lines of MBAs within business schools would increase the relevance to industry, and lessons could be taken from doctoral work in other disciplines where the employer directly contributes and determines research questions.

Another respondent noted the nature of social science research meant that engagement with business often involves a level of challenge/discomfort that can be avoided in the natural sciences.

**Supporting doctoral collaborations**

**Ability to support collaborations**

Respondents were asked to rate the extent to which they felt that they could support their students in engaging with business/industry. On a scale of 1 to 5 where 1 = not able to support collaborations and 5 = fully able to support collaborations, the average score for all respondents was 2.93. A frequency chart is shown below in Figure 11. There was a reasonably uniform spread of responses across each category of between 15% and 25%.

Figure 11: Ability to support collaborations (n=88)
Respondents were asked to explain the reason for the rating they provided. For those rating their ability highly, many felt that their ability to engage was linked to their discipline of study where strong relationships and contacts are developed both institutionally and individually.

Individual backgrounds were sometimes an important factor, having entered academia from careers in industry. As a result, understanding of how industry works is greater, and links and trust have been developed.

“I have spent more of my working life outside academia than in it - and hence understand how such external bodies actually work.”

Educational background was an important factor for some, where industry links forged while being part of externally-focused departments were cited by some of fostering their own links and ability to facilitate collaboration in their academic career.

“I have a lot of experience of working at the academic/industry interface, from fundamental science to data-driven innovation. I was fortunate to complete my PhD in a 5-rated department with excellent industry links, and learnt how such engagements are created and supported.”

The subject of an academic’s own research was cited commonly as a factor in supporting collaborations. Many had built up networks and contacts as a result of studies they have already undertaken. The degree to which respondents undertook applied research was important factor for some.

“My research involves working with industry “

“My research is generally very applied, and I have various industry contacts anyway.”

For those not rating their ability to support collaborations highly, many cited a lack of experience in industry which meant they felt less able to support efforts to collaborate. Positions and responsibilities within the university were sometimes cited as impacting on ability/willingness to support collaborations.

“I have some experience myself, but this is limited. I do not feel like I have the range of experience to be fully confident in my ability to do this and would aim to work in collaboration with a colleague with more experience to do so.”

The nature of individuals disciplines often meant the incentives or need to develop links were limited. This could be due to being active in ‘theory-driven’ research/disciplines, or the fact that social science disciplines often are more naturally linked to the public sector (specifically government and public policy) or voluntary sectors. Some citied that within their discipline, the involvement of industry might add perceptions of bias within the academy.

“I don’t have the links with industry. I also think within much of the social sciences involvement of industry is perceived as adding an ‘impurity’ or unwanted bias to the PhD.”

Another factor is the applicability of industry collaborations to PhD candidates areas of interest.

“In law, any collaboration with a private sector organization would probably be with a law firm. I feel reasonably comfortable with this - it is just that the topics pursued by my research students (criminal law/justice) do not easily lend themselves to this type of collaboration.”

One respondent noted the lack of shared language between academia and industry, and identified the need for more training to explicitly support this.
“The university should offer explicit training to support this. It is hard for academics to function in the business world, we don’t always speak ‘the same language’. The PhD students end up being the bridge, but this is not entirely fair to them.”

Finally, time was noted by a number of respondents – in that developing collaborations is another demand on academics time who already have to balance a wide range of objectives in their roles (e.g. research, teaching, impact and public engagement).

“All new relationship is time consuming to build. This activity often can’t be delegated. So the main constraint is academics’ time not lack of support.”

Support available for building collaborations

Respondents were asked about their awareness of support available to help them develop partnerships (see Error! Reference source not found.). Many were unsure (39%) of what was on offer to help support, or that no support was available (7%).

Where there was awareness of support this was most commonly in the form of generalist support, with 13% stating their research office is available to help build collaborations. Knowledge Exchange teams were only cited by 9% of respondents as being a source of support. Some academics had access to specialist support via their school or institution; 6% had access to specialist business advisors.

Very few noted financial support from universities or schools that was available to support collaborations. Some noted that greater training opportunities would be beneficial, both for academic members of staff, and prospective industry partners. Only one respondent mentioned SGSSS, and they presumed that support was available.

Those who stated they would refer to senior/more experienced colleagues often mentioned a lack of other support available, and as a result felt they had no other option.

“Very little process support”

“Limited at current, on a more informal basis colleagues are willing to advise.”

The role of SGSSS

Respondents were asked how SGSSS could better support academics in forming collaborations. Suggestions included:

- Build collaboration into doctoral awards
- Provide leadership on engagement with industry, providing alerts on industry need to academics
- Examples and case studies
- Funding for collaborations and scholarships
- Training
- Networking opportunities
- Consortium building
- Online resources
- Showcase events bringing together academics, business, and students
Some respondents noted specific objectives for training, or gaps they were aware of. For example:

“Provide dedicated training for social science students and supervisors, particularly in the ‘softer’ disciplines and for those engaging in qualitative research to ensure better understandings of whether/how our work may be relevant/useful to the private sector.”

“Training sessions in universities for particular subjects that are less involved in collaboration”

Where awareness of SGSSS appeared higher, or individuals had experience of working with SGSSS, a number of points were made about improvement. Some respondents noted that more time should be built into studentship calls (c. 3 months) to help develop relationships/collaborations.

One respondent noted that greater ongoing support would be helpful. “I have an SGSSS PhD student just beginning, and they were super helpful in getting it into place, but perhaps more check ins once up and running would help smooth any wrinkles. Some general training on these types of partnerships within universities could also help smooth communication and collaboration.”

Clearer advice and training for current partnerships were cited by another respondent. “Ensuring clear briefings and training on relationship management with PhD’s to ensure that expectations are managed with them and the industry partner - again it needs to provide value for the industry partner for it to be a valuable and sustainable collaboration.”

**Barriers to collaboration**

Respondents were asked to outline what the barriers to greater collaborative projects in doctoral research. One barrier identified was the lack of understanding of academia among companies, or vice versa:

“Academics who don’t understand or who have never worked in industry”

“Mutual lack of understanding and appreciation for what each party could bring the other.”

There was a perceived lack of value of academic research in business/industry, and that often the timescales for academic research didn’t correspond closely to the demands for quicker turnarounds in business/industry.

There are differences in working cultures and mindsets between industry and academia that are a significant barrier.

Often priorities are misaligned or competing between both sides of the partnership. These are related to underlying differences in the purposes of knowledge generation in academia and industry (i.e. for profit and not-for-profit).

“The objective of academic research is knowledge creation and revision; the objectives of industrial and commercial research is profit-driven. These two objectives have I know in the past conflicted.”

Internal bureaucracy and lack of funding was cited by some respondents as being a barrier. Practical barriers were apparent, most notably the lack of time among academics. Ethical barriers were also a concern for some, alongside commercial confidentiality.

Barriers are also apparent from the type of research being undertaken or the field of enquiry not lending itself to collaboration (i.e. not being or perceived not to be useful to industry).
The importance of academic independence was noted as a barrier. Commercial interests could be perceived to, or actually limit the independence of research. This might particularly be the case where funding is provided by a business.

Finally, and quite significantly, funding for collaboration development was seen by many as a barrier to successful collaborations.

**Future collaborations**

The identification of opportunities within the sample was fairly limited. Where suggestions were made, this included:

- Mortgage lenders, house builders and larger housing associations
- Environmental regulation and behaviour change around land management
- Data science and quantitative methods
- Microfinance
- Technology in schools
- Oil and Gas industry
- Social Robotics
**Students**

We received 97 responses to our survey of current and recently completed PhD students. The vast majority (93%) were currently studying for a doctorate, and 6% had completed a doctorate in 2013 or later.

Nearly three fifths of respondents were attached to either the University of Glasgow (27%) or the University of Edinburgh (32%). As with the survey of academics, our analysis is skewed by the experience of collaborative activity at these two institutions. Nearly a tenth of respondents respectively were connected to the University of Strathclyde, Glasgow Caledonian University or the University of Aberdeen. We received responses from 10 of the 16 Universities in the SGSSS partnership.

**Figure 12: Respondents by institution**

<table>
<thead>
<tr>
<th>Institution</th>
<th>Respondents</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glasgow Caledonian University</td>
<td>9</td>
<td>9%</td>
</tr>
<tr>
<td>Heriot-Watt University</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>Queen Margaret University</td>
<td>4</td>
<td>4%</td>
</tr>
<tr>
<td>University of Aberdeen</td>
<td>9</td>
<td>9%</td>
</tr>
<tr>
<td>University of Dundee</td>
<td>4</td>
<td>4%</td>
</tr>
<tr>
<td>University of Edinburgh</td>
<td>31</td>
<td>32%</td>
</tr>
<tr>
<td>University of Glasgow</td>
<td>26</td>
<td>27%</td>
</tr>
<tr>
<td>University of St Andrews</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>University of Stirling</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>University of Strathclyde</td>
<td>9</td>
<td>9%</td>
</tr>
<tr>
<td><strong>All institutions</strong></td>
<td><strong>96</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: Cloud Chamber 2018

Most respondent’s mode of study was full-time (85%). See **Figure 13**. The one respondent who chose ‘other’ noted this was ‘part-time distance learning’.

**Figure 13: Respondents by mode of study**

Source: Cloud Chamber 2018

Most commonly, respondent’s studies were either funded by an institution (33%) or self-funded (28%). Only 4% were funded by business/industry and 2% were collaborative studentships.

**Figure 14: Respondents by funding source**

Source: Cloud Chamber 2018
Funding source | N  | % of total
--- | --- | ---
Business/industry | 4  | 4%
ESRC (via the Doctoral Training Partnership/Centre) | 15 | 15%
ESRC Collaborative Studentship | 2 | 2%
Institution | 32 | 33%
Other (please specify) | 11 | 11%
Other research council | 6 | 6%
Self-funded | 27 | 28%

All funding sources | 97 | 100%

Source: Cloud Chamber 2018

11 respondents noted other funding sources. These included charitable organisations, government, local authorities, and research institutes, and part-funding arrangements.

There was a wide spread of disciplines represented among survey respondents. Popular subjects of study among respondents including AFBM; Education; Health, Families, Relationships and Demographic Change; Psychology; and Science, Technology and Innovation Studies and Information and Communication Studies. Full data can be found below.

Figure 15: Respondents by discipline

<table>
<thead>
<tr>
<th>Discipline</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting, Finance, Business and Management (AFBM)</td>
<td>16</td>
<td>14%</td>
</tr>
<tr>
<td>Economic and Social History</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>Economics</td>
<td>3</td>
<td>3%</td>
</tr>
<tr>
<td>Education</td>
<td>12</td>
<td>11%</td>
</tr>
<tr>
<td>Health, Families, Relationships and Demographic Change</td>
<td>11</td>
<td>10%</td>
</tr>
<tr>
<td>Human Geography, Environment and Urban Planning</td>
<td>9</td>
<td>8%</td>
</tr>
<tr>
<td>Language-based Area Studies and International Development</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>Linguistics</td>
<td>5</td>
<td>4%</td>
</tr>
<tr>
<td>Politics and International Relations (PIR)</td>
<td>4</td>
<td>4%</td>
</tr>
</tbody>
</table>
| Psychology                                                     | 10 | 9%
| Social Anthropology                                            | 2  | 2%
| Social Work and Social Policy                                  | 5  | 4%
| Socio-Legal Studies and Criminology                            | 7  | 6% |
| Sociology                                                      | 5  | 4% |
| Science, Technology and Innovation Studies and Information and Communication Studies | 11 | 10%|
| Other discipline                                               | 11 | 10%|
| **All disciplines**                                            | 114| 100%|

Source: Cloud Chamber 2018. Note multiple responses

‘Other’ disciplines included Cultural Policy, Organisational Studies, Media Studies, and interdisciplinary studies.

Respondents were most commonly studying full-time for a doctoral qualification. See Figure 16.
There were a number of multiple responses within the data, where a full time or part time student is employed or self-employed while completing their studies. This has been coded and is shown in Figure 17. Ten respondents were both studying full time and employed and 5 respondents were studying part time and employed.

Of those employed, the most common sector of employment was education (59%). Other sectors identified were wide ranging and included management consultancy services, legal services, government and public sector, and healthcare services among others.
Most doctoral business engagement takes place with Scotland

28% of respondents stated that their research involved an industry partner (n=93). Partners were most commonly based in Scotland, but many were spread across wider geographies as shown in Figure 18 below.

Figure 18: Location of partners

- Scotland 43%
- Elsewhere in the United Kingdom 23%
- In the European Union (excl UK) 14%
- The Rest of the World 20%

Source: Cloud Chamber 2018

Within Scotland, most common locations of collaborative partners were in Edinburgh and Glasgow. See Figure 19 for full details.

Figure 19: Scottish partner location

<table>
<thead>
<tr>
<th>Geography</th>
<th>N</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aberdeen City</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>Aberdeenshire</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>Clackmannanshire</td>
<td>2</td>
<td>11%</td>
</tr>
<tr>
<td>Dumfries and Galloway</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>Dundee City</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>City of Edinburgh</td>
<td>5</td>
<td>28%</td>
</tr>
<tr>
<td>Glasgow City</td>
<td>5</td>
<td>28%</td>
</tr>
<tr>
<td>Renfrewshire</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>Scottish Borders</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td><strong>All regions</strong></td>
<td>18</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Cloud Chamber 2018

Business engagement commonly includes participation in the research

The majority of business involvement was reported to be participation in the research (44%). Only 4 respondents had their studies funded by a business, three were involved with placements at the business and one being externally supervised by a member of staff.
Figure 20: Role of business in partnerships

<table>
<thead>
<tr>
<th>Role</th>
<th>N</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>They funded the doctorate</td>
<td>4</td>
<td>11%</td>
</tr>
<tr>
<td>They were a co-supervisor of the research</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>I completed an internship or placement at the business</td>
<td>3</td>
<td>8%</td>
</tr>
<tr>
<td>The doctoral research was of direct commercial benefit to the business, and further collaboration occurred</td>
<td>2</td>
<td>6%</td>
</tr>
<tr>
<td>They participated in the research (providing data, interview participants)</td>
<td>16</td>
<td>44%</td>
</tr>
<tr>
<td>They were involved in knowledge exchange activities (seminars, etc)</td>
<td>5</td>
<td>14%</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>14%</td>
</tr>
<tr>
<td><strong>All</strong></td>
<td>36</td>
<td></td>
</tr>
</tbody>
</table>

Source: Cloud Chamber 2018. Note: Multiple responses

The ‘other’ category included: assisting with focus group and data collection; involvement of the businesses clients; providing equipment; some minimal funding and guidance; and being a named collaborative partner.

**Doctoral collaboration is often a result of their own professional networks**

The source of collaboration for business/industry involvement was through respondents own professional networks (38%) or networking (19%). A fifth (19%) came about through existing links with departments. There were limited linkages originating from knowledge transfer partnerships, engagement work done with the doctoral study or from third party initiatives. See Figure 21 below.

Figure 21: Source of collaboration

<table>
<thead>
<tr>
<th>Source of collaboration</th>
<th>N</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part of a Knowledge Transfer Partnership (KTP)</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Through own professional networks</td>
<td>12</td>
<td>38%</td>
</tr>
<tr>
<td>Through existing links in the department/faculty/University</td>
<td>6</td>
<td>19%</td>
</tr>
<tr>
<td>Through a third-party organisation or initiative (e.g. Interface)</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Via your employment in the industry</td>
<td>4</td>
<td>13%</td>
</tr>
<tr>
<td>As a result of engagement work done as part of the PGR</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Networking</td>
<td>6</td>
<td>19%</td>
</tr>
<tr>
<td>Not sure / unknown</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>6%</td>
</tr>
<tr>
<td><strong>All</strong></td>
<td>32</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Cloud Chamber 2018.

**Value of industry involvement**

We asked respondents to comment on the value that industry involvement provided to their research, its applicability to industry and its impact. Many cited the importance of industry involvement to securing research data.
“Due to the nature of my research, collaboration with industry experts and the Government was required for data collection. Forming relationships and networking was pivotal to my gaining access to required data and therefore was hugely impactful on my research.”

“My research is applied therefore the partner organisations (5) provided access that allowed me to collect all the data for my research project.”

“Without the cooperation of business/industry, I may not be able to conduct my research”

“Their engagement is extremely important as they provide me with the primary data for my research. Without this engagement, I will not be able to complete my research.”

Fewer respondents commented on the applicability to business or its impact. Specific examples where industry engagement made a difference included the following:

“The industry engagement dramatically increased the impact of the research as the resulting training course that has been created is now being taught to other teachers, through the partner’s teacher training network”

“Very Important as I expect my research to be pragmatically useful to organisations in a certain sector”

Some respondents noted practical issues around staff retention that meant the impact/applicability was limited, and others noted it was too early in the lifecycle of the project to comment on impact and applicability.

Respondents were asked to rate the extent to which they felt that business/industry collaboration was important to them. On a scale of 1 to 5 where 1 = not important and 5 = very important, the average score for all respondents was 3.5. A frequency chart is shown below in Figure 22. Most commonly respondents rated the statement as 1 – not important.

**Figure 22: Rating of importance of business/industry collaboration**

<table>
<thead>
<tr>
<th>Rating</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>35%</td>
</tr>
<tr>
<td>4</td>
<td>21%</td>
</tr>
<tr>
<td>3</td>
<td>20%</td>
</tr>
<tr>
<td>2</td>
<td>11%</td>
</tr>
<tr>
<td>1</td>
<td>13%</td>
</tr>
</tbody>
</table>

Source: Cloud Chamber 2018.

**Supporting collaborations**

Respondents were asked whether they had received any training on business/industry engagement. The majority had not received any training. Where formal training had been received this included
SGSSS workshops, life coaching, and alumni services. Many noted their previous experience valuable in the absence of formal training.

We explored the extent to which respondents felt their department or institution supports them to make industry/business contacts. Many of those asked noted that support networks were limited, or that they had received no support at all. Many respondents stated they had to establish connections themselves.

“Very limited support. I had to support myself identifying and contacting relevant partners for my study.”

Supervisors were supportive through the use of their own personal contacts and industry experience in some cases. Many respondents felt that there was a lack of institutional or departmental support for collaborations.

“While my supervisor is flexible and open-minded and would certainly support meaningful engagements with business, I believe it would be highly complex and laborious to establish such collaborations because of the administrative rigidity.”

“My supervisor hosted a seminar that allowed me to meet and engage with potential partners. He also put me in contact with some of his contacts.”

Supervisor somewhat due to her own experience, department very little, institution somewhat.”

“My PhD supervisors: absolutely. The Institution less-so.”

Others noted a general absence of links between academia and industry, which have detrimental effects on supporting collaborations.

“It feels like there’s a disconnect between academia and industry - perhaps there tend to be very different goals and values between the two”

“Not so much really - they are quite sheltered from relationships outside of the university world”

Very few of those who responded identified a great extent of support available, and with those who did this the main source of support came from their supervisors. A minority of respondents did, however, feel they were very well supported by their institution.

“Their support is critical to the research and they are able to provide a great deal of support”

Relevance of research to business/industry

We asked respondents to rate the relevance of their research to industry or business. 70% felt their research was very relevant or some relevance to business/industry. See

Figure 23 below.
Respondents were asked to explain the reason why they scored as they did in the previous question. Where there was relevance for business and industry, some outlined ways in which the research was of direct relevance. For example:

“I am studying innovation in corporate digital platforms, which market is reach £148 billion by the end of 2020. We argue that our research will help companies in this market to manage their business better.”

“I am looking at the role of trust in the financial service sector for consumers. Highly relevant and could have the potential of shaping better policy and internal practices within the industry.”

“My research is on mediation, business/industries do have conflicts that need to be resolved using informal means to preserve relationship”

“As I work in social robotics, the findings of our research may be interesting to industry.”

“My research seeks to study the potential uses of digital technologies in business making for manufacturing industries.”

For many, the dual relevance of the research to both policy making, government and the third sector – alongside business and industry - was noted. Given the ‘natural leaning’ of social sciences towards
questions of policy, this demonstrates the wider relevance of doctoral research to markets and private enterprise.

“As I am researching the healthcare needs of older people exposed to disasters, the results of that research could directly impact in the way in which public organization are planning the preparedness to disasters. With respect to industry it could also impact in how resilient infrastructure of health is designed to support that needs.”

“I research a highly popular technology and its relevance to aid and development; however this is relevant for start-ups and tech companies that would like to work with aid agencies”

“I think that social research in dementia is of interest to all people as we are all impacted by it in some way. I think industry will be interested in my research because, with our current ageing population, their workforce will likely either develop dementia or care for someone with dementia and this needs to be understood and supported.”

Others noted the indirect relevance of their research to business and industry, often through public policy mechanisms or information mechanisms.

“My research is based on cultural policies that are determined by local governments. The impact of these policies can determine the urban ecology of a city and community and therefore an effect of a city or communities infrastructure.”

“Focuses on families - information would be useful to employers, but not directly linked. More applicable to government/third sector.”

“Mental health is of relevance to industry in numerous ways. Therefore, improving adolescent mental health and well-being does have direct benefits for employers. Mindfulness and self-compassion training for adolescents has (relatively tentatively) been shown to increase resilience, focus etc and reduce stress, anxiety and depression. A more resilient and focused workforce is clearly of direct relevance to industry.”

“My research focuses on the third sector and how it uses information exchanges, so although it does not focus on the private business industry, there could be relevance because it will explore the relationships between third sector and other sectors and how these might be improved by or for better use of innovation information”

Finally, for those who didn’t feel their work was relevant to business or industry – the reasons quoted included:

- Inability to identify a profit-motive
- Research is of more relevance to government/third sector
- Belief that the research area should fall outside the realm of private interests
- The nature of the research i.e. basic or theoretical, is less relevant than applied research

**Business engagement post doctorate**

We investigated the extent of collaboration following the completion of a doctorate. We further clarified details about respondent’s current employment status, and the results are shown below. Among this sub-group, we go on to explore perspectives on collaboration of doctoral students who are employed outside the academy. Please note that responses in this section are not limited to those employed in industry or business; it includes those working in the public and third sectors.
Nearly three fifths (59%) were involved in collaborations with Higher Education (n=16). Of those 13 respondents who were involved in collaborations, the majority were connected to the institution where they undertook their doctoral studies (see Figure 25).

The nature of collaborations were most commonly joint participation on funded research projects (5 respondents). There were no internships offered for doctoral students and within the other category (5 responses), collaborations included teaching and work on non-research projects.

<table>
<thead>
<tr>
<th>Nature of collaboration</th>
<th>N</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>We collaborate on funded research projects</td>
<td>5</td>
<td>31%</td>
</tr>
<tr>
<td>We offer internships for doctoral students</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>We offer placements for other students (undergraduates, post-graduate taught)</td>
<td>3</td>
<td>19%</td>
</tr>
<tr>
<td>We participate in research projects run by academic colleagues (e.g. interview participants)</td>
<td>1</td>
<td>6%</td>
</tr>
<tr>
<td>We are involved in knowledge exchange activities run by academic colleagues (seminars, etc)</td>
<td>2</td>
<td>13%</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>31%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>16</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Cloud Chamber 2018
Barriers to collaboration

Respondents were asked about the barriers to collaboration. Many echoed comments made in the survey of academics, reported on earlier in this paper. One barrier was a lack of shared language or a lack of common understanding between academia and business:

“Often it’s easier to talk to academics or 3rd sector people. It’s been hard to explain the relevance of my research to industry, especially because no one is teaching me that language during my PhD studies. And there’s this invisible block, like we are not supposed to be doing anything besides academia”

“business seems to be primarily interested and preoccupied with self-interest projects, generating private profit at the expense of the public purse, the environment and social good”

“I don’t think businesses understand or see the benefit of health in social science researcher, they’re more interested in engaging with the business, engineering, IT schools”

Another barrier was the relevance or perceived relevance of the research to business: “As my research has a social orientation, sometimes it is difficult to see the direct impact for industry.”

For some, collaboration was not considered to by incentivised by institutions and there was a lack of institutional engagement/promotion:

“I think a primary barrier is that it is not encouraged/incentivised/rewarded by academic institutions and relatedly research funding institutions.”

“The academic institutions not valuing the IMPACT of partnerships with industry “

“There is no formal way in the university to look for interested parties in the private sector.”

Lack of experience and lack of contacts were commonly cited barriers to collaboration among students. Other common barriers included misaligned timescales; differences in working cultures; ethical issues, IP and commercial sensitivity; and lack of funding.

Further to these issues, less frequently cited barriers included the structure/mode of study of the programme, and that the geography of doctoral research means that collaboration can be inherently difficult:

“A part time, distance learning programme doesn’t lend itself obviously to business.”

“I am doing my research in a Scottish university, whereas, the business is located in South-Asia.”

The immigration status of doctoral students was cited as a barrier by one respondent. Another cited barrier was related to the research process itself, and the risk of introducing bias into an academic study:

“My immigration status and my focus on Latin America, which some businesses do not find relevant enough”

“I am mapping a network of businesses, but I do not want to get biased data therefore I am hesitant to have a too close partnership with one particular organisation.”

A final perspective was the value of promoting interdisciplinarity in doctoral programmes as a way of developing shared language and understanding: “Sometimes it is difficult to see the direct impact for industry. I think that interdisciplinary research and to know other students from other PhD programs could allow me to solve that barrier and to think in more innovative ways.”
**Best practice**

Respondents generally found it difficult to identify good examples of successful collaborations in the social sciences. There were only a few instances of collaborations being identified, these weren’t overly specific but included:

“**In knowledge exchange: specifically, academic experts providing consultancy to businesses on very narrowly defined questions. EG ‘What are the nutritional needs of athletes aged 15-19?’**”

“yes, look at the Turing foundation”

“several in the MIS field.”

“Yes, the Living Lab at Edinburgh”

“Yes. A project on rankings helped one of the organisations involved in structuring methodology for their own rankings”.

Many were able to point at industry collaboration in other disciplines, principally science and technology subjects (engineering, biology, computer science).

“There are examples, but I think they are more common throughout engineering and innovation careers. As well the interdisciplinarity can help in promoting that innovation within social sciences.”

“I think the harder sciences have more relevance to collaboration with business. I know a lot of engineering PhDs are funded by industry and my friend who does math/computing is hoping to work with industry since her research has business applicability”

Some respondents said they would value concrete examples of collaborations, and further support in networking / identifying collaborators.

**Future collaborations**

Respondents were asked about potential future collaborations with industry and business. Few mentioned particular opportunities, where they did these included areas such as:

- Robotics
- Genealogy
- Dementia
- Curriculum development work (in HE)
- Translating third sector insight to the private sector
- Speech recognition/machine learning
- The interface between agriculture and tourism
- Apparel manufacturing / textile industry
- Creating supportive working environments
- Healthcare providers

One respondent felt collaboration with business/industry is a way of legitimising an area of study: “**Genealogists want to be seen as a legitimate ’professional discipline.’ We want to have available to us regularly recognized academic programs, we want to have a place as an ’academic discipline.’ This is our goal for the future.”**
Another noted the importance of business/industry engagement because of the oversupply of PhDs: “We can’t force industry to take our research seriously, but we should be starting to develop those relationships as new PhD students. I have classmates who have never interacted with this ‘outside’ world. It’s important because the chances of ending up in academia today are super slim. We can’t train PhD’s for professorships anymore.”

The concept of ‘platformisation’ was articulated by one respondent, another spoke of willingness of industry to include social sciences in the work they undertake. The upshot of which is the future collaborations might be more interdisciplinary in nature – and increasing the relevance of social science research to collaboration to industries and businesses.

“Pervasiveness of digital platforms are causing ‘platformisation’ of organisations, meaning different business models. Ecosystems that form around platforms also make traditional supply chain management framework obsolete. A market in which players are a composition of platforms and ecosystems blurs the notion of industry segments as we have today, with implications in strategy, marketing, etc.”

“It appears to me that within the global context of generalised uncertainty, social scientists’ opinions are increasingly more valued by industries. It seems as if industrial prestige is now slowly being built through the inclusion of social scientists (or at least pseudo-social scientists) as part of their committees, spokespersons teams, crystal ball gazers, and so on. There is hope, but we need to separate good and bad social science.”
Key Findings

Across the different phases of the research a significant amount of synergy was found whether the problem was examined from the funder, student, university or academic perspective. The key findings of the research have been summarised below:

- The UK and Scottish policy and operational landscape provides a positive environment for business and industry engagement with academic researchers and universities. The Scottish government see universities as key players not only in developing the Scottish workforce but to also help solve and address countrywide economic and societal problems and challenges.

- Barriers to collaboration are mixed but often start with a lack of knowledge within the business community about the value of social sciences and a lack of confidence to speak the language of business on the part of researchers. This can hamper initial engagement. Once engagement has taken place issues are rare and only arise where expectations have not been laid out front.

- There is a greater level of engagement between business and social scientists than what was expected although most collaborations are with the public sector. It is likely that much of the existing engagement goes unrecorded. The Industrial Strategy, Scottish Economic Strategy and the REF are supporting an increase in overall engagement.

Where doctoral students collaborate with the private sector, commonly the business is based in the UK with over a third in Scotland and the relationship came about due to the doctoral students’ own professional networks.

- Private industry is open to working with social scientists if the value of social science research is communicated with them. Where engagement occurs the relationships are positive and longstanding.

- The time taken to develop strong and lasting relationships with business partners is usually significant and shouldn’t be underestimated. Often partnerships develop on a very small scale first and build to larger collaborations as trust is established. It is usually only at this stage that PhD opportunities may emerge and this may take years.

- Where flexible funding options (e.g. 1+3) and delivery models for doctorates, reflecting the diversity of the Scottish resident and business population thus enabling businesses to engage, has been in place it has been well received.

- Where doctorates have involved business or industry the research is seen to be relevant and informative suggesting that once engagement and collaboration is secured the relationship is beneficial to all parties.

- Much of the research carried at doctoral level was considered by those undertaking the research to be of relevance to public policy as well as industry. The potential impact of research of this nature could end up having a greater impact beyond that of the business e.g. economic and social benefits.

- Some sectors were highlighted where future opportunities for more engagement could be found. To achieve collaborations in these sectors work will be needed from both social science disciplines as well as the sectors. Specifically, these include:
  - Within ABFM the finance discipline could engage more and move from theoretical models to practical day to day problem solving with industry. This is an important industry in Scotland and research collaborations here could have a significant impact.
There is capacity for more work to be done with health and medicine through adopting interdisciplinary research approaches. Potential areas of synergy exist around the organisation of health care, patient behaviours and distribution of healthcare services.

Any sector that deals with artificial intelligence (AI) could be targeted for engagement. Social science researchers can help address the ‘people’ and ‘ethics’ issues that arise from AI research and implementation. Businesses using AI often focus on the research and development of applications and associated technologies, without necessarily tackling the human elements of implementing the technology. Social Scientists can help with this through interdisciplinary partnerships with businesses.

A number of other industries and research themes were highlighted by academics and doctoral researchers as having potential for future collaborations although the scale of the potential partnerships and research opportunities was not always clear. These sectors and themes included:

- Robotics including social robotics
- Genealogy
- Dementia
- Speech recognition/machine learning
- The interface between agriculture and tourism
- Apparel manufacturing / textile industry
- Healthcare providers
- Mortgage lenders, house builders and larger housing associations
- Microfinance
- Technology in schools
- Oil and Gas industry
- Curriculum development work (in HE)
- Translating third sector insight to the private sector
- Data science and quantitative methods
- Creating supportive working environments
- Environmental regulation and behaviour change around land management
Recommendations

The recommendations for action from the study are described in this section. These have been split between recommendations that apply at policy level, for funding agencies, universities and SGSSS.

Policy

- There can be a reluctance amongst social science academics to engage with private businesses due in part to a lack of incentivisation in the system. On the back of UK Industrial strategy, policy drivers (e.g. REF) should be reviewed to maximise the incentives for academic engagement with industry. This is most easily implemented at institutional level

Funding agencies

- Flexible models for PhD delivery should be explored (like ICASE studentships offered by EPSRC) to increase delivery options for business and industry as well as academics and potential students. In addition, models that promote a number of discreet projects to complete a doctorate may help with structure and relevance for business
- The implementation of 1+3 PhD’s via SDS funding has helped to diversify the doctoral programme as it addresses financial issues for some students. Further expansion of this funding model would help ensure a diverse range of doctoral students with associated benefits for business and industry

Universities

- Continue the implementation of training programmes to support doctoral students to engage with business as well as communicate with industry, policymakers and the public. This can include media training which supports the adaptation of communication to meet the needs of different environments and audiences
- Understanding the research strengths of social science departments and research centres would enable universities to target industry sectors for engagement. This engagement, either at industry representation level, or with specific business, enhances the chances of building successful collaborations
- Academic and Industry Meetings (AIM), currently run by Edinburgh, offer a useful approach to nurturing and developing business and academic relationships. These have resulted in strong relationships and this approach could be replicated by other universities
- The increase in engagement between academics and business potentially exposes universities to a loss of IP if there is a lack of transparency about the extent of engagement. KE and/or legal teams need to be aware of the full extent of relationships with businesses in order to safeguard against loss of IP. Universities should actively raise awareness of IP issues and challenges with academics across the social sciences spectrum
- Universities could identify academic champions to promote the advantages of working in collaboration with business and industry. Champions could mentor and support less confident academics to build industry relationships. Academics often respond better to peer support and promotion than directives and training from the “centre”
- Seed corn funding should be made available to support collaboration development. This support could enable broad collaborations which may, in time, result in doctoral research projects
SGSSS

- There is an opportunity for SGSSS to act as a key advocate and facilitator for doctoral-industry collaborations in the social sciences in Scotland. They can replicate/work alongside the work done by the Campaign for the Social Sciences to raise the profile of the disciplines. SGSSS could act as a facilitator and space for social science academics across Scotland to come together and build partnerships and speak in a coordinated way to policy practitioners.

- SGSSS should continue to promote enterprise training and provide realistic advice and support to PhD students regarding future career options. More will work in the public and private sector than stay in academia.

- SGSSS could provide a gateway or facilitation role to engage with industry bodies to help improve engagement. By targeting key industry bodies, they can promote the benefits of doctorates and social science research more broadly. It would enable the sector to speak with ‘one voice’.

- SGSSS, in conjunction with university partners, could run events to engage business and generate new projects which may include doctorates. These events should include access to £5-10k of seed corn funding to help kickstart project ideas.

- Enhance relationships with existing Innovation Centres to promote the value of social science doctorates within key industries.

- Given the high numbers of doctoral students who sourced business collaborations through their own networks, SGSSS could consider funding more ‘bottom up’ research proposals from prospective doctoral students who have existing business links. This could bring forward new research ideas and diversify the business partnership base.

- SGSSS, in conjunction with university partners, could play a facilitation role in bringing together consortia of businesses to fund post-doctoral students. By focusing on a business or industry cluster the financial burden on individual businesses would be reduced while the impact and applicability of the research may be increased.