

Institution: University of Hertfordshire
Unit of Assessment: 17 Business and Management Studies
<p>1. Unit context and structure, research and impact strategy</p> <p>The Business and Management Studies Research Unit comprises 28 staff (26.9 FTE), located within Hertfordshire Business School (HBS). The Unit composition is 12 Lecturers and Senior Lecturers, of which 5 are Early Career Researchers (ECRs), 9 Readers and 7 Professors. It responded to a disappointing outcome in REF 2014 by implementing a strategy that has reinvigorated its research culture, which has included a significant increase in the Unit size. The enablers and success of this strategy is evidenced by some notable factors which include:</p> <ul style="list-style-type: none"> • 9 new appointments (5 Lecturers; 2 Readers; 2 Professors) • 91% increase in Unit FTE staff over REF 2014 • 1st for overall satisfaction among Business and Economics research students among the 47 HEIs participating in the 2019 Postgraduate Research Experience Survey (PRES) • 20% growth in average annual doctoral awards over REF 2014 <p>Strategy</p> <p>The School Research Strategy (SRS) <i>Achieving a Step Change to 2021</i> employed a two-pronged focus on:</p> <ul style="list-style-type: none"> • inclusivity in research through extensive mentoring and staff development programmes especially for early career researchers (ECRs). • a focus on research development, design and execution to foster state of the art critical thinking in business-related research. <p>A strengthened management structure for research was introduced to engage more staff in research activities and professional development, led by the HBS Associate Dean Research (Page) supported by a Research Administrator (0.6 FTE). Inclusivity has been achieved through the establishment of an SRS Advisory Group and an Impact Case Study Group, creating forums in which staff can raise and table papers and issues around any aspects of research.</p> <p>Research is now managed through 4 multidisciplinary <i>Research Groups</i> (RGs) to generate critical mass and foster interdisciplinary working, responding to REF 2014 feedback regarding the dangers of research fragmentation. These are:</p> <ul style="list-style-type: none"> • Enterprise and Value (leader: Watson) • Managing Complex Change (leader: Demir) • Global Work and Employment (leader: Brookes) • Organisations, Markets and Policy (leader: Dagdeviren) <p>The Research Groups are aligned with the University's overall research strategy and engage with 4 of the 6 interdisciplinary pan-University Research Themes established in 2015-16: <i>Food, Global Economy, Health and Wellbeing</i> and <i>Information and Security</i> as shown in Figure 1. This development has facilitated collaborations with researchers from cognate disciplines based in other Units, such as Agriculture, Food and Veterinary Science (AFVS), Allied Health Professions, Psychology and Computer Science.</p>

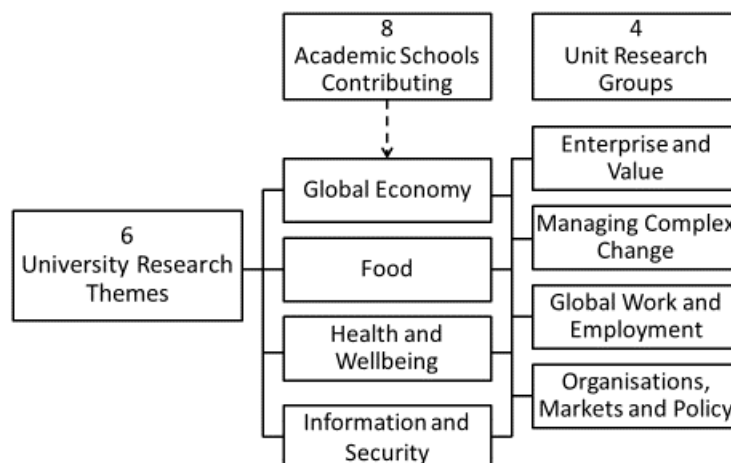


Figure 1: Unit research group structure to facilitate interdisciplinary research showing relationship to the 4 most relevant University Research Themes.

Examples include:

- **Food; Health and Wellbeing:** the Organisations, Markets and Policy RG collaborates with researchers based in the AFVS and Computer Science Units on a project measuring social impact in the redistribution of surplus foodstock, combining computing, economics, nutritional and geographical inputs. Members of the Enterprise and Value RG have collaborated with researchers based in the Allied Health Unit on food provision in later life.
- **Global Economy:** the Global Work and Employment RG hosted a European Cooperation in Science and Technology (COST) project on the dynamics of virtual work with collaborators based in 31 European states. Outputs included 15 research monographs published in the Palgrave MacMillan series Dynamics of Virtual Work, including Huws's *Labour in Contemporary Capitalism*, 2019.
- **Information and Security; Health and Wellbeing:** the Managing Complex Change RG includes research into the application of systems thinking to healthcare decision making in the NHS, and information systems and the third age.

The SRS was designed to enable the Unit to make a wider contribution to society by generating impactful scholarly research with international reach. The Unit's research addresses 3 of the Grand Challenges identified in the 2017 Industrial Strategy: i) an ageing society, ii) the data revolution iii) clean growth and sustainability.

Strategic investment has been made into the development of a series of research clusters populated from groupings of researchers from the Research Groups. Clusters represent beacons of interdisciplinarity (see Figure 2), each led by a senior academic (Reader or Professor). It was planned that ECRs, mid-career and senior researchers collaborate and co-create research within these clusters. Each cluster has vertical and horizontal coherence to advance knowledge to a wide range of publics.

The research clusters are:

- **Business technology:** combines expertise in big data, the Internet of Things, SMART technology, assisted living technologies, business adoption of technology, information systems, operations research, computer science and health science.
- **Ageing:** synthesises expertise from marketing, the visitor economy, business technology, consumption, operations research, health science, psychology, geography and public policy.
- **The Gig Economy and Global work:** combines a range of expertise from sociology, political economy and employment relations. Key themes include zero hours work and the precarity of labour.
- **Societal economics:** integrates expertise in economics, finance, politics and sociology, examining governance and societal impacts of institutions in terms of debt, poverty and inequality.
- **Business sustainability:** adopts a broad-based focus on the economic models of business production (e.g. franchising), global concerns on sustainable business practices and greening of the supply chain and the financial sustainability of business.

The clusters utilise the synergies and interdisciplinary interconnections across the Unit's Research Groups areas. They facilitate fluidity in interdisciplinary research development within the Unit by integrating disciplinary inputs into overall research activity that aligns with the University Research Themes. This is evidenced through increased interdisciplinary research grant awards from diverse bodies such as DEFRA, Innovate UK and the NHS; and the publication of outputs in transdisciplinary journals such as *The Lancet* and *British Medical Journal*, as well as interdisciplinary journals including *Journal of the Operational Research Society*, *International Journal of Social Research Methodology* and *Technological Forecasting and Social Change*.

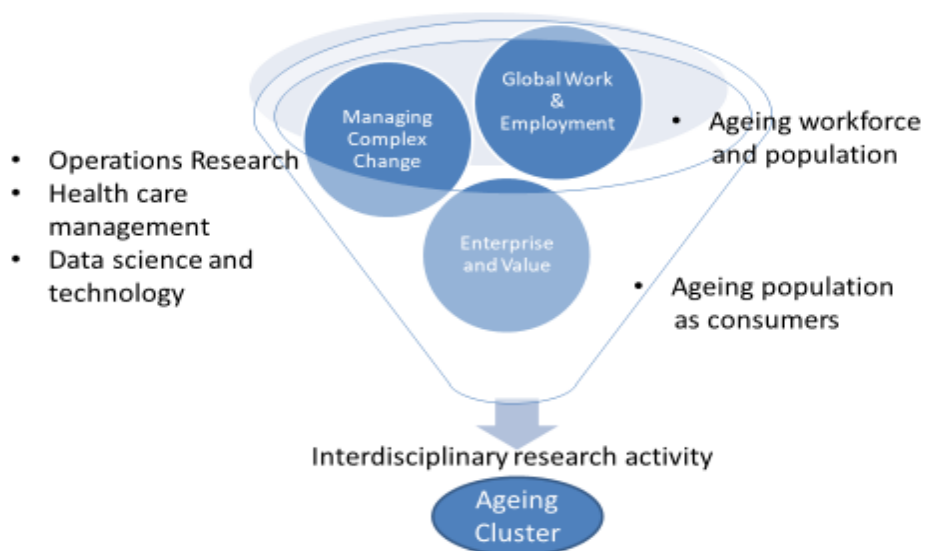


Figure 2: Example of a Unit research cluster formation (Ageing cluster) with RG multidisciplinary contributions.

Impact strategy

The Unit's impact strategy is oriented towards supporting civil society by informing policies to achieve greater social inclusiveness and fairness, whilst contributing towards economic development.

The Unit's approach to impact is to:

- **Co-produce research with stakeholders using a user-engaged approach** focusing on collaboration with the research, the dissemination of the findings and on evaluation (for example, the Household Debt study disseminated at a Debt, Poverty and Austerity event (2018) with representatives from debt advice charities (Money Advice Centre, Stepchange, Citizens Advice (CA), Christians Against Poverty, Toynbee Hall, the Institute of Fiscal Studies, Joseph Rowntree Foundation, Resolution Foundation and Members of Parliament.);
- Undertake **research-informed policy analysis to assist policymakers** (for example *The Universal Basic Income: An idea whose time has come* (Huws, 2016, Compass.org) and *Online Labour Exchanges* (Huws, 2015, European Occupational Safety and Health Agency);
- **Address topics of social and ethical significance** to promote greater equality and security in employment practices. For example, the Unit hosted a workshop on the effect of zero-hour contracts on the health and wellbeing of workers in July 2017 which engaged 38 stakeholders from three leading Trade Unions, law firms and European researchers to share and disseminate research findings. This workshop built on the successful Zero Carbon Britain (2015) event where the report was tabled at the COP21 UN Climate change Talks, Paris, December 2015 and included in the subsequent report (Zero Carbon Britain – Making it Happen, 2017);
- **Use the insights of research to enhance organisational performance through a variety of methods** including
 - Reports co-created with businesses (for example, *Making the UK visitor economy more dementia-friendly* (2017) for the Association of Scottish Visitor Attractions' (ASVA) 500 business members on how to become dementia-friendly);
 - Best practice guides (for example, *Royal Historic Palaces Rethinking heritage – A guide to help make your site more Dementia-Friendly* and Visit England's *Dementia-Friendly Tourism Guide*, 2017);
 - Collaborative public facing projects (for example, the UH and Hertfordshire County Council Public Health Department <http://www.hertsphconnect.org/> initiative);
 - advice to assist third sector organisations (for example, FareShare to achieve greater equity and targeting of surplus food stocks to those most in dire need via Food Banks in Scotland 2017-)
- **Transfer research insights to organisations through short-term consultancy projects** (for example Hertfordshire LEP; University of Hertfordshire Enterprise Zone (UEZ)).

The Unit's approach is illustrated by the submitted case studies. '*The Platform Economy: shaping international policy, legislative and public responses to rising precarity in the labour market*' details the work led by Huws which provided the first evidence of the scale, nature and social implications of the growth of the platform economy in Europe and which guided policy responses across the three EU institutions: the European Commission (EC), the Council and European Parliament. '*Novel decision support modelling to increase efficiency of healthcare provision, reduce costs and improve patient experience*' (Lebcir and Demir) involved collaborations with 3 NHS trusts and 2 private healthcare companies and led to several impacts including increased service efficiency. *Developing a dementia-friendly visitor economy* (Page) details how, through partnerships with tourism and heritage organisations, research on the low level of awareness within the tourism industry around the needs of people living with dementia has been translated into

practical guides and toolkits which have supported the development of a dementia-friendly visitor economy and have improved quality of life for people affected by dementia.

The Unit has contributed to 3 of the Industrial Strategy Grand Challenges - *the data revolution* (for example operations management research with the NHS), *an ageing society* (for example the *Food provision in later life* project funded by ESRC and the Food Standards Agency) and *clean growth and sustainability* (DEFRA and Innovate UK projects). Impact is also created through undertaking overseas research programmes on issues of fairness (for example the RESCuE and *Land Rights and Food Security* projects).

The Unit's research has also been cited in high level policy forums such as the EU and European Parliament, Hansard (2016), *The Select Committee on Regenerating Seaside Towns and Communities* (2018) and the *Lancet Commission on Obesity* (2019). The latter has achieved global reach through workshops held with stakeholders (e.g. the World Bank, IAEA, WHO, UNICEF, Public Health England) in St Louis Missouri, Washington DC, London, Vienna, Tehran, Buenos Aires, Wuhan and Delhi).

Impact is treated as an integral part of research design to encourage engagement with end-users at an early stage. To embed the process of impact into the research planning stage, exemplars of best practice are disseminated to facilitate discussions with colleagues including at the Unit's biennial research conference.

The Unit has supported the development of research impact by:

- Increasing research workload allocations from 0.2 FTE to 0.6 FTE for staff developing a case study;
- Allocating Research Fellow time (up to £150k annually) to support colleagues' work;
- Allocating School and central funding through University Research Impact Grants (between £2.5k and £5.0k a year) to support 7 impact case study areas with evidence development and collection;
- Funding events to facilitate public engagement such as at the ESRC Festival of Social Science;
- Working with the central Research Office Impact Facilitators on stakeholder development and evidence collection.

Open Research Environment and Integrity

The Unit adheres to the protocols established by the University in accordance with the Concordat on Open Research Data. It is mandatory for all researchers to deposit a copy of their outputs into the University Research Archive (UHRA) which then makes these available under Green Open Access (OA). The University has additionally established an Article Processing Charge fund to support Gold OA publication of outputs of strategic importance. The Unit has published several articles supported from this fund, while, as a matter of course, all UKRI funded research includes budgets to support Gold OA publication.

The University is a signatory to the Concordat to Support Research Integrity. Mandatory training on research integrity is provided for all staff and PGR researchers within the Researcher Development Programme administered by the Doctoral College. Unit members have also participated in additional training sessions organised by the University Research Office, including an annual seminar addressed by the UK Research Integrity Office. All research involving human participants requires approval by the University Ethics Committee through its sub-committee with delegated authority for the Social Sciences, Arts and Humanities which contains members nominated by the Unit.

Future Strategy

The Unit will adopt a stepped approach to research development focused on development of the research clusters. This will be underpinned by five **principles**:

- Research activity must be **innovative**;
- Research activity must **reach end-users and generate impact**;
- Research activity must **cultivate interdisciplinary**;
- Research activity must **support research concentration**;
- Research activity must **tackle grand societal challenges** through research-informed practice.

These principles will be incorporated into four actions:

1. **Investment to engage each cluster more broadly with key stakeholders.** This will be done locally through the Business Power Group – a University advisory body led by HBS; regionally via the LEP; and nationally with government and other bodies, via workshops and collaboration forums to foster knowledge. These initiatives will build on the Unit's involvement in, for example, the SHAKE Climate Change programme funded by the Societe Generale UK Foundation, which assists entrepreneurs who are combatting climate change with science or technology-based ideas for start-ups and scale-ups in agriculture and food production; This approach will also be facilitated through future management Knowledge Transfer Partnership (KTP) applications to innovate UK following a recent successful award with Southend YMCA to develop a digital platform to manage their internal and external business capabilities.
2. **Increase the financial vitality of each cluster.** Working with the appropriate University Research Theme champions and complementary University research groups to facilitate additional interdisciplinary funding bids, focused on team-led research grant applications for amounts over £200k;
3. **Develop the Business Technology cluster into a University Research Centre,** by building capacity through new posts to scale up operations research activity through further appointments to grow the cluster's critical mass and embed it into the institutional research infrastructure;
4. **Expand the Unit's research infrastructure,** by growing the number of externally funded Research Fellows building on the School's investments into creating a career pathway from Research Fellow to Lecturer between 2016 and 2020. Postgraduate research (PGR) student numbers will also be grown in line with the 35% target set in the University's Strategic Plan 2020-2025, through a greater focus on partnerships with new global organisations that are being developed in the Asia-Pacific region.

It is intended that this strategy will deliver a further improvement in the Unit's generation of high-quality outputs, external research income and research impact.

2. People

Staffing Strategy

The Unit seeks to recruit, retain and invest in developing its staff to support the research clusters to develop critical mass. Developing dynamic clusters to create a vibrant research environment has aided staff retention and also helped in attracting new staff by demonstrating enhanced career pathways in research.

Staffing Strategy is overseen by the Research Advisory Group consisting of the Associate Dean Research, the leaders of the Research Groups, and the Senior Research Tutor (Gagliardi) and School Research Tutor (Balamenou).

Recruitment and Progression

New appointees are targeted who will strengthen Unit research capability, and their career progression is supported through the granting of enhanced research allocations. One illustration of this strategy is Bonizzi, an ECR who joined the Unit in 2019: initially he was part of collaboration led by Leeds University which secured an Independent Social Research

Foundation project in the area of Financial Subordination; he then secured two research contracts - with the European Parliament on Blended Finance in EU Development Policy and with the Overseas Development Institute, concerned with external debt in Lower-Income Developing Countries.

Staff are supported where appropriate to apply for research-based promotions in the University annual academic promotions round. Some 5 Unit members have been promoted on this basis between 2014-20. As part of the Unit approach to talent management, the Associate Dean for Research monitors staffing through annual reviews with Human Resources, actively identifying those Unit members who should be encouraged to apply to the promotion round. This process helps with retention by ensuring the most capable researchers build successful and rewarding careers, and it also facilitates active succession planning enabling high performing individuals to be mentored and developed into future research leaders, thereby ensuring longer term sustainability as well as vitality. Lebcir, Spencer and Demir were encouraged to apply for promotions during this REF cycle through this process and were subsequently awarded a Readership (Lebcir), and Professorships (Spencer, Demir).

Research Time and Resources

All Unit staff enjoy research allocations of at least 0.2 FTE pro rata within their workload allocations, as is consistent with the University's REF 2021 Code of Practice. Further enhancements to these allocations are made to reflect roles in research administration, the management of grant-related activity, postgraduate research student supervision, special projects and research activity considered of strategic value to the Unit.

At each six-monthly appraisal period, research activities are reviewed, and any necessary support and development needs identified. Additional research time allocation may be awarded to accelerate project development and completion which is incorporated in the School workload model. Research time allocation is made more efficient through organising teaching inputs into a limited number of days, group teaching, and concentrating the staff teaching load into a single semester where possible.

A School-funded sabbatical scheme awards up to 6 sabbaticals per year. This was introduced during this REF cycle at an overall investment cost of £460k. Sabbaticals provide for relief from all School obligations for the duration of a semester. A total of 17 staff benefitted from sabbaticals during this REF cycle. Major beneficiaries have been all the 5 Unit ECR staff.

Staff can apply to the Unit's Contestable Research Fund (£100k per annum) to support seed corn research with a focus on both internal and external collaborations. The Staff Development budget of £200k per annum funds all staff conducting research to attend scholarly conferences and events to build networking opportunities and engage in critical dialogue with their peers at an international level. ECRs can also apply to the Early Career Small Grant Awards scheme operated by the University Research Office. Unit staff have received 10 such awards - typically worth £3-4k - over the course of the REF cycle which has assisted their progression from the early career stage. The University also participates in the Santander Universities initiative with awards focussed on international projects: 4 Unit members received awards to a total value of £4k over the cycle.

Staff Development

The Associate Dean for Research and the Research Group leaders identify the peer to peer support needed for ECRs and other colleagues under the leadership of the School. Unit members typically receive £1k a year in staff development support with additional funding on as required basis. External staff development organisations are used to facilitate specialist training needed to support individual requirements while all staff have access to the extensive Researcher Development Programme offered by the University Doctoral College (see Postgraduate Research Students subsection below).

The Unit has further supported staff development investing in three initiatives.

- All staff are allocated a **research mentor** with more substantial research experience to advise on research (e.g. publishing and grant application development). This is undertaken at Research Group level, with strategic oversight from the Associate Dean (Research);
- The Unit operates an **internal peer review** process for journal article submission to assist staff in navigating the challenges of peer review. This is achieved through knowledge transfer from senior colleagues who regularly peer review for leading journals in their field, as members of Editorial Boards and as Editors of Chartered Association of Business Schools (CABS) listed Journals;
- The Unit provides **funded places** at externally hosted annual Writing Retreats at the University of Cambridge to assist with the completion of articles. Spend over the cycle has been approximately £25k to support 40 places.

Research Culture

The School Research Tutor organises a series of 15 to 20 research seminars a year featuring internal and external speakers. These are attended by both staff and PGR students and are designed to enable participants to improve their communication skills through critical debate over research epistemology and methods, as well as acquiring expert knowledge of a subject area. The seminars also provide a site for networking, and build motivation and confidence in research, especially among both the ECR and PGR communities. Overall annual staff engagement with research development activities has risen by 65% over the course of the REF cycle, indicative of the transformation in research culture achieved through the School Research Strategy.

A series of workshops on publications, grant applications and research methodology workshops designed to enhance staff performance is also organised, while a biennial research conference allows staff and PGR students to receive supportive critical feedback on their emergent research.

Postgraduate Research Students

The Unit adheres to a philosophy of treating all postgraduate students as 'Colleagues in Training'. The success of this approach can be gauged from the results of the 2019 Postgraduate Research Experience Survey (PRES). The Unit was ranked 1st for overall satisfaction, 2nd for research culture, 2nd for progression, 3rd for research skills and 5th for student supervision from the 47 universities participating in the Business and Economics category. The University as a whole ranked 21st for overall satisfaction, 4th for research culture and 15th for supervision out of 103 participating HEIs with a local PGR student participation rate of 62%.

The percentage satisfaction ratings given by the Unit's PGR students to each element of the survey, and their quartile position among the 42 participating English institutions are shown in Table 1. In 6 of the 8 categories, the Unit was ranked in the top quartile.

Table 1: Unit 2019 PRES outcomes for Business and Economics.

Category	% Satisfaction	Quartile
Supervision	93	1
Progression	93	1
Research Skills	92	1
Responsibilities	85	1
Research Culture	72	1
Professional Development	76	3
Resources	71	4
Overall	91	1

Doctoral Awards

The average number of doctoral awards per annum over the REF 2021 period is 6.6 which is a 22% increase over the 5.4 per annum for REF 2014. The distribution of these awards, based on HESA returns, is shown below. This represents a total of 46 students: however, a further 19 PGR students successfully completed their studies while remaining resident overseas so that a total of 65 doctoral awards were obtained in the Unit during the reporting period.

Table 2: Doctoral awards over the REF 2021 cycle.

	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	Total
PhD awards	1	7	6	4	7	7	3	35
Professional Doctorate awards	2	3	0	1	2	1	2	11
Total Number of Doctoral awards reported to HESA	3	10	6	5	9	8	5	46
Awards to students based overseas (PhD and Professional Doctorate)	1	3	4	1	4	2	4	19

PGR Recruitment

The Unit has increased PGR student numbers through its diverse range of doctoral programmes. The PhD programme accounts for around 50% of enrolments, with the other 50% enrolling on two professional doctorate programmes aligned to practice: a Doctor of Management (DMan) and a Doctor of Business administration (DBA) each of which received accolades for their innovative provision at successive validations. PGR student recruitment is conducted in accordance with the Unit's underpinning commitment to Equality, Diversity and Inclusion (see EDI subsection below). Fully funded and fee waiver scholarships at Research Council rates are awarded to outstanding candidates for PhD programmes, thereby supporting the research clusters by investing in projects aligned to staff research expertise.

PGR Supervision

The Unit provides regular supervisory advice and support that is based on clear and frequent communication (written and oral) with agreement on mutual expectations, as well as mentoring tailored to the needs, attributes and aspirations of each student. This facilitates PGR doctoral completions within sector norms. In 2018/19, for example, of those completing a doctorate in the Unit 87.5% completed to award either within 4 years full-time or 6 years part-time.

All PhD supervisory teams are comprised of two or more Unit staff and must have a minimum of two successful doctoral awards within the team. This provides for both a breadth of expertise and variety of interpersonal relationships to support the research student. Within each

supervisory team a senior colleague will normally act as principal supervisor. Where there is a third place on the supervisory team, it is often used to provide an opportunity for a more junior member of staff to gain supervisory experience.

Full-time PGR students participate in a minimum of 10 face to face planned supervisory team meetings per annum, while part-time PGR students receive a minimum of 6 such meetings each year. These meetings are recorded on the online Research Student Management System (RSMS) in which progress reports and actions from meetings are lodged to support the student, while providing a formal supervisory record. The RSMS provides for robust processes (for example, by sending out automated messages to all parties reminding them when meetings are due and alerting them to formal deadlines) while providing a place where meeting records are held that can be reviewed by the University's Doctoral College. This has contributed to the high levels of student satisfaction with supervision and research project management evidenced in the Unit's 2019 PRES student response performance.

Researcher Training and Resources

PGR students all have access to the extensive Researcher Development Programme sessions to enhance knowledge and skills provided centrally through the University Doctoral College. This provision includes mandatory elements on topics such as research ethics which must be completed prior to the student's formal registration on their doctoral degree programme. These are supplemented by Unit-led workshop events on specific topics for specialist needs.

PGR students are fully integrated into the research activities of the Unit, including the research seminar programme, and at University level attend Doctoral College seminars and social events together with the annual PGR student research conference. Part-time PGR students, who might otherwise find it difficult to attend Unit events, help organise an annual weekend Research Conference at which they can build relationships with other students, as well as their supervisors.

PGR students have access to office space, which is available on a hot-desk basis. The office is equipped with computers, storage facilities and stationery supplies. It was refurbished in 2017. All computers are regularly upgraded following the same standards used for staff. Printing and photocopying facilities are available in several locations within the School. Additional credit is added free of charge to PGR student accounts. The Unit runs a PGR Professional Development Support Scheme which is aimed at providing financial support for professional development activities, including conferences and training events. The scheme also covers funding to purchase software, databases and other items that may become necessary during the programme of study, hence could not be resourced at the time of admission. PGR students can order business cards via the standard staff process. Resources to facilitate communication and interaction between PGR students and their supervisors are provided via MS Teams and Zoom. Dedicated Teams channels are also available for PhD and DBA students, while the DMan programme has opted for Zoom as the preferred methods for virtual communication and interaction.

When appropriate, opportunities are offered to PGR and post-doctoral students to participate in the research activities of the Unit. For example, a post-doctoral Research Fellow has been appointed to support the Unit's project-based work with NHS Trusts, including those projects focused on Covid-19 with Public Health England, and two Research Assistants have also been attached to the Big Data Technologies and Innovation Laboratory (see Infrastructure and facilities, section 4). Other Research Fellows are employed to support projects across the Unit, providing them with opportunities for receiving mentoring and development as researchers.

Equality, Diversity and Inclusion

The principles of equality, diversity and Inclusion are central to the Unit's staffing and research practice. Consideration is given to gender and ethnicity balances in research projects and output

production to ensure that HBS reflects diversity in the academy. The characteristics of the Unit are summarised in Table 3.

Table 3: Unit equality, diversity and inclusion summary data.

	BAME	White Other	White British	Not disclosed	Total
Female	5 (17.9%)	5 (17.9%)	3 (10.7%)	0	13 (46.5%)
Male	2 (7.1%)	4 (14.3%)	8 (28.6%)	1 (3.8%)	15 (53.6%)
<i>fractional contracts</i>	0	3 (10.7%)	1 (3.8%)	1 (3.8%)	7 (25.0%)
Total	7 (25.0%)	9 (32.1%)	11 (39.3%)	1 (3.8%)	28 (100%)

The Unit is now close to achieving gender parity. The submission is over 46% female, a significant rise from the 35% of women in the REF2014 submission. This includes 3 out of the 7 Professors in the submission (42.8%). Women also hold significant roles in the research management structure: 2 of the 4 Research Group leaders are women, as is the Senior Research Tutor and School Research Tutor. HBS supports staff to participate in the women-only *Aurora Scheme for Future Leaders*, and the School received the Athena Swan Bronze Award in 2019.

In terms of ethnicity, 25% of the Unit identify as BAME - a figure higher than the sector mean. This includes 2 of the 7 Professors in the submission (28.5%). Leadership and management training for BAME staff has also been implemented.

The HBS Equality, Diversity and Inclusion Team (EDIT) meet on a regular basis to oversee the implementation of measures in relation to recruitment, retention and development initiatives to ensure all processes are transparent and fair. Steps taken include reviewing recruitment practices (e.g. job description language, interview panel gender and ethnicity compositions and guaranteed interview schemes), monitoring the gender balance of the REF submission, encouraging broader female participation in research through collaboration and additional research time, positively encouraging research projects on EDI subjects, and constant monitoring of weekly research events held throughout the academic year to ensure a balance of speakers.

The overall thrust of EDI focused research activities has included working with the Unit's PGR students to create opportunities to recruit from a pool of women and BAME ECRs, with a focus on encouraging women and BAME candidates to apply for doctoral programmes and to ensure that they receive the support to enable successful completions and awards. In particular, the Unit has sought to address the lower rates of applications from women for research degrees by promoting support mechanisms for women students (including mentoring), and marketing specific projects to encourage more women to apply. This strategy has led to the achievement of gender parity where 51% of the PGR student community are women.

3. Income, infrastructure and facilities

Income

The overall external research income obtained by the Unit over the REF 2021 period is £1.73M. Income per annum has remained stable between this and the previous REF cycle.

The Unit strategy to achieve self-sustaining research comprises 4 strands of activity:

- the **pursuit of prestigious large multi-year funding** to sustain team-based research programmes (including continuation grants) (for example EU, UKRI) that underpin Unit research on grand societal themes such as inequality;
- the **pursuit of inquiry-based grants** by individual or groups of staff (for example EU, ESRC, ISRF);
- **enterprise-related income** including research projects that have a direct benefit to businesses;
- **deployment of QR funding** for PGR studentships.

Unit staff routinely bid for grants to support this self-sustaining strategy, often in collaboration with other external researchers. Since 2014 key successes include multiple grants funded by the EU (£873k), ESRC (£263k), the UK Government (e.g. DEFRA £127k), and Innovate UK (£898k). The Unit continues to diversify its income streams: for example, an award from the UK-India Education and Research Initiative (UKIERI) (£165k).

Some of the major awards successes for the Unit during this REF cycle are itemised in Table 4:

Table 4: Selected external funding award successes for the Unit in the REF 2021 cycle.

Research Programmes (PI)	Funder	Strategic Focus
<i>COST Action IS1202 Dynamics of Virtual Work</i> (£125k) (Huws/Spencer)	European Union	Interdisciplinary network comprising 31 European countries and participation from North America and Australia. Policy workshops and 15 research monographs published by Palgrave Macmillan.
<i>Work in the European Gig Economy</i> (£48.3k) (Huws)	Foundation for European Progressive Studies	Analysis of crowd work in 12 European countries and policy analysis.
<i>Access to Land Project</i> (£165k) (Dagdeviren)	UK-India Education and Research Initiative (UKIERI)	Analysis of land rights and land access in relation to food security.
<i>LiveTap – Live Visualisation of Emissions</i> (£495k) (Alaka)	Innovate UK	Development of app to communicate live emission data on streets/routes to allow people to decide when to use certain streets/routes, or which ones not to use (i.e. avoidance behaviour).
<i>Big Data and Machine Learning enabled Automated Building Information Modelling (BIM) for Projects</i> (£898k) (Alaka)	Innovate UK	Focus on lowering emissions in construction.
<i>The PLUS Project: Platform Labour in Urban Spaces: Fairness, Welfare, Development</i> (£315k) (Schlappa)	European Union Horizon 2020	Analysis of platform labour in seven European cities contributing to the development of welfare policies.

<i>RESCuE (Citizens' Resilience in Times of Crisis)</i> (£363k) (Dagdeviren)	European Commission	Research in nine European countries on the resilience strategies of poor households facing with economic crisis
<p>Many of these awards are for interdisciplinary collaborations designed to deliver impactful outcomes for policymakers. A further selection of funded projects awarded between 2014-2020 demonstrating the diversity of the Unit's funding sources, as well as its focus on end user engagement to address societal problems include:</p>		
<i>Health behaviour in school-aged children</i> (£23k) (Kapetanaki))	Department of Health	Report to World Health Organization Collaborative Cross-National Study, building on Chief Medical Officer of Health concerns on adolescents.
<i>Older people's perceptions and experiences of strengths and vulnerabilities across the UK food system</i> (£268k) (Kapetanaki)	ESRC/Food Standards Agency	To support older people as they engage in everyday food acquisition and consumption practices.
<i>URBACT (Placemaking for Cities)</i> (£37k) (Schlappa)	European Regional Development Fund (ERDF)	Programme to help cities to develop pragmatic solutions that integrate economic, social and environmental urban topics to achieve greater sustainability.
<i>ReGrow City</i> (£64k) (Schlappa)	ERDF	Follow-on grant to URBACT to disseminate good practice.
<i>Pilot for a Maternity Equipment Product Service System</i> (£66k) (Catulli)	DEFRA	Development of rental scheme for infant car seat.
<i>Evaluating Cloud Computing Technologies Development</i> (£35k) (Choudrie)	Royal Academy of Engineering	The use of cloud computing by Xerox to fulfil the needs and requirements of customers and suppliers to maintain its competitive advantage.
<i>The Political Economy of Cooperative Firms</i> (£61k) (Gagliardi)	Independent Social Research Foundation Fellowship	Working with the cooperative movements in Europe on their evolution including follow-on funding for dissemination activities (£5k).
KEEP+ project (£34k)	ERDF	Assisting the Steve Sinnot Charitable Foundation, to develop the financial sustainability of the charity and working with recipients of support in Sierra Leone, the Gambia, Haiti, Nepal and Uganda.

Covid-19 data modelling (£7.5k) (Lebcir)	West Herts NHS Trust	Analysis of outcomes and treatment for COVID-19 patients.
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Consultancy income has also generated key outputs and reports for high profile clients such as that undertaken by the Gig Economy and Global Work cluster for the *Foundation for European Progressive Studies* in 2017, the *European Institute for Gender Equality* and the *European Parliament*.

Infrastructure and Facilities

The Unit receives a devolved QR budget from the University, calibrated in accordance with REF performance, along with further support through the School which, as a Strategic Business Unit, can absorb investment costs through its Staff Development budget and payroll elements. This facilitates Unit strategic investment (financial and in-kind staff time) into collaborations with industry such as advice to key UK third sector organisations including *Royal Historic Palaces*, the *Alzheimer Society*, *VisitEngland*, *The Parkinsons Society* and *FareShare*. *FareShare* is the UK's largest foodbank charity, supporting 6,700 charities/ community groups, working with 500 food suppliers to redistribute surplus goods. The Unit has worked with *FareShare* to develop a web-based resource allocation model to help distribute food to areas of greatest need.

In 2019 the Unit made an initial investment of £100k to establish a new Big Data Technologies and Innovation Laboratory to provide high performance local computational resources with a server, and peripherals including visualisation capability and necessary software to provide for big data analysis to enhance the activities of the Business Technology research cluster. This facility was partly funded from two recent Innovate UK grants which utilised the laboratory (Alaka: *Live Visualisation of Emission*; partner Earthsense Systems; Alaka: *Big Data and Machine Learning-enabled Automated BIM for Projects*; partner Balfour Beatty).

Most of the research undertaken in the Unit does not, however, require laboratory equipment or research facilities so an investment has been made in 3 School-funded Research Fellow posts to assist staff in each cluster with projects and facilitate research impact. This investment has also provided support with funding bids, coordinating interdisciplinary teams and development of prospective future ECRs.

All staff have state of the art PCs, updated as a need arises, and many have laptops and tablets to permit flexible working. They have access to suitable industry standard software such as Qualtrics to assist with its analysis and higher-level statistical packages such as Stata. Packages for specialist needs such as Mplus for psychological research has also been purchased to support staff. Additionally, an investment was made in specialist databases to facilitate research (such as the FRANData database which has American franchisee data) as well as Hospital Episodes Data from NHS Digital to support the Unit's NHS collaborations. Routine qualitative research transcription is also contracted out to support Unit staff with primary data analysis.

A designated Library and Computer Service (LCS) Information Manager works in partnership with the Unit to ensure relevant information sources, services and support are available for staff and PGR students. There are 220 information databases and 50,575 journal titles, an increase of 81% since 2014, of which some 8,140 are catalogued in business and economics. Amongst the most relevant databases and journals collections available to support research in the Unit are FAME and OSIRIS, Eikon/Datastream, FT.com, IBISWorld, Euromonitor Passport, Mintel, WARC, XperthR, SCOPUS, Business Source Complete, Emerald Management Journals, Sage Premier Journals, Wiley Journals, and Gale Reference Complete. There are also 533,000 ebooks of which 16,812 are in the area of business, management and economics to be accessed by Unit staff. The Information Manager regularly runs support sessions for new PhD students and new staff introducing them to the LCS and its facilities located in 2 extensive multi-floor Learning Resource Centres at the University, and fields enquiries from research staff regarding access and procurement of information resources. In addition, more recently the LCS

has established transformative agreements with several publishers (for example Sage, Wiley) to facilitate gold OA publication removing the requirement for Unit staff to make payment for individual article publication.

In addition to local provision, the Unit draws on the support of the Doctoral College for the training and career development of its academic staff and research students. The Doctoral College provides a central online RSMS implemented in this REF cycle (outlined under PGR supervision, section 2) to oversee the recruitment, training, assessment and examination of research students. The University's Research Office provides centralised training and support for Unit staff including the identification of funding opportunities, support with the preparation of grant submissions, assistance with the electronic submission of grant applications and advice on research communication and the development and evidencing of research impact through a dedicated Impact Facilitator.

4. Collaboration and contribution to the research base, economy and society

Research Collaboration and User Partnerships

Unit staff are supported to undertake national and international networking to build long-term collaborations through the Unit's Contestable Research Fund. They are also supported through the Staff Development Fund to attend one international conference a year, resulting in over 20 peer-reviewed conference papers per annum. Unit research collaborations in terms of bidding for funding involve partners:

- **Internationally:** with Universities in Australia, Brazil, Canada, Indonesia, Malaysia, Nigeria, Tanzania, South Africa and the United States. Partner institutions include Harvard University, USA; the Institute of Human Virology, Nigeria; and the South African Medical Research Council along with global businesses such as Xerox and Johnson and Johnson;
- **Nationally:** with HEIs including Imperial College, Kings College, UCL, Cranfield, Leicester, Exeter, Cambridge, Oxford, Edinburgh, Newcastle, Nottingham, Bath, UEA and the London School of Hygiene and Tropical Medicine as well as organisations such as the Association of Scottish Visitor Attractions;
- **Regionally and locally:** working with partners such as the Hertfordshire LEP, Public Health Hertfordshire; West Herts NHS Trust; Dartmoor National Park and the Steve Sinnot Trust. Social enterprise research has been commissioned from the Unit at the regional level by organisations including the NHS Hertfordshire Partnership Foundation Trust, St Albans District Council; Hertfordshire Community Foundation.

Unit collaborations have achieved global reach. For example, The Health Foundation Report (2019) *Infection Prevention and Control: Lessons from Acute Care* which was a collaboration with Imperial College and the University of Leicester for the NHS (Lebcir) involving partners in South Africa, Thailand, Ghana, and Rwanda, preceded the UK Government's 20-year *Vision for Anti-Microbial Resistance* that recognised that anti-microbial resistance may pose the greatest risk to public health in the future. This collaboration also led to an MRC funded PhD studentship with the lead supervisor at Imperial and the second supervisor from UH (Lebcir).

Contribution to Economy and Society

HBS has a strong tradition of applied practitioner research reflecting its foundations in the University which is an anchor institution for Hertfordshire. The School shapes economic development by influencing policy via the Hertfordshire LEP (for example, future employment needs research), and through evidence-based research (for example, Hertfordshire Business Productivity Survey). The KEEP+ research programme has assisted businesses in the UK (for example Steve Sinnot Foundation) and in developing countries to adapt their operations, through the Unit's outreach work with a Research Associate.

Hertfordshire Business Academy

A major investment in infrastructure to support engagement with business is via the Business School Advisory Board (BSAB) and the Hertfordshire Business Academy (HBA). Since 2000, the HBS strategic approach to local impact has been informed through external industry and community input via the BSAB. The BSAB comprises senior business people and academics, representing regional, national and international interests. In 2016, the Dean of School repositioned BSAB to raise its reputation within regional, national and international business communities, providing advice on various areas including research and consultancy for the business community. This was operationalised through HBA led by an Associate Dean (Corporate Development) drawing on expertise from the Research Groups to achieve collaborations and impactful near to market research outcomes. HBS invests £250k a year in its enterprise activity and delivered, through HBA, an informal membership community which operates virtually on LinkedIn, Twitter and Facebook and through public engagement events on campus. HBA is a rolling network of over 3000 members from a wide range of industry sectors and professional profiles who attend chargeable and complimentary events. The composition of HBA changes continually but typically comprises 48% SMEs, 19% corporates and 33% professional practitioners who have engaged as shown in Table 5:

Table 5: Hertfordshire Business Academy events and participant numbers 2014-2019.

HBA Events	2014-15	2015-16	2016-17	2017-18	2018-19	Total Participants
Courses and Workshops	347	437	251	148	109	1292
Events and Conferences	191	272	592	782	375	2212
Total	538	709	843	930	484	3504

HBA also focuses on areas where the Unit can make a difference to the regional economy, building mutually beneficial relationships for its membership in user driven research delivery and hence research impact. Monthly public events include breakfast briefings (BBs), workshops, masterclasses, Lunch N Learn webinars and knowledge exchange seminars. Since the outbreak of Covid-19, HBA moved its offer online to *Let's Talk About* webinars for local businesses to maintain the network. HBA offers a live and regular communication channel to its subscribers through monthly newsletters and daily social media alerts on up-to-date research, LIVE modules, Market Research Services, Innovation Vouchers and Knowledge Exchange Activities.

HBA has facilitated consultative and commercial research projects with a range of organisations including: Clinical Commissioning Groups in Hertfordshire; Foundation Trusts; Hertfordshire Community Trust; Hertsmere Borough Council; Creative Economy Sector Mapping and Benchmarking Survey; ColArt Ltd Change Management Programme; St Albans District Council Leadership Development Programme; Greater London Authority on regional regeneration strategies in Dagenham. HBA projects that extend beyond the local region include two studies for the Leadership Foundation for Higher Education (2014; 2018).

Unit staff are frequently invited to lead briefings and disseminate new insights and updates for industry and professional stakeholders such as CIM, CIPS, CMI, CIPD, Chamber of Commerce, FSB, LEP, Local Growth Hub, CVS, Institute of Directors and the NHS. HBA is key partner in the University Enterprise Zone established with £1.1 million from Research England. It aims to expand the volume of business start-ups within Hertfordshire. HBA delivers coaching and a

support programme via the £1.5M ERDF funded InCampus incubator to support start-ups and graduate entrepreneurs.

Community Engagement

The Unit supports community engagement, resourcing staff with time and funding. For example, over £40k has been invested in a project with Fareshare, the UK's national network of charitable food redistributors, on optimising surplus food redistribution and the onset of food vulnerability. Other projects with the third sector that support local stakeholders include a Head Teachers Forum, examining the rise of academies which has informed future policy development. Dissemination events for specific research projects are hosted such as the Hertfordshire Matters project attended by 150 people. The Unit is building on this, heading a Task Force in Hertfordshire to pilot a model (Brookes) to engage anchor employers in the region to help support disadvantaged communities. The objective is to enable the greatest impact from each £1 of spending, particularly public spending, within the local economy by minimising leakages.

Three research studies for Hertfordshire LEP have emerged from HBA on a Skills Gap Analysis to assist in informing apprenticeship provision (2015; 2016; 2018-19) and a Young Persons Skills Survey (2017-18) for the top seven employment sectors to inform careers guidance for 14-18 year olds and the Hertfordshire Business Productivity Survey (2019). The Unit is also involved in the University's Annual Arts Marketing Symposium which aims to build links between local businesses to assist networking. It has also participated in three ESRC Festival of Social Science events between 2017 and 2019 in *Smart Technologies - creating value for business* (Davari) exploring smart technologies, the scope and benefits of going "smart" in different sectors such as transportation or healthcare; *Bridging the Internet Generation Gap* (Choudrie) exploring the use of smart technology on the lives of seniors; and *Creating Value in Projects* (Cubric), exploring how social "agile" practices are beneficial in managing projects.

Research Consultancy and Advisory roles

The Unit contains a *Statistical Services and Consultancy Unit* (Spencer (leader), Demir, Tofallis) which has undertaken advisory roles with Viewpoint on survey design; the Advanced Institute for Scotson Techniques to advise and assist in analysing Cerebral Palsy data, the European Technology for Business (cost of falls and fall rates) and the Intellectual Property Office (design rights and copyright infringement survey design and analysis). A regular client is the National Lottery Promotions Unit for whom they produce the National Lottery Index (the randomness of ball selection is tested annually). Other work includes sharing research findings on donor motivations for the Welsh National Opera and the Royal Academy of Engineering on ethnic minorities in engineering. They have also engaged with external clients annually providing research training courses for industry to enhance statistical skills in business. Beneficiaries include the Hertfordshire Partnership University Foundation Trust, Reform, Lockheed Martin, Camelot, the Royal National Orthopaedic Hospital NHS Trust, Tesco, Hertfordshire Constabulary, Lincolnshire County Council, the Ministry of Housing, Communities & Local Government and Department for International Trade.

Through the work of Lebcir and Demir the Unit has major ongoing collaborations with public and private healthcare providers including two Covid-19 research studies with Public Health England and West Herts NHS Trust; enabling better management of Deep Vein Thrombosis patients in collaboration with Abbott and Bayer Plc and the eleven NHS Hospitals and Trusts which have been beneficiaries of Unit research on demand and capacity planning for acute services as well as simulation and forecasting for ophthalmology services. A collaboration with Sheffield Teaching Hospital and on Oxford University Hospitals NHS Foundation Trust has been funded through a £102k grant from a global medical device company (Sirtex) to develop an online analytical tool for personalized care for liver cancer patients.

Notable advisory contributions to organisations include: the European Parliament (Huws); Age Concern (Choudrie); Royal Statistical Society (Spencer); Advising Xerox on online social networks and cybersecurity (Choudrie); on dementia (Page): Prime Minister's Working Group on

Dementia; Royal Historic Palaces, Alzheimer's Society and VisitEngland/VisitScotland/National Trust.

Contributions to the Sustainability of the Academy

Table 6 identifies the range of contributions made by Unit staff to editorial and peer review activities in the REF period.

Table 6: Editorial and peer review activities by Unit staff.

	Total CABS recognised journals	Examples include:
Editors in Chief	6	<i>Tourism Management</i> (Page); <i>Competition and Change</i> (Dagdeviren) <i>Work and Employment</i> (Cotton); <i>Work Organisation, Labour & Globalisation</i> (Huws) <i>Information, Technology and People</i> (Choudrie), <i>Journal of Institutional Economics</i> (Hodgson)
Guest Editorships	7	<i>Journal of Comparative Economics</i> (Gagliardi); <i>Journal of Institutional Economics</i> (Gindis); <i>Journal of Business Ethics</i> (Gindis); <i>Competition and Change</i> (Gindis)
Editorial Board Memberships	27 (9 CABS rated international standing)	<i>Artificial Intelligence Advances</i> (Alaka) <i>American Journal of Engineering and Technology Management</i> (Alaka) <i>Tourism Management</i> (Alaka) <i>Electronic Journal of E-Learning</i> (Cubric)
Book Series Editorships	5	<i>New Horizons in Institutional and Evolutionary Economics</i> ((Edward Elgar - Gagliardi and Gindis); <i>Critical Studies in Economic Institutions</i> (Edward Elgar - Gagliardi and Gindis); <i>Advances in Tourism</i> (Routledge - Page), <i>Themes in Tourism</i> (Pearson - Page), <i>Dynamics of Virtual Work</i> (Palgrave Macmillan – Huws)
Peer Grant Reviewers – major funders	5	ESRC (Page), NIHR (Lebcir), Hong Kong Research Council (Demir), EU Horizon 2020 (Cubric) European Commission's Ethics Review Panel (Huws). Page was also a Scientific Committee member of the <i>CABS Journal Guide 2014-21</i>

In total Unit staff have authored, co-authored or edited 35 scholarly books during the cycle.

Prizes and awards

Two staff were awarded Honorary Doctorates during this cycle: Hodgson from University of Thessaly, Greece, 2017 and Page by the University of West London, 2014. Other notable awards include the 2014 Schumpeter Prize in Economics (Hodgson); 2014 Award for Outstanding Service in Marketing Education (Marketers' Trust/ Academy of Marketing, Brennan); TechWomen100 Award for 2019, (Choudrie); Best Paper Awards at the International Society of Franchising 2015, 2018 (Watson); Emerald Literati Network Awards for Excellence 2016, 2017

(Page). Public Health England Honorary Registrar, for services to workforce modelling, 2020 (Lebcir).

Visiting positions

Several staff have held Visiting Posts/Professorships during the cycle including:

- Brookes: Nelson Mandela University, Port Elizabeth, South Africa
- Choudrie: Strathmore Business School, Nairobi, Kenya; Symbiosis International University, Pune, India
- Kaworski: University of Johannesburg, South Africa
- Lebcir: Harvard University, USA

Notable Conference activities

Gagliardi, Gindis and Hodgson co-founded the World Interdisciplinary Network for Institutional Research, (WINIR). With the benefit of financial support from the Unit, WINIR has helped shape the interdisciplinary research agenda on institutions by organising 6 annual global conferences and 4 international symposia since 2014. These have been held in locations such as Lugano, Switzerland; Rio de Janeiro, Brazil; Boston, USA; and Utrecht (Netherlands) on topics such as as *Institutions and the Future of Global Capitalism*, 2018; and *Institutions for Inclusive Societies*, 2019.

The Unit hosted the 16th AEME Events Management Educators Forum in 2019 for which Jepson was Conference Chair; and the 9th Global Brand Conference of the Academy of Marketing's Brand, Corporate Identity and Reputation Special Interest Group in 2014 (co-organisers: Brennan, Watson. Unit Members are frequently keynote speakers at industry workshops and conferences. For example, Alaka has twice presented keynotes to Balfour Beatty Workshops in 2019 and 2020, as well as to an Air Pollution Analytics Workshop, New Leaf Technology, 2020, an Air Pollution Monitoring Workshop, Earthsense, 2019, and 7th Annual Conference of AnalytiX, Singapore, 2019. Dagdeviren is regularly invited to present her work at international conferences and symposia. For example, invited speaker, *Gender and Effective Use of Land Rights*, Mother Theresa University, Tamil Nadu, India, December 2018; Keynote Speaker, Social Policy, Local Governments and Social Policy Symposium, Istanbul, January 2019 and, Invited Academic expert, Oyo State Agribusiness Summit, Ibadan, Nigeria, March 2020

Staff regularly chair or convene international conference streams. An illustration of the scale and scope of this activity is the work undertaken by Demir and Lebcir within the Ageing cluster in the field of Operations Research who between them have chaired or convened 14 international conferences and presenting 15 invited papers at conferences during this REF cycle. Lebcir, for example, was Chair of the Healthcare Applications Stream of the Operational Research Society Annual Conference, Canterbury, 2019; Program Committee Chair of the Winter Simulation Conference, Las Vegas, 2017, Scientific Committee Member, Global Joint Conference on industrial Engineering and its Application Areas, Vienna, Austria 2017, Associate Editor, 23rd European Conference on Information Systems, Munster Germany 2017. Lebcir and Demir also delivered invited lectures in health management at Harvard, the National University of Singapore, Duke University Medical School and Imperial College, as well as for the NHS.