REF2021

Institution: Loughborough University

Unit of Assessment: 17- Business and Management Studies

1. Unit context and structure, research and impact strategy

1.1. Unit context and structure

Following a strong REF2014 performance in which 75% of its research was rated as 'world-leading' or 'internationally excellent', the Unit's profile has developed further through strategic investments in staff, an enhanced focus on external engagements, and a collegial and supportive environment. Table 1 shows growth since REF2014 in staff volume, output quality, research income and PhDs awarded.

Table 1. Growth since REF2014

REF period	Eligible Category A staff FTE	Peer-reviewed publications in CABS 4*/4 journals (per capita)	Research income (per capita)	PhD degrees awarded (per capita)
REF 2021	138.7	182 (1.32)	£6.08M (£43.8k)	191 (1.38)
REF 2014	89.4	49 (0.55)	£2.61M (£29.2k)	63 (0.70)

- The Unit covers the triple-accredited School of Business and Economics (SBE, 122.2FTE staff) in Loughborough, and 16.5FTE staff at the new Loughborough University London (LUL) School.

- SBE comprises seven academic groups: Accounting and Finance; Economics; International Business, Strategy and Innovation; Information Management; Management Science and Operations; Marketing and Retailing; Work and Organisation.

- LUL staff are from the Institute for Innovation and Entrepreneurship (created 2015) and the Institute for International Management (created 2017).

SBE staff report to their Dean (Robinson) via the academic groups and LUL staff report to their Dean (Edwards) via the institutes. Both Deans are Unit staff. Associate Deans for Research and Enterprise (ADR and ADE) in each School provide strategic leadership to the research and impact activities of the Unit and are members of the University's Research Committee and Enterprise Committee, respectively, chaired by the Pro Vice-Chancellors for Research and Enterprise. SBE Associate Deans, Ravishankar and Souchon, are Unit staff.

We have created and sustained a vibrant research culture conducive to producing research of the highest quality and enabling outstanding research impact. In addition to academic groups and institutes, which are the focal organising units for research, we have supported five Research Centres over the REF period (total investment - £900k) as vehicles for our external collaborations and events. Prominent achievements of the Research Centres are described in Section 4.1.

Across our comprehensive and diverse research portfolio, we highlight six cross-cutting research capabilities (Table 2), which reflect long-standing and emergent strengths, as well as competencies acquired in the current assessment period through staff recruitment and the

establishment of LUL institutes. These capabilities span theoretical, empirical and applied research, and have developed organically with contributions from all areas of the Unit.

Table 2. Research capabilities

Research capabilities	Groups / Institutes contributing:
Business in Emerging Markets	• Economics • International Business, Strategy and Innovation • Marketing and Retailing • Institute for Innovation and Entrepreneurship
Corporate Governance	• Accounting and Finance • International Business, Strategy and Innovation • Work and Organisation • Institute for International Management
Decision Analytics	• Economics • Information Management • Management Science and Operations
Digital Innovations	• Economics • Information Management • International Business, Strategy and Innovation • Marketing and Retailing • Institute for Innovation and Entrepreneurship
Energy and Sustainability	• Accounting and Finance • Economics • Management Science and Operations
Future of Work	• Information Management • Work and Organisation • Institute for Innovation and Entrepreneurship • Institute for International Management

1.2. Research strategy (2014-2020)

Our research vision (2014-2020) was *to produce research of world-leading standard, that is recognised and valued by peer and non-academic communities across key disciplinary areas within business*, and our REF2014 submission set out six strategic objectives for research and impact.

(1) <u>To increase the proportion of the Unit's research outputs rated as internationally excellent and world-leading</u>.
We used the Chartered Association of Business Schools (CABS) Academic Journal Guide (AJG) to compare our REF2021 and REF2014 submissions. We published 182 AJG 4/4* and 420 AJG 3 papers in the REF2021 period. 4/4* outputs increased by 271% (140% per capita) and AJG 3 outputs increased by 233% (115% per capita).

Unit staff published 55 peer-reviewed research articles in the Financial Times list of 50 top journals in business and management (FT50), which represents a 129% increase (48% per capita) from REF2014. For instance, research related to:

- Business in Emerging Markets has appeared in *Human Resource Management* and *Journal of International Business Studies*.
- Corporate Governance has appeared in *Academy of Management Review*, *Management Science* and *Strategic Management Journal*.
- Decision Analytics has appeared in *Operations Research* and *Production and Operations Management*.
- Digital Innovations has appeared in *Journal of the Academy of Marketing Science* and *MIS Quarterly*.
- Energy and Sustainability has appeared in *Manufacturing and Service Operations Management* and *Research Policy*.
- Future of Work has appeared in *Human Relations* and *Organization Studies*.

We recognise that the sub-panel will not use journal rankings in evaluating individual outputs, but we believe this analysis affirms our growing research strength across the range of our activity.

(2) To increase the level of research income derived from Research Councils, EU, charities, industry, and alumni.
In a competitive research funding environment, we have secured £6.08M (£43.8k per capita) in research income over the current assessment period, up 133% on REF2014 (up 50% per capita). With a strong push towards participation in international research consortia and interdisciplinary/cross-disciplinary research, we increased our income from EU government bodies by 1430% per capita. Income from Research Councils and UK charities increased by 97% and 21% per capita, respectively.

In increasing research income, we have combined our research capabilities with activities promoted under the University's CALIBRE framework and its emphasis on interdisciplinary research. For instance, by forging links with staff in three schools (Design and Creative Arts, Science, Social Science and Humanities), we provided expertise in Decision Analytics to the EU H2020 TOXI-Triage project, which set new global standards for decision-making processes during mass casualty incidents involving chemical, biological, radioactive, or nuclear materials (Unit PI: Jackson). Overall, we have played a key role in 25 externally funded interdisciplinary research projects, working collaboratively with different Schools in the University (total income: £1.4M). Further examples include:
- Barnard's EU H2020-funded research with the School of Architecture, Building and Civil Engineering, which advanced gender equality in the higher education sector.
- Jackson's EPSRC-funded work with the School of Aeronautical, Automotive, Chemical and Materials Engineering, which facilitated system integration and optimisation of alternative energy sources.
- Rasciute's Health Foundation-funded work with the School of Sport, Exercise and Health Sciences, which contributed to a better understanding of the trade-offs between economic and environmental impacts of nature-based leisure trips.

(3) To embed research students as an integral part of our research culture and create the next generation of business research scholars.
Our achievement is evidenced by award of 191 PhD degrees in the REF2021 period (completions per capita staff up 97% from REF2014) and high scores in the Postgraduate Research Experience Survey (2019), which showed that over 95% of our students are satisfied with the skills and subject knowledge of supervisors and the opportunities to maintain regular contact with them.

Success in training the next generation is evidenced by our PhD graduates currently holding permanent academic posts at some leading institutions: Universities of Edinburgh (Douch), Manchester (Han), New South Wales (Mysore Seshadrinath), Leeds (Morton and Xu), Sheffield (Katsiampa), Nottingham (Achtzehn, Yazdani and Zhang), Lancaster (Fayoumi), Vienna (Micevski), Cranfield (Ghadge), Shandong (Li), Strathclyde (Tsougkou), Aston (Despoudi, Xue) and IESEG School of Management (Nemkova). We have also recruited 10 of our own PhD students into full-time academic posts (e.g., Adetutu, Brooks, Crick, Odusanya), which is further

testimony to the quality of our programme, our confidence in our graduates, and the vitality of our research environment.

(4) <u>To engage more closely with non-academic users around our research activities and seek to ensure that our research influences policy and practice</u>.
We have nurtured a strong network of external relationships, featuring our key research capabilities, and involving Unit staff at all levels. Our nine impact case studies (ICSs) detail some of our deep engagements with research users and are referenced in Section 1.3. Therefore, here we elaborate on projects that are *additional* to our ICSs and their embedded collaborations with partners. Some may become ICSs in any future REF. The following is an illustrative list of projects initiated and advanced since 2014.

Business in Emerging Markets
Richey and Ravishankar are collaborating with African Entrepreneur Collective, the largest refugee entrepreneurship programme (supporting 3400 refugees) in the Global South, to train refugees to start and maintain a business in difficult circumstances (Funders: Society for Advancement of Management Studies and British Academy of Management). Richey and Brooks led country-wide evaluations of a UK Home Office-led project that supports refugees' entrepreneurial aspirations (Funder: Centre for Entrepreneurs). This research has directly informed ongoing revisions to the UK government's policy frameworks for refugee support. Schnyder is working with Mastercard's Enterprise Partnerships team to examine the effectiveness of the company's partnership with Unilever, which aims to facilitate credit availability for Kenyan microentrepreneurs. In collaboration with the Department of Science and Technology, Hebei Province and the Administrative Committee of the Xiong'an New Area, China, Fu has developed a blueprint for the development of emerging market entrepreneurship ecosystems that enable innovative ventures (Funder: British Academy/Leverhulme Trust).

Corporate Governance
Building on his contributions to the Africapitalism project (Funder: Tony Elumelu Foundation), Chizema served as Lead Consultant (2018-2020) of the international expert committee that drafted the Principles of Corporate Governance for the African Union. Casey and colleagues are working with multi-national companies in China to study the impact of Global Framework Agreements on governance and corporate social responsibility activities (Funder: Hans-Böckler Foundation). Drawing on his research into shareholder-orientated corporate governance practices (Funder: ESRC), Schnyder has collaborated with Inner City Fund to inform the UK's Department for Business, Energy and Industrial Strategy about regulatory regimes in global economies.

Decision Analytics
Mandania and Liu have ongoing collaborations with BT. They have developed software that contributes to more efficient and environmentally friendly scheduling of service operations (Funder: BT). In partnership with Triumph Motorcycles, Kawalek and Holland have developed data analytics solutions that can improve sales forecasting, production planning and promotional spend strategies of organisations (Funder: Innovate UK). Li B. and colleagues have worked with BAE Systems, Network Rail and the Defence Science and Technology Laboratory, and improved the situational awareness and decision-making capabilities of unmanned vehicles (Funder: EPSRC).

Digital Innovations
Milne is leading a major project with global firms (e.g., IBM, PricewaterhouseCoopers) to identify opportunities for Artificial Intelligence-based innovation in the UK insurance industry (Funder: ESRC). Jackson, Sykora and Hodgkinson have developed a digital social intelligence engine in collaboration with Ford that can outwit bot networks and safeguard brand reputation (Funder: Innovate UK); Cooke's work with the International Federation of Library Associations and the UK's Chartered Institute of Library and Information Services helped improve libraries' provision of digital resources for their publics (Funder: AHRC). Dy led evaluations of efforts to diversify the East London digital start-up sector (Funder: OneTech).

Energy and Sustainability

Grubnic and colleagues have developed a new business model for the eco-friendly development of products, based on the principles of 'circular economy' (Funder: EPSRC). It is being validated in multiple organisations (e.g., Lexmark, the printer-maker and *Arçelik, the* Turkish multinational appliances manufacturer). Giulietti has led a partnership with cleantech company Moixa and the Nottingham City Council and demonstrated how new business models provide fair and flexible energy supply systems (Funder: EPSRC).

Future of Work

Conducting research with older workers in multiple organisations (e.g., BP, BT, University Hospitals of Leicester NHS Trust), Arnold and colleagues have identified strategies that are effective in helping them craft better and longer working lives (Funder: European Commission). Based on their research into career development and leadership, Silvester and colleagues have provided written evidence to a 2019 House of Commons inquiry, outlining methods for improving the representation of women in senior political roles. Drawing on their research into LGBT experiences in the construction industry (Funder: Chartered Institute of Building), Barnard and colleagues are working with industry and civil society stakeholders (e.g., Equality and Human Rights Commission) to promote inclusive workplace practices.

(5) <u>To foster close collaboration between Economics, Information Management and Business, as well as with other Schools, to develop research areas of common interest</u>.

We encourage staff to pursue collaborations across areas and we believe in dismantling boundaries between academic disciplines. This approach remains a cherished value of the Unit's research culture. At the time of our REF2014 submission, staff working in the Economics (previously UoA34) and Information Management (previously UoA36) areas had just been moved into the Business School, forming the School of Business and Economics. They are now fully integrated into the Unit, as are LUL colleagues who have joined us since 2014. We have recorded 51 successful collaborations across the Unit's academic areas in terms of peer-reviewed research publications or/and externally funded projects. Illustrative examples include:

- Cooke's (Information Management) co-authored journal publication with Wilson (International Business, Strategy and Innovation) on the digital work practices of senior managers.
- Milne's (Economics) successful ESRC bid in partnership with Herbert (Accounting and Finance) and Holland (Information Management) to explore the reshaping of insurance value chains through new technologies.
- Scholes' (Institute for Innovation and Entrepreneurship, London) co-authored journal publication with Hughes (International Business, Strategy and Innovation) and colleagues on governance issues in family businesses.
- Coombs' (Information Management) co-authored journal publication with Barnard (Work and Organisation) and colleagues, which reviews the impacts of intelligent automation on knowledge and service work.

(6) <u>To be recognised internationally as a leading centre of research excellence in specific major areas of business and management research</u>.

In 2019, we progressed to the 101-150 band of the QS Global Ranking of business and management units (QS subject rankings), which reflects both objective metrics (e.g., citations) and the international community's perception of our reputation across research areas. The Unit's strategic growth through LUL has further expanded our research base and enhanced the international recognition of our research. The Unit has attracted an internationally competitive pool of talented ECRs (e.g., Karpuz, Kern, Nardella, Russo, Sukumara Panicker, Triebs) and established scholars (e.g., Edwards, Hodgson, Holland, Podinovski, Silvester) across multiple areas of research. In 2014, SBE joined a select group of schools that hold accreditations from all three leading business school accreditation bodies (AACSB, EQUIS and AMBA). We have since retained this coveted triple-accreditation status, which is held by only 101 business schools worldwide and recognises the excellent processes and supportive structures in place to sustain and strengthen all areas, including our research environment. Table 3 illustrates research excellence in terms of the Unit's key research capabilities.

Table 3. Research capabilities: activities and achievements

Research capability	Peer-reviewed journal publications	PhDs awarded	Research seminars and workshops hosted	Affiliation of main research collaborators in the REF period
Business in Emerging Markets	169	30	64	• Peking University • Imperial College London • Ghent University • Copenhagen Business School (CBS)
Corporate Governance	112	22	53	• Northeastern University • University of Auckland • Imperial College London • Durham University
Decision Analytics	141	24	74	• University of Southern California • London School of Economics and Political Science (LSE) • University of Edinburgh • Aalto University
Digital Innovations	204	32	75	• LSE • CBS • University of New South Wales • University of Auckland
Energy and Sustainability	183	20	57	• Tsinghua University • University of Warwick • Northeastern University, China • Indian Institute of Technology Delhi
Future of Work	206	20	67	• University of Queensland • University of Manchester • Seoul National University • KU Leuven

1.3. Enabling and facilitating research impact

Given the importance attached to developing impact, in 2014 the Unit created the Director of Research Impact (DRI, Arnold) role, which supports the delivery of impact and reports to the Associate Deans for Research and Enterprise.

The DRI's work includes information gathering, idea generation, encouragement and informal mentoring of staff, and facilitating links to the non-academic world. In 2015, led by the DRI, we set up Impact@SBE to raise the levels of awareness, activity, and achievement of knowledge translation, including but not confined to potential REF impact cases. Impact@SBE was a strategic

recognition of the desire to increase impact activity post-REF2014, based on our assessment of the Unit culture that suggested the impact element of research lagged publications and funding in academic staff's priorities.

> Impact@SBE staff: DRI (Arnold), Head (Ellis-Chadwick), two senior research and enterprise associates (Rubin, Taneva), and two part-time administrators.

Working with colleagues in the University's Research and Enterprise Office (REO), Impact@SBE staff:

- assisted in bidding for and helping to deliver 'near market' research and consultancy projects, events, and products (such as videos).
- helped to formulate the impact elements of research bids (and in some cases carried out the impact activities themselves).
- collected information about existing research collaborators and helped to identify new ones.
- advised staff on strategies for achieving impact.
- advised on and assisted with the collection of impact evidence.

Impact@SBE liaised with the University's REO over issues like non-disclosure agreements and intellectual property, produced guidance for staff on impact-related matters, and identified opportunities for dissemination of research to user groups, including via *The Conversation* and the SBE biannual magazine *Inspire*, which is distributed free to alumni and other contacts. Impact@SBE also ran training events led by external experts (e.g., Reed, Fast Track Impact) on using social media for research impact, developing and editing Wikipedia pages, and the use of non-academic citation metrics. Other successful joint Impact@SBE and REO activities include the formulation and delivery of a successful £10k bid on the impact of technology at work to the Chartered Institute of Personnel and Development, writing and now enacting impact elements of a successful £1.3M bid to ESRC for an Artificial Intelligence-based innovation consortium (Milne), and formulating a successful tender of £10k for work with Scottish libraries (Cooke). Impact@SBE won competitive internal HEIF funding from the University's Enterprise Projects Group to support the development of a short play (subsequently publicly performed in London) on gender inequalities in performing arts (Sage), and to enable the development of a visual management business game (Bateman).

Since 2019, the Unit has benefitted from an expansion of the University's REO to create a larger and more integrated support function for enabling and facilitating impact. The activities of Impact@SBE have now been absorbed into this expanded operation, which includes an Enterprise Partnership Development Manager dedicated to our Unit who works closely with the DRI (Arnold). Other staff in the REO assist with the Unit's impact-related work as required. Impact activities are also supported by the Unit's marketing and events team (e.g., in organising events on post-Brexit trade and water industry regulation where Unit staff's work has been prominent) and the University's PR teams (e.g., in providing media training for academic staff).

REF impact case studies (ICSs)
Since 2014, the DRI has worked alongside all staff with potential ICSs (27 in total, not just the nine submitted) and liaised regularly with a member of the Unit's Strategic Advisory Board (SAB - see Section 4.1) about the development of the cases. The DRI also drew up an informal panel of seven senior professionals in different parts of the world and economy who have periodically offered advice on ICSs within their areas of interest.

Since 2017, the DRI's work has included the formulation of agreed impact action plans and the allocation of 100 hours on workload per year for staff with clear REF-level cases (14 cases). In total four SAB members participated in one or both of two away days (in 2018 and 2019) where staff presented their ICSs to mixed audiences with a view to obtaining feedback and ideas for further development. The Unit's overall approach to achieving impact (via the DRI, Impact@SBE and the REO) has contributed materially to all nine ICSs submitted. Examples include:

- helping obtain internal HEIF money to support Choudhary's work on freight industry sustainability, and the uptake of Montibeller and Franco's risk-assessment tools and techniques.
- funding meetings of Coyne's DRAWING group of employers seeking to promote dignity and fairness at work.
- assisting in collecting the widely distributed evidence of the personal impacts of Travers' Reflective Goal-Setting and the organisational impacts of Ellis-Chadwick's Digital High Street Health Index.
- finding previously unknown users of the work of Freeman on long-term discounting, Saal and Nieswand on water industry pricing, and Tako and Robinson on user-centred systems design.

1.4. Research and impact objectives for the next five years

We have updated the Unit's research strategy through a consultative process involving all Unit staff and the University leadership team (September-December 2020). Building on the foundations laid in the early 2000s and continuing our focus on research excellence and its impact on society, we have rearticulated our long-term research vision as **Making a better world with research excellence**. Three strategic commitments underpin this vision:

- Commitment 1: *Engagement*
  We will develop and support meaningful collaborative relationships with businesses, social enterprises, policy makers and academic institutions.
- Commitment 2: *Ethos*
  We will maintain an unwavering focus on the values of excellence and inclusivity that underpin our research culture.
- Commitment 3: *Reputation*
  We will grow our international stature and esteem so that our research is seen, heard and used widely.

The research and impact objectives set out here to advance our strategic commitments were developed after a careful and rational analysis of our research base, current trajectory, and aspirations. We acknowledge that these objectives assume a 'normal' post-COVID world. As such, the realisation of our research and impact objectives may be influenced by resourcing limitations and decisions of the University in a turbulent post-COVID environment. There are further potential risks to our objectives stemming from protectionist and de-globalising instincts of governments. However, our working position over the next five years is to stay true to our strategic commitments, notwithstanding any economic, organisational, and political headwinds. Therefore, our strategic commitments will remain the key enduring principles of our research strategy, albeit with the possible need to flex in relation to implementation plans and objectives, but without drifting from the focus on Engagement, Ethos and Reputation.

Taking forward the research and impact objectives

Commitment: Engagement
Objective 1: To develop international partnerships that address a range of global research challenges.
We propose to build on our international research links and create a small number of 'innovation sandboxes' that will work in collaboration with partnering organisations and academic institutions. We will initiate and advance these sandboxes by aligning them with our research capabilities (e.g., addressing challenges of digital exclusion in local communities through a Digital Innovations-themed sandbox). We will work in conjunction with the University's framework for impactful research, to translate research outcomes, test ideas and develop scalable solutions. The sandboxes will tackle significant global research challenges, using the overarching framework of the United Nations' 17 Sustainable Development Goals to evaluate progress. We will leverage the geographical advantage offered by our London campus to expand the reach of our sandboxes.

Objective 2: To continue to improve interdisciplinary research connections in the University.

As reported in Section 1.2 above, our collegial and supportive environment has already spurred 25 significant interdisciplinary research collaborations in the REF period. We would like to grow this further. We see interdisciplinary links as an opportunity to grow our research income levels, build more bridges with the non-academic world, and work closely with external stakeholders. We will avoid over-structuring and over-complicating our organisation in the quest for interdisciplinary synergies. We will continue to draw on our current simple, flexible, and nimble structure for managing research. Simultaneously, we will strategically deploy our primary research capabilities as focused talking points and make more extensive use of specialist resources in the University's Research and Enterprise Office to span boundaries. We will consider the significance and reach of research impacts, and the levels of research income to evaluate success.

Commitment: Ethos

Objective 3: To nurture a research culture that supports both high-quality academic scholarly work and immersive collaboration with research users.

We will create and evolve a reward and recognition framework that fully accounts for the diverse ways in which business and management research and impact can be excellent. We will carefully nuance and calibrate the implications of this objective for the career trajectories of staff at different levels. We will evaluate progress by analysing the career progression of staff with different research strengths, and our publication and impact achievements.

Objective 4: To increase the proportion of our research projects that have an explicit focus on creating socioeconomic impact and building inclusive societies.

We will encourage and provide enhanced levels of support (e.g., seedcorn grants, PhD studentships) to projects that align with this objective. We will identify and nurture such projects through close ADR-ADE-Director of Research Impact (DRI) collaboration. The DRI already maintains a regularly updated list of nascent and emergent Unit projects in this category (see Sections 1.2 and 4.2 for illustrations). We will assess success through annual evaluations of staff research publications and of the aims stated in bids for research funding. Possible indicators of progress will include publications and projects that focus on responsible and ethical governance, fair and inclusive workplaces, digital and financial inclusion, social value creation, and sustainable business models.

Commitment: Reputation

Objective 5: To promote the outcomes of current research capabilities and to facilitate the evolution of new capabilities through organic growth.

We will use our six research capabilities - Business in Emerging Markets, Corporate Governance, Decision Analytics, Digital Innovations, Energy and Sustainability and Future of Work - to improve our strategic positioning and to get our messages heard and acted upon by stakeholders. The ADR-led SBE Research Committee will encourage and support the bottom-up development of new research capabilities, whose progress and strategic potential will be regularly assessed. Our pipeline of ambitious research projects and engagements indicate that we are poised to make intellectual, practical and policy contributions that will:

- foster financial inclusion in emerging economies.
- encourage socially responsible governance in multinational corporations.
- facilitate strategic deployment of artificial intelligence (AI) tools in a range of sectors.
- develop new knowledge about the impact of digital innovations on sustainable livelihoods.
- inform pro-environmental strategies and behaviours of governments.
- create fairer and inclusive organisational development strategies.

Objective 6: To enhance the international visibility of our research.

We will embed a new 'research visibility' programme into our staff development processes and help staff at all levels craft visibility improvement strategies relevant to their research. This programme will work in tandem with our current approach to facilitating research impact (see Section 1.3 above) and focus specifically on research translation and social media engagement. We will use a mix of traditional (e.g., editorial board appointments and citations of research outputs) and alternative metrics (e.g., Altmetrics data) to evaluate progress. We will continue to

assess the international visibility levels of our research outputs via rankings of research quality and productivity such as the QS subject rankings and the FT50 list of scholarly journals in concert with discipline specific rankings (e.g., Association for Information Systems research rankings).

1.5. Open research environment

The University has been a pioneer of the 'Open' agenda, establishing the Institutional Repository for text-based research in 2005 and the Data Repository in 2015. The two repositories were unified as the new Research Repository in 2019 to provide a single interface to the University's research outputs, enhancing their visibility, discoverability, and re-use.

> Since 2015, the Unit's research outputs have received over 2.5M views and have been downloaded more than 2.3M times.

The Repository links to the Unit's publication information system and, since 2014, we have aimed for Unit staff to deposit outputs within three months of acceptance, exceeding the REF2021 requirement. We have deposited 80% of our published journal articles (2014-2020) in the Research Repository. The University's landmark Open Research Position Statement committed to depositing the full text of all primary research outputs in the Research Repository (including on closed access where unavoidable) from 2020. The Unit has deposited 100% of its peer-reviewed journal articles (published in 2020) in line with this commitment.

1.6. Research integrity

The University's Ethical Policy Framework is the foundation of the Unit's culture of research integrity. All Unit staff are responsible for ensuring adherence to this Framework in respect of the nature, conduct, dissemination and foreseeable end-use of research and the behaviour of researchers. They are responsible for conducting ethics checks on all proposed projects and routing necessary approvals through dedicated Ethics sub-committees (e.g., focusing on human participants), or to the main University Ethics Committee. All staff apply for approval via the online ethics system, Loughborough University Ethics Online (LEON), which incorporates an initial signoff by the ADR at the School level. LEON covers investigations involving human participants and integrates the ethical processes relating to research involving security sensitive research. It is a one-stop shop for risk assessment, and participant information and informed consent provision for all research projects.

2. People

2.1. Staffing strategy

Our staffing strategy aims to sustain a community of world-leading researchers in the Unit's current and emerging areas of research strength. We regularly assess succession needs and use new appointments strategically to ensure critical mass and leadership. A key focus of our strategy in the REF period has been on ensuring the Unit's vitality and sustainability through strong ECR recruitments, leading to a moderate shift in staff profile across grades (see Table 4). Notably, the Unit employs 29FTE ECRs on the REF2021 census date, a 107% increase from REF2014. The Unit's research base has expanded substantially with a 55% increase (+49.3FTE) in eligible Category A staff, from 89.4FTE on the REF2014 census date to 138.7FTE on the REF2021 census date. The number of Professors has been largely constant, with 15FTE growth at SL/Reader and 35FTE growth at Lecturer level.

Table 4. Staff profile

Assessment	Lecturer % (FTE)	Senior Lecturer % (FTE)	Reader % (FTE)	Professor % (FTE)
REF2021	46% (64)	20% (28)	9% (12)	25% (34.7)
REF 2014	32% (29)	21% (19)	7% (6)	40% (35.4)

We have recruited talented scholars during the REF period, making 40 ECR, 22 mid-career and 17 professorial appointments, through a combination of strategic investments (e.g., LUL institutes), growth in SBE, and replacement posts created following staff departures and retirements. These include two ECRs and two professorial appointments made through the University's 'Excellence 100 campaign'.

- We recruited our ECR cohort from established PhD programmes in the UK (e.g., Bath, Cambridge, Glasgow, Imperial College, King's College, Leeds, LSE, Loughborough, Manchester, Nottingham, Sussex, Warwick), Finland (Aalto, Hanken School of Economics), France (e.g., Toulouse), Germany (e.g., TU Berlin), India (IIM Kozhikode), South Korea (Pohang) and USA (UC Berkley).
- Our mid-career appointees held prior academic positions in leading UK institutions (e.g., Birmingham, King's College, Lancaster, Nottingham, Reading, Sheffield).
- Our incoming Professors had earlier stints at established universities (e.g., King's College - Edwards; LSE - Montibeller; Manchester - Holland and Kawalek; Sheffield - Arnold; Warwick - Giulietti and Podinovski). These appointments have strengthened our research, enhanced our external reputation, and provided strategic leadership to the Unit's research organisation. For instance, Giulietti is part of transformational interdisciplinary projects linked to Energy and Sustainability; Podinovski heads the Management Science and Operations Group and has produced world-leading Decision Analytics scholarship.

We have balanced investments in new staff with promotions to 25 ECR and mid-career staff through the internal University system (e.g., Argyris, Dy, Fu, Grosman, Raffoni, Spencer to Senior Lecturer; Choudhary, Coombs, Sage, Tako to Reader; Cooke, Glass, Hodgkinson, Vivian to Professor). We take steps to nurture a friendly and supportive culture, which allows staff to realise their research aspirations and ambitions. The Unit has promoted an environment in which staff feel that they can seek internal promotion, rather than move elsewhere. The Director of Academic Development (O'Sullivan) advises and works with staff as they progress towards promotion. Staff are encouraged to approach and discuss their research progress with the Director of Academic Development, who also frequently meets all staff in academic leadership roles (e.g., Heads of academic groups) to identify potential promotion cases. Thus, we ensure that all staff are included in promotion conversations and receive appropriate guidance. The Director of Academic Development's inputs inform the Unit's decisions in relation to promotion applications and staff

retention. In instances where staff have had approaches from other universities, we have responded by carefully looking at the merits of individual cases and implementing retention measures where appropriate, most commonly promotion. In this respect, the University operates a 'Fast Track' system for promotion, and we have used this facility on multiple occasions.

The School Senior Management Team (SMT), led by the Dean, manages the succession planning process for research leadership roles, taking inputs from staff across the Unit in assessing fit between candidate successors' strengths and role requirements. Typically, successors 'shadow' incumbents for three months before formally starting in the role, which ensures a smooth transition. Succession examples in the REF period include the ADE role (Saker to Souchon) and Directorships (e.g., Edwards to Schnyder, Institute for International Management).

2.2. Staff development

> - A fair and transparent workload model operates and applies throughout the Unit.
> - All staff receive a dedicated allowance for research (at least 34% of their time), with additional allocations for PhD supervision, research grants, and impact and enterprise projects, including REF impact case study preparation.

Teaching for staff is organised and managed carefully to provide uninterrupted blocks of research time. The School SMT is responsible for staff development with SBE benefitting from a dedicated Head of Academic Staff (Coupland) role, which oversees staff development activities. This role, which is part of the School's SMT (since 2008), underscores our continued commitment to upholding the values of consistency and equal opportunity in staff development policies. Support for career progression and development of research associates follows the principles of the *Concordat to Support the Career Development of Researchers*. The University's HR Excellence in Research Award (continuously since 2010, renewed 2018) from the European Commission evidences our successful implementation of the *Concordat.*

Support for ECRs
Our long-standing New Lecturers' Programme (NLP) for probationary appointments, led by the Pro Vice Chancellor (Research), offers three years of comprehensive training for ECRs.

> Strongly protected teaching workload (33%, 50%, 67% of Unit norms in consecutive years) allows establishment of the full academic profile (research, teaching, enterprise) at a manageable pace, guided by an experienced and trained academic advisor.

NLP covers all aspects of research and impact (publication, funding, collaboration, public engagement, partnerships), guarantees co-supervision of a PhD student and leads to FHEA status. Academic Advisors (typically, a Professor or Reader) meet with ECRs regularly and provide them with mentoring and support. Advisors also perform a formal review annually, which gives ECRs the opportunity to specifically discuss progress in research and their evolving developmental needs. Over the REF period, 19 ECRs have successfully completed the NLP and 20 ECRs are currently enrolled in the programme. ECRs are prioritised in the allocation of internal PhD studentships, and 94% of our ECRs (2014-2020) have served as co-supervisors on successfully completed or ongoing PhD projects.

Mentoring support beyond NLP
SBE's ADR and other experienced staff on both campuses regularly provide advice and support to colleagues around managing research time, developing resilience, creating research and impact plans, writing and publication strategies, funding applications, and dealing with difficult collaborations. All staff are offered the opportunity to be mentored informally by experienced colleagues in the Unit who are not their line manager. This informal and voluntary mentoring, arranged by SBE's Head of Academic Staff, is an enduring element of the Unit's research culture and environment and one of the reasons we are perceived as a collegial and desirable place to pursue a rewarding research career. In addition, the Unit is part of the University's Coaching,

Mentoring and Buddying Framework, which supports less experienced colleagues to achieve developmental goals over a 12-month period. For instance, experienced SBE staff (e.g., O'Sullivan and Ravishankar) have mentored LUL staff (e.g., Zhang and Zhao), leading to positive outcomes in terms of improved access to international networks and development of a balanced research portfolio. We also fund mid-career female staff to attend the national Aurora Leadership Programme run by Advance HE.

Performance Development Review (PDR)
The annual PDR, completed by all Unit staff, is integral to staff research performance assessment and development. It provides an opportunity to reflect on achievements over the past year and discuss research plans with an experienced colleague, who has been trained to conduct the PDR (training is also available to reviewees). Annual updates, briefings and refresher training are provided by the University's HR and Organisational Development unit with input and mediation by the School Senior Management Team. The PDR agrees objectives for research outputs, impact related activities, funding applications and progress of PhD students. It also offers insights into the research aspirations of staff and allows specific research development and training needs to be identified. For instance, PDR conversations around funding led to the introduction of our Research Escalator Scheme (see Section 3.2), which supports staff in planning and writing strong research bids.

Rewards and recognition
We celebrate the success of our staff and motivate them in multiple ways. Financial rewards are considered at the end of the PDR process by the School Senior PDR Review Group, which includes the Dean, ADR, ADE, and Head of Academic Staff. Staff rated 'Exceeds Expectations' are put forward to the University for an additional increment or percentage increase in salary. We also reward high performers for one-off outstanding performances through individual lump sum payments and team awards that recognise a collaborative ethos. Total reward spend in the REF period has exceeded £200k. In addition, the Dean's annual awards in the Researcher, Impact on Practice, ECR and PhD student categories celebrate publication, funding, research leadership and impact. Unit staff (Barnard, Choudhary, Franco, Gruber and Montibeller) have also won University CALIBRE Awards that recognise outstanding achievements in research impact.

Research and impact leave
We support intensive study periods (typical duration: six months) on full salary in the form of School and University Fellowships, which provide focused time to pursue an agreed programme of research and impact work. 74 Fellowships were approved in the current REF period. For instance:
- Wilson's Fellowship (2015) was hosted at Singapore Management University (SMU) and led to the publication of a well-received book on the future of management education in Africa, co-authored with colleagues at SMU.
- Ellis-Chadwick's Fellowship (2018) involved data collection and engagement with non-academic users and contributed to the impact case study on sustainable high streets.
- Spencer's Fellowship (2017) was hosted at Hitotsubashi University and led to two articles in highly regarded academic journals and the start of a project on monetary policy with economists at the Bank of Japan.

Support for external activities and engagements
We have a dedicated research budget (£2k per capita, but transferable between staff to ensure that colleagues having a highly active year can go over £2k) that helps staff present their research externally and build professional networks. Unit staff regularly present their work at the major international conferences of a wide range of scholarly associations, and at specialist conferences and workshops. The Unit has spent c.£1.7M total through this channel since 2014, supporting participation on over 1400 occasions in conferences and workshops.

We allocate seedcorn funding for research and impact activities, on a competitive basis. Of the 58 seedcorn projects funded (budget: £244k), 54 led to externally funded projects, supported the early stages of impact case studies, or led to peer-reviewed publications. Some illustrative examples:

- funding to Schnyder supported pilot research for the successful EU NORFACE bid to study populist backlash and its effects on the rule of law.
- funding to Fu, Grosman, Richey and Zhang laid the ground for their respective British Academy/Leverhulme research grants.
- funding to Choudhary and Tako enabled work that fed into two impact case studies.
- awards to Franco and Zimmermann led to research articles on decision-making via facilitated modelling and offshore outsourcing respectively, which are included among our submitted outputs.

Research seminars and workshops

We regularly organise and host research seminars and professional development workshops (530 since 2014) that stimulate scholarly discussions, provide opportunities for friendly and constructive peer-reviews of research being written-up and share the latest research ideas and innovations. We invite a broad range of speakers and facilitators, including:

- established scholars holding editorial positions in world-leading journals: Brown - *Management Science*, Gambardella - *Strategic Management Journal,* Kankanhalli - *MIS Quarterly*, Patriotta - *Journal of Management Studies*, Silverman - *Journal of International Business Studies*.
- leaders from industry: Chief Executive Officers of Saatchi and Saatchi (Senior) and Shazam (Fisher), Chief Technology Officer at IBM (Hope), Director of Carbon Trust (Barrow), Head of Operations at Rolls Royce (Chaisty).
- experts in public sector organisations: Director of Public Information at House of Commons (Bridges), Technical Strategy Lead at UK DSTL (Stansfield), Deputy Director at Office for National Statistics (Turrell).

The Unit also runs a research writing club that meets fortnightly (in both SBE and LUL) for two hours to offer staff time away from other academic responsibilities, and the space to do undisturbed writing.

Interest Groups

Since 2013, we have encouraged and given visibility to Interest Groups (IGs), which are informal groups of Unit staff (minimum: four staff per IG) interested in developing ideas around a contemporary theme. We support eight IGs, which receive a small budget to organise research seminars and workshops. We see IGs as relaxed, informal creative spaces that contribute to the vibrancy of our research culture and create opportunities for new projects to develop. For instance, the IG on Trade Agreements and Negotiation Strategies (led by Edwards H.) has hosted policy-focused workshops around the post-Brexit UK economic landscape and works closely with the UK's Department for International Trade and the Confederation of British Industry. The IG on Money and Developing Economies (led by Ahmad) was a key player in an international consortium (budget: £1.72M) of nine partners (e.g., Universities of Birmingham, Ghana-Legon, Groningen; Brookings Institute) that identified effective policy instruments for promoting financial inclusion and sustained growth in low-income countries (ESRC, Ahmad, £210k).

2.3. Research students

- The REF2021 period has seen 191 PhD completions, a 204% increase (+97% per capita staff) from REF2014.
- 45% of our PhD graduates are women and 45% are from the BAME community.

Our aim is for every Postgraduate Research (PGR) student to be simultaneously at home in their School while being part of a wider University research environment that facilitates career development and networking. We integrate PGR (PhD) students into the Unit research culture by affiliating them with SBE academic groups or LUL institutes, through regular supervisory meetings and by attendance at research seminars. PhD students have ample open plan office space and computing facilities on each desk.

Our PhD students are fully engaged in the development of their community. Both SBE and LUL have elected Student Representatives and a Lead Representative. They report to the PGR

students' President who represents the School Representatives' views institutionally at both Doctoral College Sub-Committee and Research Committee. As well as engaging with PhD Student Representatives, participation in the annual Postgraduate Research Experience Survey (PRES) and the Doctoral College Wellbeing Survey ensures that our processes and systems are responsive to the experiences of PhD students. For instance, in response to the 2017 PRES results, we developed a student-led research seminar series and implemented an informal mentoring system between yearly cohorts.

Funding

153 PhD students started their studies in the current REF period. The Unit provided three-year studentships (total funding £6M) to 61% of the starters; 24% were self-funded and 15% had external funding from national governments, the ESRC Midlands Graduate School Doctoral Training Partnership (DTP) and the EPSRC Sustainable Hydrogen Centre for Doctoral Training (CDT). The EPSRC studentships are aligned with studentships from our Midlands Innovation partners (the eight research-intensive universities in the Midlands) to form the Energy Research Accelerator Doctoral Academy, which addresses industry-led research challenges in the energy sector. Our EPSRC CDT students benefit from an enhanced programme and training provision, including a 42-month programme length, individual Research Training Support Grants, and tailored cohort activities. We also employ six postgraduate teaching assistants (PGTAs). The PGTA roles are five-year positions with 50/50 time for teaching and PhD study.

Recruitment of research students

We require PhD students to have a good first degree in a relevant discipline and the ability to undertake a sustained programme of independent research. We give preference to candidates with a postgraduate Master's qualification. We also welcome applicants with relevant professional qualifications and research experience in lieu of typical academic qualifications, on a case-by-case basis. Decisions on the admission of candidates are taken by two members of staff and an interview is conducted, usually by a telephone or video call for international candidates. The School Research Committee (chaired by the ADR) evaluates studentship applications and makes allocation decisions. PhD students are welcomed via School-wide induction events at quarterly intake points. Students are recruited only where appropriate expert supervision is available (and sustainable). Applicants with disabilities are invited to identify their needs and support requirements, and the University's Counselling and Disability Service provides them with appropriate support throughout the recruitment process.

Support and monitoring mechanisms

Students have two supervisors and three in special circumstances. Supervisors are allocated by considering research expertise, current workload, inclusivity, and experience. Students can contact other members of staff should they need additional guidance in a specific area, and if the best-fit supervision comes from two ECRs an experienced colleague joins the team to mentor and support all involved. The student's supervisory team includes the Director of Doctoral Programmes (DDP) who monitors the supervisory arrangements and assists in the resolution of all issues and concerns.

Supervisory meetings take place at least monthly and usually far more often. Meeting records are maintained via our electronic system, Co-Tutor, and monitored both within the Unit and the University's Doctoral College. PhD students' progress and evolving training needs are monitored via six-monthly reviews with an Independent Assessor. The process is overseen by the DDP and a formal academic panel, which ensures fairness and consistency. A rigorous academic progress review is held at the end of each registration year, for which students produce significant written work and have an interview with the Independent Assessor. Records are maintained centrally in the Doctoral College and re-registration requires a satisfactory review outcome. We hold quarterly progress review Boards, which take an overview of cohort progression.

Quality assurance of our PhD programme is the responsibility of School ADRs and delivered by the respective DDPs: SBE, Sage; LUL, Vidal. The DDPs work closely with the Associate Pro Vice-Chancellor of the Doctoral College and sit on the Doctoral College Sub-Committee which reports

to University Research Committee. Across the Unit, four members of support staff are dedicated to supporting the PhD programme's management.

The Unit's PhD students access wellbeing support through the Doctoral College and from the respective SBE and LUL Wellbeing Advisors who offer advice and support on difficult personal issues (e.g., bereavement, mental health, stress). We encourage PhD students to access University support in the first instance but also give full access to the main Employee Assistance Programme which operates a 24/7 confidential helpline.

<u>Training and skill development</u>
We provide research skills training through academic supervision, access to taught modules and a dedicated training programme for first-year students with modules on research philosophy and ethics, research design and process, research communication and two modules each on qualitative methods, quantitative methods, and econometrics. The training programme includes a workshop module for students to further develop their research proposals by obtaining feedback from academic staff in their field. These proposals are then formally assessed by the respective supervisors. Workshops are offered to all students throughout the year on social media training, academic writing, qualitative coding, and advanced econometric techniques. PhD students are also encouraged to present at School research seminars.

Our PGTAs have significant opportunities for skills development and training. Teaching activity is initially restricted to tutorials, student support and marking. After attaining FHEA status, PGTAs deliver lectures on undergraduate programmes.

Through a dedicated budget (£50k/annum), we provide generous funding to our PhD students to attend conferences and workshops. In cases where a significant achievement is involved (e.g., accepted paper at an important conference; nominated to participate in a prestigious doctoral consortium), they also have access to funding from the staff research budgets. PhD students benefit from vibrant and supportive sub-cultures within the Unit. The Marketing and Retailing academic group, for instance, run an annual PhD mini conference where students present their work to peers and invited staff from Loughborough and other universities. Our PhD students organised the Unit's first annual PhD Conference in 2014, and this now runs annually, giving them an opportunity to present and receive feedback from peers and academic staff. As part of the Conference, Unit staff deliver a focused training session on preparing for the academic job market.

The Doctoral College offers over 200 events annually, ranging from orientation activity for new students to transferable skills and employability training that meet the requirements of the Researcher Development Framework. Graduate House, home of the Doctoral College, provides a dedicated training suite for PhD students and opportunities to network across the University.

Unit staff provide significant support to regional and national programmes. For instance, Selenko leads the quantitative methods training in the Loughborough section of the ESRC Midlands Graduate School. Tako and Robinson have led the EPSRC-funded National Taught Course Centre in Operational Research biennial one-week PhD courses on simulation, attended by around 50 PhD students from the UK and abroad.

2.4. Equality, Diversity and Inclusion (EDI)

We have nurtured an open and culturally diverse Unit over two decades of inclusive growth and made considerable progress over the current REF period, as follows:

- Overall staff profile: 62% of Unit staff are international (39% in REF2014), 39% are women (25% in REF2014) and 27% belong to the BAME community (19% in REF2014).
- New appointments: 44% women and 35% from the BAME community.
- Promotions: 48% are women and 17% are from the BAME community.
- Leadership roles: SBE's seven-member Senior Management Team comprises three women and two colleagues from the BAME community.

EDI activity and monitoring are organised by Schools. EDI Leads (SBE, Cooke; LUL, Dasgupta) encourage and promote good practice, and are supported by data reports (e.g., funding, PhD completion, staff promotion data organised by ethnicity and gender) generated by the Planning Office. University-run courses on Respecting Diversity and Unconscious Bias are mandatory for staff, and the School Senior Management Team attends a bespoke Unconscious Bias course. All staff have access to an on-campus support network called CONFIDE, which consists of colleagues from across the University who are trained to deal with cases of harassment and bullying. All staff involved in recruitment and selection undergo rigorous EDI training to ensure that no individual or group is disadvantaged, and all interview panels (since 2014) are mixed-gender. As part of the University's Level 2 Disability Confident Employer certificate (renewed in 2019), we guarantee an interview to applicants with a declared disability who meet the essential criteria outlined in job descriptions. The University is one of the first 10 UK HEIs to adopt the Race Equality Charter.

We support flexible working arrangements. Staff may request up to two hours each day free from timetabled teaching (e.g., to accommodate school runs). All formal School meetings are restricted to core hours of 10am-4pm. We provide both short-term compassionate leave and longer-term flexible working for ongoing responsibilities (e.g., caring for family members in poor health). We support staff returning from parental, maternity, adoption, caring responsibilities, sick or other long-term leave through a phased workload reintroduction extending over two years. Drawing on the advice of the University's Occupational Health Service, we make accommodations for staff with health challenges and long-term medical conditions (e.g., via additional support for teaching and marking duties).

We allow staff to work remotely so long as their teaching and administrative responsibilities are fulfilled. Remote working is facilitated via a VPN (with secure multifactor authentication) that provides access to all University online resources. All staff are given a desktop computer and have the alternative option of a laptop plus docking station. These policies and supporting infrastructure have eased the transition to effective home working during the COVID pandemic.

2.5. EDI in the construction of REF submission

The University's Research Committee created the REF Code of Practice (CoP) Working Group in October 2018. All research active staff (including staff on leave) were contacted individually during the CoP consultation by the SBE and LUL Deans, respectively. The CoP set out the roles and responsibilities, job descriptions and terms of reference of the Unit's submission team. All Unit staff involved in preparing the REF submission have attended dedicated and compulsory EDI and unconscious bias training. The Unit's REF submission is constructed by an 18-member mixed-gender team led by the SBE ADR (Ravishankar) and has representation from all SBE academic groups, LUL institutes and the Unit's external Strategic Advisory Board. A six-member mixed-gender sub-committee of the Unit's REF submission team selected the nine submitted impact case studies from a larger pool of strong cases, through a peer-review process followed by a consensus-building meeting. The sub-committee included the Director of Research Impact whose remit was to enable all potential cases to be developed and presented to best possible effect.

Our submitted research outputs were selected through a fair and inclusive internal peer-review process, with at least two qualified Unit staff reviewing and scoring each eligible output. 54 staff from across the Unit served as internal assessors of outputs. The University's equality impact assessment programme analysed our research outputs by gender, maternity leave, ethnicity and ECR status with attention to overall selection, allocation of co-authored outputs and characteristics of threshold-spanning outputs and found no evidence of bias.

> We have attributed 33% of our submitted research outputs to female staff and 27% to BAME staff, which is comparable to the Unit's overall staff composition of 39% female and 27% BAME. 30% of the Unit's female staff, but only 15% of the Unit's male staff, are ECRs. This accounts for the difference between 39% and 33%.

3. Income, infrastructure and facilities

3.1. Research funding and strategies

We view research funding not as an end in itself, but as one of the means available to us for conducting impactful research and engaging with the world.

Staff developing funding bids receive comprehensive support, including dedicated staffing resources, a Research Escalator Scheme, internal seedcorn funding and networking events (see Section 3.2 below). In addition to a formal peer review scheme that operates at the Unit level, experienced colleagues with strong funding records provide feedback on successive drafts of bids. We supported 406 bids worth £37.4M in the current REF period.

- We received funding for 106 proposals (success rate 26%), total value £6.08M, plus studentship funding of £500k from UKRI and industry.
- This research income is 130% up on REF2014 (50% increase per capita) which attests to the resilience of our research environment considering the number of ECRs recruited and the start-up of our LUL institutes since 2014.
- In addition, we received £2.4M for research and impact activities such as contract research, consultancy, IP and short course income, and HEIF supported projects.

The composition of funding sources has shifted considerably since 2014, in a manner that underscores the internationalisation of our research profile as well as the growing recognition of our research capabilities. The highest proportion of funding (53%) still comes from UK Research Councils, with ESRC and EPSRC contributing 21.8% each. Reflecting our more international outlook, the Unit has seen substantial growth in EU government funding, from 2.3% in REF2014 to 22.1% in REF2021. This increase particularly reflects our growing reputation in Decision Analytics, Digital Innovations, and the Future of Work, which attracted seven EU awards, including participation in four prestigious research consortia:
- Integrated and Adaptive Responses to Toxic Emergencies for Rapid Triage (TOXI-Triage, H2020, budget: €12.9M, 2015-2020), comprising seven universities, nine commercial organisations and two public sector bodies (£284k, Jackson).
- Integrated Support System for Efficient Water Usage and Resources Management (ISS-EWATUS, FP7-ICT, budget: €3.4M, 2014-2017), a network of six universities and four commercial entities (£227k, Yang).
- Novel Empowering Solutions and Technologies for Older people to Retain Everyday life activities (NESTORE, H2020, budget: €4.9M, 2017-2020), composed of six universities, two research institutions, five industrial partners and three third sector organisations (£136k, Sykora).
- Communities of PrACTice for Accelerating Gender Equality and Institutional Change in Research and Innovation across Europe (ACT, H2020, budget: €3M, 2018-2021), comprising eight universities, one commercial organisation, one research institution, four public sector and three third sector organisations (£100k, Barnard).

A particular focus in the REF period has been on developing collaborative interdisciplinary/cross-disciplinary bids. The UK Research Councils have funded 36 such projects. For example:
- Applying artificial intelligence (AI) in the insurance industry (ESRC, £1.3M, Milne, 2018-2022). This prestigious cross-disciplinary research consortium has implications for the delivery of AI-based innovation in business models, underwriting and risk analytics, claims processing and customer engagement. It is led and delivered by Unit staff in partnership with eight leading organisations including IBM, PricewaterhouseCoopers, Jaguar Land Rover and Lloyds Bank.
- Exploring how project innovations can help construction firms meet carbon reduction targets (ESRC, £176k, Sage, 2015-2017) in a consortium (£409k) of six industrial partners and two universities.
- Exploring the work of globalising actors (ESRC, £286k, 2016-2019) and social innovations (ESRC, £156.5k, 2020-2022) in multinational companies (Edwards).

- Developing information technology solutions for manufacturing (EPSRC, £474k, Jackson, 2014-2019) through a consortium (£1.94M) of 11 industrial partners (e.g., GE Aviation, SAP AG, Ford) and the UK government's Ministry of Defence.
- Addressing obstacles for the deployment of city-scale energy storage (EPSRC, £88.5k, Giulietti, 2015-2019) in a consortium (£1.1M) of eight commercial partners (e.g., Tata Steel, EDF Energy), four public sector entities (e.g., Leeds City Council) and four universities.
- Improving internet access in public libraries (AHRC, £104.9k, Cooke, 2014-2015) through a collaboration with the Chartered Institute of Library and Information Services.
- Proposing novel financial instruments that aid recovery from natural disasters (NERC, £270k, Milne, 2018-2020) through a consortium of six industrial partners and the Government of Indonesia.

We increased our research income from UK charities by 77.1% with grants for research on supply chain analytics (Choudhary, British Council 2017-2020), future of the Finance function in organisations (Herbert, Chartered Institute of Management Accountants, 2014-2018), refugee support in emerging markets (Richey, Society for Advancement of Management Studies and British Academy of Management, 2020-2022), and socio-economic impacts of mental health (Rasciute, Health Foundation, 2018-2020).

Significant industry-funded projects included work with BMW and Ford (Jackson, 2014-2022), BT (Liu, 2017), BAE Systems (Sykora, 2016) and Triumph Motorcycles (Kawalek, 2019-2021). We also held a two-year British Academy mid-career Fellowship (Charlwood, 2014-2016) and hosted a two-year Marie Curie research fellowship (Arnold/Taneva, 2014-2016).

We have been responsive to emerging priorities, receiving funding for two COVID projects:
- to investigate the role of digital platforms in COVID emergency response, through a partnership with the UK Cabinet Office's Civil Contingencies Secretariat (ESRC, £109k, Sage, 2020-2022). The project's findings are being shared monthly with 80,000 emergency responders across the UK.
- to support critical medical resource rationing through algorithmic models (UKRI, £115k, Li D., 2020-2022). The models developed through this research are being tested in hospitals in collaboration with the NHS Clinical Commissioning Group for Bristol and surrounding areas.

Research funding directly contributed to 124 high quality peer-reviewed outputs including, amongst those submitted, outputs explaining:
- why some consumers are unlikely to invest in energy efficient technologies (EPSRC, Giulietti - *Research Policy*).
- the role of relational human affects in the proliferation of new technologies (ESRC, Sage - *Organization Studies*).
- the management of sustainability risks in freight transportation systems (British Council, Choudhary - *Risk Analysis*).
- the contribution of simulation models to insight generation and problem-solving (UK Industry funding, Tako and Robinson - *European Journal of Operational Research*).

3.2. Organisational infrastructure supporting research and impact

In addition to central support through the Research and Enterprise Office (REO), which ranges from development of bids and skills training to partnership development, commercialisation and legal support (see REF 5a), Unit staff benefit from tailored research support: three Research Development Managers (RDMs), who are part of the REO, are embedded in the Unit with dedicated office space. The RDMs (all PhD degree holders with open-ended contracts) support staff through all stages of a funding application, from idea generation to final submission. Working with the ADR, they alert staff to upcoming funding opportunities, assess fit between research ideas and funder requirements, arrange internal peer-reviews of bid drafts, and organise our Research Escalator scheme. The Scheme extends over three years: Staff develop a personalised plan of action for external funding, developing from a small through to a large grant application supported

by one-to-one mentoring from colleagues with a track record of successful bids. 18 staff (6 per year) have joined this programme since 2019. The first cohorts have recently submitted large research bids and are awaiting decisions.

Impact is supported by a dedicated Partnership Development Manager, who is part of the REO and works with Unit staff (and PhD students) to build knowledge exchange partnerships, generate impact from research, and apply for HEIF funding through the University's Enterprise Projects Group (EPG). Our staff have benefitted considerably from this EPG support in the REF period, attracting £129k for 11 impact projects, of which three supported impact case studies and the rest fed into a wider range of impact work described in Section 4.2.

Overall, we estimate that the Unit has invested £37.1M into maintaining and enhancing the vitality and sustainability of the research and impact environment (see Table 5).

Table 5. Internal direct investment for Unit research and impact

Workload research allocation (34%)	£24.2M
Research study periods	£2.4M
Seedcorn funding	£244k
Research activity support (e.g., staff travel, research centre initiatives)	£3M
PhD studentships and support	£6M
Three Research Development Managers (2FTE) + Partnership Development Manager (1FTE)	£1.2M
Academic visitor programme	£105k
Total research and impact investment (internal)	**£37.1M**

3.3. Operational and scholarly infrastructure supporting research and impact

The Unit benefited considerably from the opening of the University's London campus. The new campus, with over 9,000 square metres of collaborative learning space, operates out of the former Olympic Broadcast building on the Queen Elizabeth Olympic Park in the new innovation quarter known as Here East. The campus is home to LUL, which is one of the University's nine Schools, and is equipped with purpose-built lecture theatres and seminar rooms, and a satellite of the main library operating 24/7.

LUL also serves as a base for events organised by Unit staff on both campuses. For instance, it has hosted a series of public engagement workshops, disseminating the findings of projects (e.g., internet and Wi-Fi access in public libraries (AHRC, Cooke); Brexit negotiations (ESRC, Georgiadou); post-Brexit international trade arrangements (ESRC, Milne); globalising actors in multinational companies (ESRC, Edwards)).

Staff and PhD students benefit from the Pilkington Library (on the Loughborough campus), which has 70 members of staff and covers 9,161 square metres over four floors with 1,116 study places and 254 workstations. It has over 500,000 books, 90,000 bound serials and access to approximately 30,000 e-journals. It utilises the Ex-Libris' Primo resource discovery system, which provides the facility to search across multiple digital and print resources from one search interface. The library has signed agreements with publishers of business and management journals including Wiley, Sage, Taylor and Francis, and Springer, which allow Unit staff to make their articles Open Access without additional cost.

The University's IT and e-Learning team provide specific IT support for the Unit's research. Hardware is upgraded on a three-year rolling basis. Software required for research (e.g., the Qualtrics online survey platform) is purchased, installed, and managed through this team. SBE also has a trading room, supporting finance-related research with Thomson Eikon software installed on 17 Macintosh computers in a dedicated laboratory.

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

4.1. Research collaborations: arrangements and effectiveness

SBE's seven academic groups and LUL's two institutes provide a solid base and impetus for the Unit's research collaborations. 60% of the peer-reviewed scholarly outputs produced by Unit staff in the REF period had international collaborators. We worked with co-authors in 101 UK, 297 European, 130 Asia-Pacific, 94 North American, 16 South American, 15 African and 15 Middle Eastern institutions. In our externally funded research projects, we partnered with approximately 200 national and international organisations across academia, business, third sector and government. These collaborative activities have helped the Unit to take centre stage in knowledge exchange activities, policy discussions, research conferences and professional development workshops.

We recognise that strong research connections are not always built via top-down strategic mandates, and that our staff are intrinsically motivated to expand and develop their professional networks. In addition to our main structural arrangements for research and the initiatives for staff development detailed in Section 2 that support collaborations and partnership building, we facilitate external engagement through a range of mechanisms.

We run a vibrant academic visitor program, which is supported by a dedicated budget (£15k per annum). In the REF period, we have hosted 132 scholars and their visits have spurred funded research projects and peer-reviewed publications with colleagues in institutions such as IITs - Delhi, Bombay, and Kharagpur (Choudhary); University of Nebraska, Omaha (Vivian); University of Sao Paulo (Coombs); University of Queensland and Copenhagen Business School (Simeonova).

Research Centres, which are generally rooted in one academic group but also welcome additional members, act as a vehicle for many successful collaborations, interdisciplinary partnerships, events, and outcomes.

The Centre for Information Management (led by Kawalek) has worked with 64 external partners over the REF period in its externally funded research projects (total award: £2.64M). Yang collaborated with nine external partners and colleagues in the Department of Computer Science at Loughborough to develop the tApp prototype – a wireless device and mobile app which uses sensors to collect data about water usage and aims to improve the water consumption behaviour of households. tApp, which has been deployed in Greece and Poland, was nominated for the 2017 Times Higher Education Award for International Impact and the UK IT Industry Award for Innovation and Entrepreneurship. The Centre for Information Management is the only UK member of the European Research Centre for Information Systems - the preeminent European research network headquartered at University of Munster, Germany, with over 30 academic members across Europe, Australia, and North America.

The Centre for Work, Organisation and Society (led by Casey) supports a fruitful staff exchange programme with the Centre for Work Organisations and Wellbeing (WOW) at Griffith University, Australia, which has seen nine bilateral visits since 2014. For instance, Selenko's visit to WOW in 2017 led to collaborative research projects and peer-reviewed journal publications around the impact of precarious employment on young people's work identity, and the effect of atypical working conditions on employee voice.

The Centre for Service Management (led by Gruber) has a strong global network of more than 50 scholars as affiliate members. In collaboration with international partners, the Centre led high-profile research workshops and symposia on customer experience design, service operating models, and service innovation in emerging markets and health care. Unit staff have made extensive use of these events to build their external research collaborations. Over the REF period, 20 journal articles produced by Unit staff with international co-authors have their origin in the collaborations fostered through the Centre's events.

The Centre for Productivity and Performance (co-led by Podinovski and Saal) organised and hosted the 2017 and 2019 editions of the prestigious European Workshop for Efficiency and Productivity Analysis at Senate House in London, which attracted 516 scholars from 40 countries. The Centre has developed an impactful research partnership with Japan's Kindai and Kobe Universities, working on sewerage industry performance issues. Saal is the Principal International Advisor for a Japanese Ministry of Land Infrastructure Transport and Tourism funded collaborative project on sewerage industry performance measurement with Kindai University. This three-year project, which also includes Unit staff Nieswand and Triebs is providing research and policy advice on improving performance of the Japanese sewerage industry.

The Centre for Corporate Entrepreneurship and Innovation (co-led by Hughes and Scholes) was launched in 2020. It has partnered with the School of Management at Shanghai University and developed projects around entrepreneurial decision-making. The Centre led a family businesses-themed extension of the Strategic Management Society annual conference and is collaborating with managers and entrepreneurs, applying insights from its internally developed LEGO board game prototype to help them develop a scalable, systematic approach to decision-making.

4.2. Engagement with non-academic users

Section 1.2 provided some illustrations of external engagement and Section 1.3 described ways in which we deliver research impact. Our external engagements span a diverse range of non-academic users. These relationships have developed through research grants, industry-sponsored and commissioned research, Executive Education clients, Unit-organised research events, staff research and consultancy contacts, and through placements offered by firms to the Unit's undergraduate, MSc and MBA students (over 5000 recorded placements in the REF period).

SBE's Associate Dean for Enterprise (Souchon) coordinates engagements with non-academic users for the Unit and is supported by the Director of Research Impact, who is responsible for facilitating and enabling REF defined impact, as described in Section 1.3. We have the services of two long-standing professional roles that offer operational and administrative acumen: Business Development Manager (Unwin) facilitates collaborations with organisations and policy makers, and Industry Liaison Officer (Cufflin) organises events that connect staff with industry (e.g., practitioner masterclasses, alumni events).

The Unit is supported by a Strategic Advisory Board (SAB), drawn from senior figures in the UK's business and policy communities. The SAB helps Unit staff develop research connections by identifying emerging challenges for the wider corporate community, securing support for projects, and facilitating engagement with alumni, industry, and policy makers. For example, SAB-facilitated introductions to senior managers at EY UK and EY India drove a three-year (2014-2016) research collaboration with the two companies and the publication of two research articles (Zimmermann and Ravishankar). The first piece won a best paper award at the Annual Meeting of the Academy of Management (2014) in Philadelphia, and the enhanced version of this paper was published in the world-leading Journal of World Business (2016).

The main non-academic users and audiences of our research include SMEs and start-up businesses, large businesses, public sector and multilateral organisations, and third sector and professional associations.

We have engaged with and supported 411 SMEs and start-up businesses since 2014. SBE achieved the Small Business Charter award in 2014 (extended in 2019 for a further five years), which recognises commitment to provide SMEs research-informed growth and entrepreneurship support, so that they can enhance their productivity and contribution to the wider economy. Our London campus has co-hosted four FastForward Pre-Accelerator Programmes since 2017, supporting 99 start-up businesses and featuring 240 experts (e.g., investors, tech houses, marketeers, accelerators, and grant providers). We organised and hosted an investor-focused event (2018) at the London campus for The Accelerator Network, which attracted 50 venture

capital and angel investors, and showcased the investment propositions of 10 start-up businesses on the cusp of scaling their operations. We are particularly mindful of our role in supporting and developing SMEs and shaping the East Midlands region's economic performance. We work closely with Leicestershire Local Economic Partnership and Loughborough Advanced Technology and Innovation (an influential networking organisation which promotes high-tech and engineering businesses in the East Midlands) in providing SMEs with research-led strategic and operational insights. Unit staff have translated their academic research to SME audiences in practical workshops on decision-making for entrepreneurs (Simeonova), preparing for impacts of GDPR on business operations (Hughes), sustainability of social enterprises (Brooks), supporting refugee entrepreneurship (Richey), circular supply chains (Choudhary) and entering international markets (Oliveira).

> **SMEs and start-up businesses**. An illustrative sample: Airsense Analytics, Cloud Factory, Guidance Navigation, Intelligent Energy, Invotec, Manufacturing Technology Centre, Prometech, S2S Electronics, St. James Place.

Our work with large businesses is substantial. Saker's research on automotive dealership operations reaches managers of Audi, Ford and Renault through tailored Executive Education programmes (2014-2020); Jiao has used her research expertise in stochastic optimization and capacity management to help the Bauer Group analyse demand and improve forecasting in radio advertising (2020); Zimmermann and Oshri's primary research with Scandinavian outsourcing practitioners and the Nordic IT & Software Development Association has directly informed the Swedish business law firm Lindahl KB's implementation of innovations in legal process outsourcing (2015). Giulietti conducted economic analyses of energy consumption, which has informed Western Power Distribution's assessment of the public's interest in joining local district heating schemes and the potential effect on fuel poverty in Birmingham (2018). We have responded to the growing global focus on fostering digital inclusion. For instance, Richey and Ravishankar are applying their scholarly research on digital innovations in a collaborative project with eBay UK to improve effectiveness of the company's training programme that helps charities generate income through online retail (2020).

> **Large businesses** include Anglian Water, Audi, BAE Systems, BT, BMW, Bauer Group, Bosch, eBay, EY, Ford, IBM, Lindahl KB, Maruti Suzuki, Renault, Rolls-Royce, SAP, Safexpress, Scania, Siemens, Tata Steel, Thames Water, Western Power Distribution, Willmott Dixon.

We have been responsive to emerging national and global challenges, working alongside public sector and multilateral organisations. As a key member of an ESRC-funded interdisciplinary research team set up to provide analyses of UK's Brexit negotiations, Georgiadou has engaged directly with public sector stakeholders, presenting and discussing her research in closed-door meetings (2017-2020). She has provided specific inputs to the strategic thinking of officials in BEIS, CBI, DIT and POST through her research into public emotions on social media and Brexit bargaining positions. Kawalek's work with the Greater Manchester Police has developed an Agile-based method for facilitating rapid response to emerging social issues and led to innovations in cybercrime response and mental health policing (2016-2019). Jackson's TOXI-Motive system developed as part of an EU-funded interdisciplinary project (2015-2020) uses Twitter to predict and track major crises. It can collect and analyse over 4,000 tweets a second, and search for key words, phrases and hashtags that could be linked to developing incidents. The system is being trialled by the UN's Organisation for the Prohibition of Chemical Weapons. Cheyne and colleagues' research on safety management and their Safety Climate Assessment Toolkit has been used since 2014 in the ongoing improvement of safety management systems by UK military and local government. For instance, the Strategic Command of the MoD used the Toolkit in 2019 to survey, analyse and model the safety climate in their UK sites. In collaboration with the Department for International Trade, Herbert led the development of an Earn-to-Learn scheme, which provides a framework of sustainable sourcing solutions and is designed to enable students to obtain quality part-time work in business process outsourcing centres (2015-2017).

Public sector and multilateral organisations include African Union, Bank of England, Cabinet Office, Civil Service Learning, Confederation of British Industry (CBI), Department for Business, Energy and Industrial Strategy (BEIS), Department for Environment, Food and Rural Affairs (DEFRA), Department for International Trade (DIT), Department for Work and Pensions (DWP), Food and Agriculture Organisation of the United Nations (FAO), Foreign and Commonwealth Office (FCO), Greater Manchester Police, HM Treasury, House of Commons, Leicestershire County Council, Metropolitan Police Service, Ministry of Defence (MoD), NHS, OFWAT, Office for National Statistics (ONS), Organisation for Economic Co-operation and Development (OECD), Parliamentary office of Science and Technology (POST), Public Health England, Home Office, United Nations Organisation for the Prohibition of Chemical Weapons.

We have collaborated extensively with third sector and professional associations. Barnard and Arnold co-led a large-scale project with Advance HE on how higher education organisations can better harness and value the leadership skills of female academic and professional services staff (2015-2020). Wilson undertook an audit of the structure and strategy of UK Business Schools (2016-2018), leading to the publication and wide dissemination of a Chartered Association of Business Schools (CABS) report. This work has informed the thinking of Business School Deans across the UK and figures prominently in all CABS-organised professional development programmes for Deans and Directors. Unit staff have provided regular research-led inputs to The Entrepreneurial Refugee Network (TERN) - an acclaimed London-based social enterprise that supports refugees in the creation and development of their businesses - since its inception in 2016. As well as providing TERN with practical support, such as workshop facilities at the Unit's London campus, Richey, Ravishankar and Brooks have conducted primary research with a network of more than 350 TERN refugee entrepreneurs and developed a framework for fostering self-determination via entrepreneurship-themed interventions, which has informed the strategies of social enterprises in the UK and Europe. Silvester works with the Local Government Association (LGA) and the Westminster Foundation for Democracy. Her political skills framework (developed in 2012) is part of LGA's New Member Charter and the Councillor Handbook (2020), which is free to all newly elected councillors in England and Wales.

Third sector and professional associations include Amnesty International, Advance HE, African Entrepreneur Collective, Building Societies Association, Chartered Association of Business Schools (CABS), Centre for Entrepreneurs UK, Chartered Institute of Personnel and Development, Chartered Institute of Management Accountants, Impact Hub King's Cross, Local Government Association, Malaria Consortium, The Entrepreneurial Refugee Network (TERN), Westminster Foundation for Democracy.

4.3. Contribution to academic disciplines, and indicators of wider influence

We have hosted or made significant contributions to 212 research-based events and initiatives in 46 countries. These include research symposia, seminar series, conferences, masterclasses, and skills training for researchers.

We hosted the Operational Research (OR) Society's annual conference (2017) and the Carbon Trust-funded annual conference of the UK Forum for Supply Chain Sustainability (2017). We organised the annual conference of the Network of Industrial Economists in collaboration with the Royal Economic Society (2017). In partnership with the Society for Advancement of Management Studies, we ran two extensions of the annual conference of the Strategic Management Society (2018) and a research symposium on service innovation in emerging markets (2017). We led a Newton Fund supported three-day workshop for 30 (UK and Malaysian) ECRs in Kuala Lumpur on developing an agenda for fintech research in emerging economies (2017). We co-hosted the annual Global Sourcing Workshop (2014-2018), which attracted scholars from 20 countries and helped develop over 30 peer-reviewed articles published over the REF period in highly ranked journals of the information systems discipline area. We are part of the Innovate UK Energy

Research Accelerator Doctoral Academy, with Giulietti serving as lead for the business and economics skills training component, and as co-investigator of the Centre for Postdoctoral Development in Infrastructure, Cities and Energy training hub.

Leadership roles in international conferences and research networks
We have played key roles in both new activities and prestigious long-standing disciplinary events in the research calendar.

- Robinson is a member of the Board of Directors and Tako served as track chair (2018-2020) for the Winter Simulation Conference.
- Cadogan was National Co-ordinator for the UK on the European Marketing Academy (EMAC) Executive Committee (2015-2018) and served as track chair at all annual conferences. He leads the Entrepreneurship in the 21st century (E21) network, comprising scholars from 17 countries who have collected data about the export strategies of 6,000 businesses and organised two national and three international E21 symposia (2015-2020).
- Schnyder is a member of Executive Council at the Society for the Advancement of Socio-Economics (SASE).
- Liu and Tako were Conference Co-Chairs of the 2017 Annual Conference of the Operational Research Society.
- Ravishankar is Program Chair of the 2021 Pacific Asia Conference on Information Systems, which is the largest annual gathering (with more than 600 research paper submissions) of information systems scholars from Asia and Australia-New Zealand.
- Arnold was Program Co-Chair of the 2019 European Network of Organizational and Work Psychologists (ENOP) Conference; Selenko was Conference Chair of the 2016 Institute of Work Psychology (IWP) Conference, and organised symposia at the annual conferences of the European Association of Work and Organizational Psychology (EAWOP).
- Cheyne, Grosman, Lagna, Liu X. and Travers organised and chaired research symposia at the annual meetings of the Academy of Management (AoM).
- Coupland and Zimmermann convened streams at the annual European Group of Organization Studies (EGOS) Colloquium.
- Franco convened streams at the annual European Conference on Operational Research.
- Coombs and Spanaki chaired research tracks at major annual conferences of the Association for Information Systems (AIS).

Journal editorships
Unit staff hold decision-making editorial positions in 30 scholarly journals across disciplines such as Marketing, Information Systems, Operations Research, Organisational Behavior, Economics and Finance (see Table 6 for an illustrative list). In addition, we have recorded 112 editorial review board memberships in the REF period, including at Leadership Quarterly (Chizema), Journal of Management Studies (Hughes), Organization Studies (Casey), Journal of Service Research (Gruber), Transportation Research Part B (Methodological) (Li B.), Human Relations (Dy and Edwards), and Accounting, Organizations and Society (Grubnic). Unit staff have co-edited 40 journal special issues, covering diverse and contemporary issues such as varieties of state capitalism (Grosman, Journal of World Business), power dynamics and technology (Simeonova, Information Systems Journal), identity work and learning (Coupland, Management Learning) and spatial risk analysis (Argyris, Risk Analysis).

Table 6. An illustrative list of current decision-making positions in leading journals

Journal	Unit Staff	Decision-making Positions
International Marketing Review	Cadogan	Editor-in-Chief
Journal of Institutional Economics	Hodgson	Co-Editor
Journal of Productivity Analysis	Podinovski	Co-Editor
Organization Studies	Coupland	Senior Editor
Information Systems Journal	Ravishankar	
European Journal of Information Systems	Coombs	
Journal of Information Technology	Zimmermann	
Information Technology & People	Stacey	
Annals of Operations Research	Tako	Associate Editor
Omega	Podinovski	
European Journal of Finance	Vivian	
Applied Psychology: An International Review	Selenko	
Information and Management	Ravishankar	
Judgment and Decision Making	Fatas	
International Marketing Review	Michaelidou	
International Marketing Review	Story	

Contributions to government and funding bodies, professional associations and learned societies
Unit staff serve regularly on review panels for ESRC (e.g., Arnold, Edwards, Holland, Milne) and EPSRC (e.g., Choudhary, Giulietti, Jackson, Liu). Jackson and Tako, Schnyder and Story, and Cooke are, respectively, members of the EPSRC, ESRC and AHRC Peer Review Colleges. Argyris and Cooke are members of the UKRI Future Leadership Fellows Peer Review College. Giulietti was a member of the Department of Energy and Climate Change (now BEIS) panel of technical experts which evaluated the National Grid estimates for energy auctions in the capacity market (2015).

We are active in leading and advising professional associations and learned societies. Robinson is a member of Council of the UK's Chartered Association of Business Schools and was President of the Operational Research Society (2014-2015). Hughes is a member of Council of the British Academy of Management. Saker is President of the Institute of the Motor Industry, which is the sole professional body of the UK automotive sector. Grosman is Social Media Strategy Director for the International Corporate Governance Society. Coyne is a Consultant Editor with the British Psychological Society Test Reviews and leads scholarly reviews of psychometric tests used in organisations. Silvester is a member of the International Advisory Board, School of Business and Social Sciences, University of Aarhus, Denmark. Holland is a member of the European Insurance and Occupational Pensions Authority's expert group, which examines digital ethics in insurance. Cooke is an expert advisory member on the International Federation of Library Associations and Institutions' Freedom of Expression and Access to Information Committee. Hodgson (2017) and Selenko (2020) were appointed as Fellows of the Royal Society for the encouragement of Arts, Manufacturing and Commerce, and Wilson is advising the Chartered Association of Business Schools (CABS) following his appointment as the first CABS Fellow (2017).

Invited keynote lectures
Unit staff gave 135 keynote speeches. For example:
- *Impacts of intelligent machines on work and employment* (Coombs), 15th International Conference on Information Systems and Technology Management, Brazil.
- *Utility maximisation and society* (Hodgson), 22nd International Network for Economic Research Conference (online).
- *Making better choices: The new leadership challenge* (Kawalek), 18th Excellence in Policing Conference, UK.

- *Modelling and heuristic solutions for operations planning problems* (Liu), 13th International Conference on Bio-inspired Computing, China.

Recognition and awards

Over the REF period, our staff have held Visiting Professorships/Fellowships in 22 universities. For example:

- In recognition of his international standing in the field of international marketing and strategy, Cadogan was appointed a Lifetime Honorary Professor at LUT University (Finland) where he runs regular research workshops on developing marketing theory, and the philosophy of science.
- Ravishankar holds a Visiting Research Leader appointment at University College Cork (Ireland), and mentors staff projects on digital innovations and technology strategies.
- Franco was appointed an Excellence Initiative Visiting Professor at Radboud University (Netherlands) for his contributions to decision analytics and advises academic staff and PhD students.
- Chizema and Grosman were appointed Extraordinary Professor at University of Pretoria (South Africa) and Visiting Research Fellow at Luiss University (Italy), respectively, in recognition of their work on corporate governance, and mentor academic staff and postgraduate research students.

Unit staff were recognised for their contributions to scholarly peer-reviewed research through many awards. For example:

- Stacey won the Journal of the Association for Information Systems Best Paper Award for his work on improvisation in systems development projects (2018).
- Montibeller received the Society of Risk Analysis Best Paper Award for his research on cognitive and motivational biases in decision analysis (2015) and the Informs Decision Analysis Practice Award (2018) for his work on improving the supply chains of malaria rapid diagnostic test kits (this research also contributes to one of our impact case studies).
- Castro was awarded the Pedro Pita Barros Prize for his article on the impact of sugar consumption on healthcare expenditure (2018).
- Robinson won the European Association for Operational Research Best Paper Award for the agenda setting journal article on operational research in the age of analytics (2015).
- Liu received the Best Applications Paper award from the Institute of Industrial and Systems Engineers Transactions for research into improving and optimising container terminal operations (2017).
- Gruber won the American Marketing Association SERVSIG Best Article Runner up Award for his research on analysing customer experience feedback using text mining (2014).
- Hughes and Tako were recipients of the Outstanding Reviewer Award at British Journal of Management (2019) and European Journal Operational Research (2017) respectively.

The broader contributions of Unit staff have also been recognised by prestigious awards:

- Hodgson won the 2014 Schumpeter Prize for his book 'Conceptualizing Capitalism' (University of Chicago Press) and was awarded an Honorary Doctorate for his contributions to Economics by the University of Thessaly, Greece (2016).
- Coupland was awarded the British Academy of Management Medal (2017) for her contributions to research on identities and to the development of management research.
- Podinovski received the William W. Cooper Lifetime Contribution Award by the International Data Envelopment Analysis Society (2019) for his seminal contributions to advance theory, practice, and knowledge of data envelopment analysis.

Finally, we provide some examples of prestigious awards made to our talented ECRs, which demonstrate the Unit's vitality:

- Corsi (Lecturer since 2019) received the Journal of Product Innovation Management Thomas P. Hustad Best Paper Award for his research on typologies of reverse innovation (2016).
- Lee (Lecturer since 2018) won the Case Centre award for her case on corporate social responsibility with specific reference to Apple's suppliers in China (2019).

- Nardella (Lecturer since 2019) received a best paper award from the Academy of Management for research on the reputation risks associated with multinational enterprises' irresponsible behaviour in global markets (2020).