

Institution: Anglia Ruskin University
Unit of Assessment: 17
<p>1. Unit context and structure, research and impact strategy</p> <p>Overview</p> <p>In this REF period, the Unit's core research strengths were focussed on two of ARU's strategic priority research areas:</p> <ul style="list-style-type: none"> • Entrepreneurship and applied innovation, anchored in the Innovation, Management and Practices research centre (IMPact), and the Centre for Intelligent Supply Chains (CISC) • Social inclusion and marginalised communities, anchored in the Centre for Pluralist Economics (CPE) <p>The Unit has focussed research investments in these areas to generate theoretically rigorous insights into the practical concerns of business and society, leveraging academic knowledge to inform economic policy and practice, globally and within our region. Our research has impact across the East of England with SMEs and local government, and globally through the EU, NGOs, including the International Labour Organization (ILO) and the International Telecommunications Union (ITU), and multi-nationals such as Amazon. We have academic collaborations across the world, with particular strengths in Europe through our ERDF funded projects.</p> <p>Both locally and internationally, our focus on business in a social context is echoed in our commitment to sustainable and ethical business, summarised by the Dean of Faculty, Professor Packham, as 'doing well by doing good'. This approach informs both our research and the organizations we work with, and the UN's Sustainable Development Goals (SDGs) run through our research.</p> <p>Over the coming five years we will be developing and combining these themes around an integrative focus on Sustainable Futures: one of three of ARU's emerging, streamlined priority research areas. The Unit understands sustainability in the broadest sense: environmentally sustainable green growth delivered through responsible production and consumption (SDG 12) and sustainable innovation (SDG 9), and social betterment delivered through reduced inequality (SDG 5 and 10), wellbeing (SDG 3), and decent work (SDG 8).</p> <p>Structure</p> <p>Located in the Faculty of Business and Law (FBL), the Unit works closely with industrial bodies to deliver professionally relevant research, impact and innovation. The Unit has seen significant structural change since our 2014 submission when we were a stand-alone Business School with five departments and a research institute. We have consolidated our focus and integrated research and teaching more effectively, coming together with colleagues in UoA 18 to create a professions-facing Faculty of Business and Law in 2018. UoA 17 has 59.2 staff (FTE) across two schools:</p> <ul style="list-style-type: none"> • The School of Management: 37 FTEs across marketing, organizational behaviour, entrepreneurship, HRM, tourism and events • The School of Economics, Finance and Law: 22.2 FTEs across accounting, international business, operations management, economics, and finance. A further 17 FTEs are in Law (UoA 18) <p>Both schools work across ARU's Cambridge and Chelmsford campuses.</p>

Until 2017, research in the Unit was concentrated in the Institute of International Management Practice (IIMP). To better integrate research and education, and create more space for innovative research themes to emerge, this was replaced in 2017 by three, individually more focussed but collectively more inclusive, research centres:

- **Innovation, Management and PrACTices (IMPact)**
 - IMPact focusses on the social and organizational aspects of entrepreneurship and applied innovation. Researchers investigate how management, work and organization are changing in response to digitalisation and sustainability. A commitment to impactful research, underpinned by high-quality social science, is the bedrock of the centre's research ethic.
 - IMPact has 12 Unit members and three visiting researchers based in Sweden (Mälardalen), Finland (Aalto), and Birmingham University in the UK. The centre is led by Professor Chris Ivory and is home to four of the Unit's nine professors.
 - IMPact runs several of the Unit's larger funded projects, with funding from the ERDF, Interreg and FORTE (the national Swedish social science funder for wellbeing and work). It has also received funding from the University's 'sandpit' programme, for a project with the emergency services in Essex, and from cross faculty 'VC Studentship' funding for three PhDs.

- **Centre for Pluralist Economics (CPE)**
 - CPE's research is focussed on the economics of equality and diversity across labour markets, health, global development, and innovation. It draws upon a heterodox range of economic perspectives and methods from qualitative interviewing to predictive data analytics and theoretical research.
 - CPE has 10 members, led by Professor Nick Drydakis, with connections across Europe, including the Bavarian Research Institute for Digital Transformation in Germany.
 - The CPE's research underpins both of the Unit's impact case studies and the centre has strong networks with policy makers and organizations including the Council of Europe, the Government Equalities Office, the Department for Business, Energy and Industrial Strategy, the Competition and Market Authority, the European Commission, the International Labour Organization, the International Telecommunications Union, and the Organization for Economic Co-Operation and Development.

- **Centre for Intelligent Supply Chains (CISC)**
 - CISC's strengths are in supply chain digitalisation, machine learning, data mining, business process improvement, sustainability and the circular economy. These are combined with industry expertise across the healthcare, automotive, and transportation sectors.
 - CISC has 5 members, and 1 visiting researcher from Ocado Technology. The centre is led by Dr. Ying Xie.
 - Knowledge transfer is at the core of CISC's development. The centre has delivered several Knowledge Transfer Partnerships funded through Innovate UK and ERDF and has well established collaborations with the Faculty of Health, Education, Medicine & Social Care, including projects on healthcare and medical device supply chains, and healthy ageing.

Research in the Unit is led by the Faculty's Deputy Dean for Research and Innovation (DDRI), working with two Heads of School, Director of Business Development (DBD), Director of PGR Students (DPGRS), and support officers in the University's Research and Innovation Development Office (RIDO). This team meets monthly as the Faculty Research Management Group (FRMG). A larger Faculty Research and Innovation Committee (FRIC) meets quarterly and includes the FRMG plus: PGR student representatives, School Research Leads, REF convenors, Centre Directors, an ECR, a post-doctoral researcher, the chair of the Faculty Research Ethics Panel, and a Library representative. The FRIC is the main decision-making

body for the Unit and reports directly to the University's Research and Innovation Committee, chaired by the Deputy Vice-Chancellor for Research & Innovation. These committees ensure democratic accountability and representation on decisions relating to research investment and outcomes, researcher development, integrity and ethics, PGR recruitment and performance, impact, dissemination, and events.

Research Strategy

Our 2014 strategy was to:

1. Have 50% of our research judged as world leading or internationally excellent in terms of originality, significance and rigour
2. Increase our total research grant income awarded to £6 million by 2019
3. Have 30% of our staff engaged in funded research projects as either principal or co-investigators
4. Establish the IIMP (Institute of International Management Practice) as an internationally renowned and connected research institute
5. Increase the number of postgraduate research students to 150 FTEs by 2019
6. Achieve 50 doctoral completions by 2019
7. Establish three additional Research Centres aligned to our key priority areas.

With the exception of 2, 4 and 5, these objectives were fully achieved:

1. In 2014 54.5% of our outputs were evaluated as internationally excellent or world leading, with a GPA of 2.42
2. We achieved research income of £2,082,883 from 2013-14 to 2019-20, bringing our total research income since 2008 to £5,246,272, some £753,728 short of our £6m target (see section 3 for details)
3. 9 out of 21 staff (43%) with SRR were on funded projects (Drydakis, Giovannetti, Ivory, Martin, Paraskevopoulou, Tzempelikos, Wang, Willis, and Xie)
4. The IIMP was restructured into three separate 'centres' as part of a strategic move to build research strengths across the Unit
5. For the 2019-20 academic year we had increased our total number of PGR students to 131
6. In 2014-19 we achieved 67 doctoral completions (62 PhD and 5 DBA), compared to just 8 in the previous period
7. We established three new Research Centres aligned to our key priority areas (details above).

As part of a concerted strategy to embed research in all of the Unit's activities, these changes have significantly increased and diversified research activity across the Unit with 29% of academic staff (by FTE) now being included in this submission, compared to just 16% in 2014. This results from giving more people the time and resources for research. Although this did not enable us to reach our desired research income target, £2.1m between 2014 and 2020 brought us very close to the average income per FTE across all Business submissions to REF 2014, which would have been £2.4m with 17.3 FTE.

Future strategic goals and aims

Our strategic priority for the next REF period is to grow our capacity for world-class, interdisciplinary research addressing real-world economic and societal challenges. This research will contribute to our disciplinary bases and deliver innovative solutions towards sustainable futures, socio-economic justice, and wellbeing. We will achieve this by deepening our collaborations with industry, government and NGOs, internationalizing our academic networks, attracting and developing world-class researchers, and focussing PGR recruitment on our priority areas. Our concrete objectives are to:

1. Increase the volume and proportion of our research outputs evaluated as world leading or internationally excellent to 65%
2. Increase the proportion of staff with SRR from 29% to at least 36% (by FTE)
3. Increase the quantity, quality, and range of impact cases developed, with at least five high-quality impact cases from across the business disciplines to choose from for REF 2027
4. Grow our PGR student numbers to 202 FTE by 2027
5. Achieve top quartile (nationally) for overall satisfaction in the PRES by 2027
6. Grow the value of our funded research activities by 10% year on year from 2019-20 to achieve £2,540,000 of income in the period to 2026-27
7. Enhance our impact and industrial collaborations through a strategic partnership and collaborative Innovation Centre with The Welding Institute, in addition to consolidating established collaborations with local government and other industrial partners.

We will achieve these goals by:

1. Investing in mentoring, researcher development, writing retreats, and research time to prepare excellent outputs.
2. Increasing research income to fund research activities, and investing resources gained from teaching and administrative efficiencies in research hours for staff with a proven record of, or potential for, excellent research.
3. Ensuring that all funded projects have a clear pathway to impact, building impact into our researcher development programme, and ring-fencing QR funding for dissemination and impact activities.
4. Our DBA programme currently recruits 25 FTEs per annum, which will stabilise at 125 FTEs by 2024-25. PhD recruitment will focus on research areas with a critical mass of supervisory expertise, located in our research centres, to grow to a cohort of 77 PhD students (FTE) by 2027.
5. Building industrial partnerships to recruit DBA students and anchoring more PhD projects in research centres will improve timely completions and PGR student satisfaction.
6. We will grow our income by increasing staff time allocated to research activities, channelling funding opportunities through research centres, focussing researcher development on grant applications, sponsoring writing retreats, and fostering our ECRs' academic networks, to support them as co-investigators on projects with other universities.
7. Investing in a joint innovation centre with The Welding Institute (TWI), focussing on digital transformation management. The contract for this has been signed and will launch in the spring of 2021.

Our research will position environmental sustainability as a central plank of social justice and a goal for entrepreneurial, applied innovation, contributing to ARU's priority research area of 'sustainable futures'. Recent projects have built strong foundations in this area, investigating the role of business and government in developing a circular economy (Blueprint, £351,537, in partnership with Essex County Council), eco-systems services (IRENES, £150,000, in partnership with IUAV University of Venice), and low/zero carbon business opportunities (Eastern New Energy, £169,656, in partnership with the University of East London). The latter will soon be joined by a sister project, South Eastern New Energy (£99,991) delivered with the University of East London, Kent and Essex County Councils and the South East Local Enterprise Partnership.

Interdisciplinary Research

Our research orientation is inherently interdisciplinary, and we have actively recruited academics trained in law, philosophy, sociology, psychology, economics, anthropology, and engineering, as well as business disciplines. Since 2014 we have grown our interdisciplinary research capacity through collaborations with other faculties. Projects with colleagues in UoA13 have examined digital platform mediated work in the construction industry (funded by the Transforming

Construction Network) and sustainable energy initiatives (ERDF). Projects with colleagues from UoA20 have examined the impact of the MOD's Spousal Employment Support Programme (Forces in Mind Trust), the experiences of migrant workers in the UK (Harlow Council), and, with colleagues from UoA4, the barriers and enablers to planning and preparing for later life (Centre for Ageing Better). Collaborations with researchers in Arts, Humanities and Social Sciences have been fostered by sharing writing retreats and researcher development sessions on grant applications and evaluation methods. This collaboration will be deepened in the coming period with a joint research conference in 2020-21 bringing academics from both faculties together around common themes. Cross faculty collaborations have also been facilitated through university-wide 'Sandpit' events that convene and fund interdisciplinary research projects addressing real-world problems in collaboration with external partners. One example is an ongoing project with researchers in UoAs 3 and 4 examining wellbeing initiatives and stress in the emergency services using physiological data (heartrate/cortisol) in combination with qualitative data on work-life balance. For our PGR students, interdisciplinary working is anchored in cross-faculty supervision, including the Vice-Chancellor's Studentships awards.

Impact Strategy

The Unit has a strong tradition of working with external partners, including businesses (from [Amazon](#) to local SMEs), NGOs (e.g. the International Telecommunications Union and International Labour Organization), professional bodies (e.g. the CMI and CIPD) and local government (e.g. Essex County Council, Suffolk County Council, and Cambridge and Peterborough Combined Authority). The Unit has had over 70 such collaborations since 2014, from Knowledge Transfer Partnerships and consultancy work to large grant-funded projects and partnerships.

We have two main goals for growing impact:

- Anchoring our collaborations in a strategic partnership with The Welding Institute (TWI). In 2021 we are launching a joint Innovation Centre with TWI, focussing on 'digital transformation management', to bring our expertise to collaborative projects addressing the twin challenges of digitalisation and green growth. The TWI-IC represents a significant additional investment in the Unit over the next two years, after which it should be financially self-sustaining. This collaboration will enable us to bring a distinctive, social-science perspective to engineering challenges, ensuring that our research makes a tangible difference to the TWI's membership of more than 6,000 professionals and hundreds of organizations.
- We will extend our collaborations with local government through funded projects exploring sustainability, renewable energy and transportation. This will build on our track record of ERDF funded, collaborative research into the circular economy ([Blueprint](#), with Essex County Council), renewable energy ([Eastern New Energy](#), with Suffolk County Council), and eco-systems services ([IRENEs](#), in collaboration IUAV University of Venice, and governmental partners in Italy, Germany, Estonia and Romania).

In conjunction with well-established corporate relationships, including Degree Apprenticeships with Barclays and UPS, these collaborations with local government and the TWI will enable us to ensure that the majority of our research projects are designed and delivered in partnership with key stakeholders, and make a genuine contribution to policy and practice. As [ARU Peterborough](#) comes on-line in 2022, our regional impact across the East of England will be extended across the Fenland area. This regional impact will complement the increasingly international work we are doing through our EU funded projects and with TWI.

Research Integrity and Open Access

In line with the Unit's commitment to 'doing well by doing good', integrity and accessibility are central to our research. Following *The Concordat to Support Research Integrity*, we:

- Support our researchers to understand expected standards by providing compulsory Epigeum modules on research ethics and integrity, with compliance data reported to the Deputy Dean on a regular basis. Ethics and integrity are standing items on the FRIC, incorporated into the 'research escalator' development programme, and built into PGR training on both the DBA and the PhD research methods course.
- Support research project design through our 'Statement of Intent' review panel. Designed as a collegiate process, and chaired by the Deputy Dean, new projects are reviewed early in their development, before funding is sought, to evaluate the validity, viability, and reproducibility of research design, assess projects' impact and open dissemination strategies, and highlight potential ethical issues arising. This process supports researcher development whilst simultaneously ensuring research integrity.

All projects must also go through a faculty-level ethical approval process, where all empirical research involving human participants is evaluated by a panel that reports to the FRIC.

The Unit has a strong commitment to open access publishing, with all articles made available through the [Anglia Ruskin Research Online](#) (ARRO) repository, and datasets stored in repositories where possible. Our librarians check copyright embargoes to ensure that publications are openly available as soon as possible through 'green' open access. Three members of the Unit have also taken advantage of ARU funding to support 'gold' open access by making the published version of articles open access on publishers' websites and databases. Additional materials, including datasets and presentations, are made available through Figshare.

Members of the Unit have been active in the open access movement. For example, Land has written on the political economy of academic publishing, was a founding editor of the open access journal [ephemera: theory & politics in organization](#), has been a managing editor at the open access publisher [Mayfly Books](#), and is on the Community-led Open Publication Infrastructures for Monographs (COPIM) Governance [Working Group](#). The Unit will continue to support open access publishing both by contributing to the OA infrastructures in our disciplines, and by supporting staff with resources to publish their work open-access.

2. People

Feedback on our 2014 REF submission commended our investments and progress towards becoming more research-intensive. However, some concerns were raised about the sustainability of our strategy given relatively high proportion of ECRs and ambitious plans to grow PGR registrations. Our strategy since 2014 has therefore focussed on sustaining and growing our research base:

1. Building a structured programme of development for ECRs and for PGR students.
2. Investing in our ECRs, and high-performing mid-career researchers, through our Faculty Fellowship scheme, to recognise and support excellence in research.
3. Balancing our ECRs with more experienced staff including established researchers at other European universities, recruited on fractional contracts to build international networks, mentor ECRs, and provide a broad range of expertise for supervising PGR students.
4. Building a strong 'research community' through activities in the research centres and faculty.

Of the Unit's 59.2 FTEs, 17.3 had a Significant Responsibility for Research on the census date (29%). Of these, 29% were Professors, 64% were mid-career researchers (SL/AP), and (7%) were ECRs. In the Unit as a whole, 7.2 members would count as ECR according to REF criteria, representing a significant rebalancing in the Unit towards mid and senior career researchers, enabling us to provide strong support for our ECRs, and often rapid promotion.

Staffing Strategy

Our staffing strategy is focussed on 6 priorities:

1. Recruiting staff with research interests aligned to our strategic priorities and research centres.
2. Providing time and resources for all research active staff to maintain regular research activities, PGR supervision, and disciplinary citizenship such as reviewing and editing work.
3. Developing and promoting ECRs through affiliation with a research centre, inclusion on funding applications and projects, mentoring by senior research-active academics, and training through a dedicated researcher-development programme (details below).
4. To improve our gender balance (we are presently working toward gaining Athena Swan accreditation).
5. Providing an appropriate physical and technological infrastructure to support research, including laptops and quiet working spaces where required, and social spaces for collaborative working.
6. Enabling staff development through mentoring, individually tailored research plans, appraisal processes, and the provision of research leadership opportunities.

Recruitment prioritises academics with research interests aligned to one of our research centres. For example, Wang works in Finance but collaborates with staff from the Centre for Intelligent Supply Chains on machine learning, and Land's research is in organizational theory but collaborates with IMPact on research into the future of work. Recruiting staff with established networks beyond the UK has raised our research profile in the wider academic community (e.g. Fink, Liñán, Ybema). Our academics have also held visiting positions at prestigious institutions including the Bonn Institute of Labour Economics (Drydakis), Mälardalens högskola (Ivory), Universidad Nacional Autónoma de México (Meyenburg), Johannes Kepler University (Ivory), Innsbruck University (Land), Cambridge University (Giovannetti), Newcastle University (Ivory), Aalto University (Fink), the University of Dundee (Ybema), and University of Sydney (Fink).

The Unit has sought to increase the proportion of senior academics over the period, to provide effective research leadership. Professors Liñán and Ybema were appointed in September 2017 as 0.2 FTEs with core responsibilities for researcher development, mentoring, and PGR support. Professor Martin joined the Unit in June 2017 on a 0.5 contract. Professor Land was recruited in January 2018 and Nick Drydakis was promoted to Professor in December 2018. They joined Professors Fink (0.2 since 2013), Ivory, Giovannetti, and Packham (Dean of Faculty), who were all in post in 2014. The Unit has two emeritus professors and four visiting professors.

Sabbaticals and Fellowships

Research hours allocated by line managers are supplemented by University sabbaticals and by Faculty fellowships, which provide additional time for research in academics' workload models. Twenty-one academics have taken university research sabbaticals since 2014 with five more benefiting from Doctoral sabbaticals to complete a PhD thesis. A further thirteen Faculty fellowships, offering similar terms to a sabbatical, and funded through QR, have supported members of the Unit with a trimester free of teaching and 43% of their annual workload allocated to research and scholarship.

In 2019-20 the Unit piloted a 'mini sabbatical' through which staff are offered a 2-3 week break from teaching and administrative responsibilities to dedicated time to research. These were focussed on supporting staff working to complete their PhD (Partac, Lanzano, Leggett), providing the time to complete a chapter or final submission. We plan to extend this initiative over the next few years and open it up to staff seeking time to complete a specified output.

Researcher Development

The Unit runs a 'Research Escalator' career development programme. Open to all, but mandatory for ECRs, the 'Escalator' supports staff with the building blocks of a research career: publications, income generation, profile, and doctoral supervision. The approach is designed for early and mid-career researchers and is mapped onto the University's promotion criteria. It sits alongside university-wide training opportunities, 107 of which have been attended by members of UoA17 since 2014. Additional support for grant applications is provided through facilitated writing retreats. Research escalator training and mentoring is mostly delivered by the professoriate, enabling our fractional professors to share their networks and experience as editors, organizers and reviewers, with more junior colleagues.

Researcher development is integrated into probation and annual appraisal processes, when academics discuss their Individual Research Plan for the coming year with line managers. Appraisals evaluate past performance and future plans and allocate support and research time for staff. All appraisals are reviewed and signed-off by the Dean of the Faculty. The professoriate is subject to an additional 'professorial review' by the University every three years.

Research Culture

As well as providing individualised support for research-active staff, the Unit recognises that research will only flourish in a nurturing environment. As such, we have worked to create a sustainable and vibrant research culture and sense of community within the Unit, focussed on the three Research Centres. The Centre Directors play an essential role in this community-building by leading the direction of research, mentoring, and drawing on their own networks to foster a community of practice around the Unit's priority research areas. Practically, the culture is built through regular research activities including paper development workshops, reading groups, and seminars focussing on emerging priorities. Between 2017 and 2020, for example, the CPE ran a successful seminar series on heterodox economics, with academics and PhDs coming together with colleagues from Cambridge University for a monthly research presentation and discussion of conceptual and methodological issues in heterodox economics. CISC has focussed its events on building practitioner networks and in 2016-18 they hosted four workshops in Chelmsford with the Chartered Institute of Logistics and Transport (CILT). These events brought supply chain professionals together with academics to share industry insights and new research findings. In 2019, a national 'Disruptive Technology Webinar' with Invest Essex, the CILT, and Lombard Finance, was attended by over 30 industry partners and academics from across ARU. The IMPact research centre has hosted regular paper-development workshops, supporting researchers to prepare draft manuscripts for submission, or with strategies for approaching a revise and resubmit. IMPact has also hosted a series of reading groups, in which staff meet weekly to discuss a significant book on digitalization and the future of work, chapter by chapter. These have been followed by invited research seminars by the book's authors (for example by Adam Arvidsson and Phoebe Moore).

Outcomes

While it is not possible to attribute outcomes to specific activities, in combination they build a research culture and community that supports and is valued by research active staff. More concretely, it has enabled staff in the Unit to build successful research careers at ARU and beyond. ECRs staying with ARU can expect rapid promotion to Senior Lecturer once their PhD has been awarded. One of the Unit's 8 professors with SRR was promoted internally during the last REF period, while another was promoted within the scale from A1 to A2. Academics who have applied for external promotions have moved on to prestigious institutions including the University of Surrey, Henley Business School, Birmingham University, Kings College London, University of Melbourne, Queen Mary University of London, Newcastle University, the University

of East Anglia, Royal Holloway University of London, York University (Toronto), the University of Essex and the Bavarian Research Institute for Digital Transformation.

Equality and Diversity

By headcount, 48.5% of the Unit are female, comparable with the 47.5% of those classified as carrying SRR, suggesting near gender equality in terms of responsibility and time for independent research. Despite this, the Unit does have a gender imbalance in seniority, with only one (0.5 FTE) female professor from the 8 with SRR, and just one of our five visiting professors being a woman. The Unit is addressing this by working towards Athena Swan Bronze, and ensuring open and transparent processes when appointing to research leadership roles and committees. One of the three Research Centre Directors is female, both Heads of School, and the Director of PGR students, all of whom we would anticipate seeking promotions in the next REF cycle.

The Unit has 18 BAME staff (27.5% by headcount) of which 4 carry SRR (19%), suggesting a greater disparity in ethnicity than gender, something that the Unit will explore further as we apply for the Advance-HE Race Equality Charter award. The Unit has no staff declaring in the LGBTQ categories. The age profile of staff in the Unit and with SRR are comparable. Of four staff with declared disabilities, none has SRR, suggesting a need to explore this further.

Our Unit's commitment to equality and diversity is reflected in the commitment of staff time to the cross-faculty LGBTQ Research Group (headed by Drydakis) and much of our research addresses E&D issues, including national identity, age, gender, sexuality, trans-identities, and alterity. Drydakis' work in particular has impacted national and international debates and policies through the media, the UN, and the UK Government Equalities Office, Hirst's work on gender has impacted on architectural design and artistic practice in relation to gendered norms and assumptions, and Martin's work on the 'leaky pipeline' in STEM careers has changed organizational practice at Amazon. The Unit takes every opportunity to influence conversations in this area and to impact on wider debates in our disciplines around inequality and exclusion.

Research Students

Alongside the existing PhD training programme delivered through the ARU Doctoral School, we support our PhD students with in-Faculty research training courses. A 'mock Viva' is also arranged for candidates, drawing on the school's fractional and full-time professoriate. DBA students take four taught modules in their first two years of study, covering contemporary issues in management research, reviewing academic literature, research methods, and research project piloting. PGR students are also invited to all research seminar events, many of which are now more accessible given our increasing use of on-line, webinar formats.

In the period since 2014, we have seen steady growth in PGR recruitment and completions. The fastest growth has been since 2018-19, when we launched a new DBA programme, which is recruiting an average of over 60 part-time students per year. These will start coming through as completions from 2023, so we anticipate a significant increase in our PGR completions in the next REF.

In late 2020, we introduced a more targeted scheme for recruiting PhD students. Previously prospective PhD students applied with a proposal which we then sought to match to supervisors' expertise. We now have several projects advertised on our webpages to strengthen the alignment between PhD candidates' and supervisors' research interests. This should enhance the student experience, improve completion times, and increase publications from PhDs over the coming period.

Prior to 2018, the Unit funded PGR studentships directly, with 12 studentships awarded in the period from 2014. Ten of these successfully completed in a timely manner. Eight of those funded have gone on to pursue academic and research careers. In 2018 this funding was centralised as the Vice Chancellor's Studentships, a competitive scheme that is open to applications from across the University. The Unit has secured four VC's PhD Studentships since their inception: Drydakis (2018), Land (2019), Ivory (2019), Hirst (2020).

3. Income, infrastructure and facilities

Income

The lion's share of external funding secured by the Unit is from EU government bodies, accounting for £712,121 of the Unit's total income of £2,082,883 since 2013-14. This reflects the significance of the ERDF in funding the Unit's research, an approach we have consciously pursued as a means of ensuring effective impact is built into our research and that our projects are designed in collaboration with international networks of researchers and beneficiaries. These projects have benefitted from having a full-time Director of Business Development linked to the Unit: Dr David Arkell. Arkell has a background in local government and industry, providing excellent networks beyond academia and the ability to connect our researchers with large, EU project consortia.

The second largest income is from UK 'Other Sources'. It should be noted that £536,372.15 of this came into the Unit in 2013-14 as a philanthropic donation from Lord Ashcroft to support the Institute of International Management Practice. Without this, our second largest source is UK industry, commerce and public corporations. Whilst not a huge amount in any one year, this has contributed £411,178 to the Unit since 2013-14, followed by 'UK central govt bodies, local authorities, health and hospital authorities' which brought in a further £249,431, to make a combined £660,609 of income to the Unit from UK sources, and clearly demonstrating the Unit's ability to secure funding from industry and government. The largest growth opportunity is from BEIS and the Research Councils, which have contributed £117,544 to the Unit since 2013-14. Although we have won funding from these sources, there are clearly opportunities to improve. For example, the Unit has made 11 applications to the British Academy's small grant scheme since 2013-14, but none were funded, suggesting a need to improve our bidding strategies for more traditional research funders. Our focus in the next REF period will be on building networks with more established researchers, to support collaborative bids, and to work with less conventional funders, including charitable trusts, to build a track record for ECRs, as a stepping-stone to larger applications and more prestigious funders. This will run alongside continued collaborative bids, supported by our Business Development team, and in partnership with strategic allies such as TWI.

Investment, Infrastructure and Facilities

To grow our research capacity, the Unit has invested QR and HEIF income in our Business Development Team, funding a Director of Business Development (Arkell) and, since 2019-20, two fractional Industrial Leads to work with him. This approach has delivered income and impactful research, with several members of the Unit now participating in ERDF funded projects (Giovannetti, Willis, Ivory, plus more recent recruits, without SRR in the census period: Walsh, Leggett, and Davies). Where these projects do not cover the full cost of delivery, and require a match from the Unit, we have deployed QR and HEIF funding to support staff research time for the projects and to ensure that the team have time to develop research outputs, as well as core deliverables.

As a social science driven Unit, we do not have a large call for investments in material infrastructure for research, so have ploughed the bulk of our budgets into staff development and supporting our researchers to publish, submit funding bids, supervise doctoral students effectively, and build a strong research profile, including through media work and funding

conference attendance. Further details of investments in people, and researcher development, funded by QR, are detailed in Section 2 above. Where necessary, however, we have supported staff with research materials, including books, specialist software, and research assistants for pilot and pump-priming projects, as well as for post-project, impact maximisation. For example, Hirst was funded to travel to Aarhus to participate in an art exhibition by Sondra Perry, which was inspired by her work on gender and office design, and has been exhibited at the Museum of Contemporary Art, Cleveland, and Aarhus Kunsthall. This work was reported in over 80 news outlets and informed interdisciplinary research led by the engineering firm Arup to devise strategies for reducing acoustic stress in open plan offices. Additional funding for impact has paid for a research assistant to support Drydakis, Giovannetti, Hirst and Martin to evaluate, track, and maximise the impact of their research. Doctoral students are also entitled to a conference and travel allowance (£1,200 for full-time and £600 for part-time students) and the Unit has provided £55,625 of additional support to PGRs since 2014.

The Unit also provides a physical infrastructure to support research. PGR students have dedicated office spaces at both the Cambridge and Chelmsford campuses. At Chelmsford there are two office spaces on the floor immediately below the main academic office space, allowing easy interaction between academics and doctoral students. At Cambridge the same arrangement was in place until 2019, when the Unit temporarily moved to the Science building while structural improvements were made to our accommodation. We anticipate moving back to this space in mid-2021, to a fully refurbished, agile and flexible collaborative working space. As well as supporting our ambition to build an inclusive, developmentally focussed culture of research, innovation and impact, this will allow for the co-location of staff and research students. Until then, our doctoral students have a large, dedicated space just three minutes away in the Eastings building. A similar 'agile' development at our Chelmsford campus will follow the completion of our Cambridge refurbishments, ensuring parity of experience for researchers on both campuses. Chelmsford is also the home to our Bloomberg Room: a secure space in the Michael Ashcroft Building where finance researchers, including doctoral students, can use Bloomberg Terminals for their research and training students to trade. A virtual Bloomberg facility is planned for Cambridge, post refurbishments.

In the coming period, our main investment in new infrastructure and facilities will be through the collaborative Innovation Centre with The Welding Institute (TWI). This represents an initial investment of £275,000: £150,000 in 2021 and £125,000 in 2022. This funding is matched by TWI and will provide physical space at TWI's Granta Park campus, salary costs for an Innovation Centre director, expenses, and administrative support. Support from TWI and the director, plus the physical co-location of the centre at Granta Park, near our Cambridge Campus, will enable academics in the Unit to network and collaborate more easily with TWI's member organizations, as well as providing research access to TWI's R&D archives, with a large historical innovation dataset. If the plan is successful, the TWI-IC will deliver £1.86m of research funding over the next 5 years, growing research capacity and collaborations in the areas of digital transformation management and intelligent supply chains as well as driving published outputs and doctoral student recruitment.

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

Collaboration

The Unit has fostered its academic networks beyond ARU, through collaborative funding bids, support for international travel during research sabbaticals, support for national and international conference attendance, and through the strategic use of fractional contracts for to extend the Unit's international networks.

- Funding bids – Relationships have been fostered with a number of other universities through bidding activity, including: Mälardalens högskola (Ivory), Queen Mary University of London, University of Applied Sciences and Arts of Italian Switzerland, University of Cape Town, University of Cambridge, Indian Institute of Technology, Madras (Giovannetti), York University (Drydakis), Coventry University (Martin), Birmingham

University (Land), Bedfordshire University, Leicester University, Auburn University, and University of Michigan (Hirst), Loughborough University, and Hyria Business Institute (Wang).

- International Travel – The Unit has supported staff with funding for international travel to take up visiting positions at Universities including: the Universidad Nacional Autónoma de México (UNAM) (Meyenburg, 2019-20), the University of Bonn's Institute of Labor Economics (Drydakis), and Mälardalens högskola (Ivory). Staff have also been supported to attend national and international conferences since 2014, with an average budget of £1,000 per member, plus additional support for ECRs. In recent years staff have been to events in Japan, New Zealand, Ireland, Denmark, Germany, Sweden, France and Italy, and the UK.
- International Networks – Fractional professors in the Unit - Ybema, Fink, Liñán, Zucchella - have held substantive research focussed contracts with the Unit, whilst maintaining posts at universities in the Netherlands, Austria, Spain and Italy. All have collaborated with ARU academics on grant applications, journal articles, and PGR supervision.

Whilst traveling and collaborating with other Universities and research institutes helps to build academic networks and research capacity, we have made a concerted effort in recent years to ensure that projects are developed with partners from industry and government. Led by Dr David Arkell, the Faculty's Director of Business Development, and two part-time Industrial Leads (Paul Bourgeois and Jemma Little), the Unit has worked closely with industrial partners to secure several collaborative research projects, funded through the European Regional Development Fund and Interreg Europe:

- [Blueprint](#) – A project led by Essex County Council, who are based in Chelmsford and are a strategic partner for the Unit. Examining the circular economy, this project will leverage research insights to increase sustainability in collaboration with 30 Local Authorities in France and England.
- [Eastern New Energy](#) – Led by the University of East London and a network of 19 other partners, including Suffolk County Council, the Unit provides research insights in collaboration with colleagues from UoA13, to support low/zero carbon actions and local economic development.
- [IRENES](#) (Integrating RENewable energy and Ecosystem Services in environmental and energy policies) – Led by IUAV University Venice, and with partners from industry, academia, and government in Germany, Italy, Estonia, Romania, and the UK, this project is working with 100 stakeholders from across the region to develop policy and share practice on Ecosystems Services and renewable resources, to deliver win-win solutions for people and the environment.
- [Futures By Design](#) – The Unit is one of 12 partners from five countries: the Netherlands, Germany, Sweden, Belgium and the UK. The project is focussed on using research insights to enable small and medium-sized enterprises (SMEs) in regions of lower economic success to innovate, grow and increase productivity. The Unit is working with 50 SMEs from the region to support the development of digital skills to enhance innovation and productivity, for example by mining data from CRMs.
- [GrowIn 4.0](#) – Bringing together partners from The Netherlands, UK, Belgium, Germany, and Denmark, this project focussed on the challenges facing SMEs in the North Sea Region as they adapt to the challenges of digitalisation and the fourth industrial revolution.
- [Seas2Grow](#) (Silver Economy Accelerating Strategies To Grow) – Led by Eurasanté, a French, not-for-profit, technology transfer agency, this project brought together 14 partners from France, Belgium, The Netherlands and England, to support the development and delivery of silver-economy, social and technological innovations.

All of these projects combine a contribution to the underpinning academic knowledgebase of the research team with the delivery of practical solutions to partners in industry, government, and the third sector.

We will continue with these projects in the coming REF period, strengthening our external relationships with partners including Allia in Cambridge, Opportunity Peterborough, local authorities, and NHS Trusts. New projects are already in place working with the emergency services across Essex on wellbeing (Land), with Ocado on digital twins and health surveillance (Xie), with the British Library and Cambridge Library on start-up support (Martin), with the International Telecommunications Union on digital infrastructures (Giovannetti), and with the University of East London and partners in regional government across the South-East on an ERDF project investigating barriers to decarbonisation. We have also recently signed a contract to establish a collaborative Innovation Centre (IC) with The Welding Institute – a globally renowned research and technology organisation with established expertise in material science and engineering, more than 6,000 members, and a strong SME network. The Innovation Centre will focus on the application of social science perspectives to the human and organizational challenges of sustainability and digital transformation management. It will be the 14th collaborative Innovation Centre set up by TWI and UK universities including Lancaster, Essex, Brunel, and Teesside, but the first to focus on social scientific aspects of the innovation process, rather than technological challenges. The partnership will provide our researchers with access to TWI's network of SMEs and blue-chip corporations, ensuring that industrial collaboration remains at the heart of our research agenda.

Contribution to economy and society

In addition to the economic and social contributions realised through these collaborations, and evidenced in our Impact Case Studies, the Unit has made significant contributions to the economy and society through:

- Media and news – Members of the Unit have written 46 articles for *The Conversation* since 2015, with more than 1.3 million unique reads. Many of these have been syndicated in the mainstream media including *Business Insider*, *Fast Company*, *HuffPost*, *BBC*, *Australian Geographic*, *The Sydney Morning Herald* and the *Independent*. Members of the Unit are also regularly interviewed by the BBC and ITV to comment on regional news events on TV and radio (Meyenburg, Land, Giovannetti, Parakevopoulou, Meyenburg), the Canadian Broadcasting Company (Hirst), and by publications such as the CMI's *Management Today* (Russell), the *Times Higher Education* (Spear) and Austria's *Die Presse* (Fink). Paraskevopoulou and Drydak's work on age discrimination was also featured as a press release by the [British Sociological Association](#), and subsequently reported in *Forbes* and the *Daily Mail*.
- Consultancy and contract research – As well as our larger ERDF projects, members of the Unit have been active in smaller-scale consultancy work and contract research, drawing on their expertise to support public and private sector organizations. For example:
 - Paraskevopoulou has worked with colleagues from UoAs 18 and 20 on a £35,000 project working with Rainbow Services and Harlow Council to investigate the challenges of integration facing migrants in the area. This work impacted on local debate over migration, integration, and informed policy making in the Council.
 - Martin has worked with WISE (the campaign for gender balance in science, technology & engineering) and Amazon to better understand the barriers and enablers to women forging successful careers in innovation. This project drew on underpinning research in the unit on gender and workplace dynamics (Martin, Hirst, Alt, Fernandez-Sabiote). Recommendations from the [final report](#) led to changes at Amazon, including a Return to Work programme, providing coaching support to employees returning from a career break, internal training and awareness programmes, and a schools outreach programme to ensure greater diversity early in the STEM pipeline.
 - Xie has worked closely with the UK National Health Service (NHS), Essex County Council, and Dynamic Group (a social marketing company) to investigate reverse logistics in the pharmaceutical supply chain, designing green pharmaceutical supply chains that result in less pharmaceutical waste for the NHS (2012-2016).

- Publications in *The Pharmaceutical Journal*, the official journal of Royal Pharmaceutical Society of Great Britain and widely read by pharmacists and GPs, demonstrate the value of this research to practice.
- Since 2016, Xie has also worked closely with Felixstowe Port (UK) to develop data-driven optimisation tools to improve economic and environmental efficiency in the Seaport Rail Terminal.
 - CISC research on supply chain management has included collaborations with Simarco International Ltd., Ocado, CGI, Iotics lab, Cash's Ltd, Bosch, and Hexcel Composites. Research findings from this work have been applied in practice, for example through a decision system adopted by Cash's Ltd to coordinate their supply chain, a rail planning system adapted by Felixstowe Port, and business processes improvements at Hexcel Composites Ltd.
 - Ivory has worked for Cambridgeshire, Hertfordshire and Bedfordshire Police leading a £20,000 project assessing the efficacy of the 'Athena' policing information system - 'Benefits Realisation from Information and Mobile Technology'. The project drew on Ivory's background in technology assessment and helped the Tri-forces develop improved technology assessment metrics and better targeting for change management (March 2015-January 2016).

Contribution to the research base

In addition to academic publications, reports, and media engagement, which shape public debate and have impacts outside academic, members of the Unit also contribute to the research base through their work with professional associations, editing journals, reviewing, and organizing conferences.

Several members of the Unit have edited well-respected journals in the period since 2014:

- Land as senior editor of *Organization Studies* and Associated Editor of *Organization*
- Ybema as Senior Editor at *Organization*
- Liñán as Associate Editor of *Entrepreneurship, Education & Pedagogy*
- Fink as Associate Editor at *Technological Forecasting & Social Change*, the *Journal of Small Business Management*, and *International Small Business Journal*
- Xie as Associate Editor with *Heliyon Business and Economics*.

Editorships of Special Issues include:

- *International Journal of Manpower* (2020) on 'Sexual Orientation and the Labor Market' (Drydakis)
- *Journal of Business to Business Marketing* (2019) on 'Innovation in Business to Business Marketing' (Tzempelikos)
- *British Journal of Management* (2018) on 'Scaling Sustainability' (Land)
- *International Journal of Manpower* (2018) on 'Hiring discrimination: measures, moderators and mechanisms' (Drydakis)
- *Industrial Marketing Management* (2014) on 'Relational Key Account Management' (Tzempelikos)
- *European Management Journal* (2020) on 'Service Improvement in Public Sector Operations' (Xie).

Editorship of Handbooks or book series include:

- *The Routledge Companion to Alternative Organization* (Land, 2014)
- 'Gender' Section Editor of the *Handbook of Labor, Human Resources and Population Economics* (Drydakis).

Members also sit on the boards of several academic journals including: *Organization Studies* (Hirst), *Industrial Marketing Management* (Tzempelikos), *Journal of Business to Business Marketing* (Tzempelikos), *Entrepreneurship Theory & Practice* (Liñán), *International*

Entrepreneurship & Management (Liñán), *Journal of Global Entrepreneurship Research* (Liñán), *International Journal of Management Education* (Higgins), *International Journal of Entrepreneurial Behaviour & Research* (Martin), *Journal of Small Business Enterprise Development* (Martin), *Gender in Management* (Martin), *Journal of Rural Enterprise* (Martin), *Journal of Business to Business Marketing* (Tzempelikos), *Journal of Business and Industrial Marketing* (Tzempelikos), *International Journal for Technology Marketing* (Martin).

Members of the Unit contribute to the research base of their disciplines by reviewing:

- For journals including *Human Relations*, *Journal of Business Ethics*, *Journal of Management Studies*, *International Journal of Management Reviews*, *International Journal of Human Resource Management*
- For grant-awarding bodies including the European Commission, INTEREG, ESRC, EPSRC, H2020, Department for International Development.

Since 2014, the Unit has hosted two international conferences – the International Workshop on Burnout amongst Entrepreneurs (2016, 30 delegates, Down, Ivory, Fink), in collaboration with the Johannes Kepler University's Institute for Innovation Management, and the Regional Conference of the International Telecommunications Society (2016, 150 delegates, Giovannetti) – and has contributed to public and policy engagement through the Centre for Science and Policy at Cambridge University (Arkell, Ivory, Giovannetti), Cambridge Science Festival (Hirst, Paraskevopoulou) and the Business and Intellectual Property Centre at the Cambridge Central Library (Land, Martin, Sheng).