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<p>Institution: University of Portsmouth</p>
<p>Unit of Assessment: 19 Business and Management Studies</p>
<p>a. Overview</p> <p>The 2014 UoA19 Business and Management Studies REF submission comprises 47 staff (41.4 FTE) drawn mainly from the areas in which Portsmouth Business School (PBS) has traditionally exhibited research strength, such as Operational Research, Economics and Finance. This core is complemented by the addition of researchers in more recently established or emerging areas targeted for future growth, such as Business Logistics, Business Innovation and Growth, Employment Relations and Human Resource Management, Business Education, and Corporate Governance. The current submission includes the following research areas (staff submitted in italics):</p> <ul style="list-style-type: none"> • Operational Research: <i>Barbati, Brabazon, Brown, Chakhar, Chen, Greco, Ishizaka, Labib, Read, Ries, Siraj, Smart.</i> • Economics: <i>Apostolakis, Bjorndal, Collins, Cox, Failler, Hauck, Jaffry, Mitrokostas, Sedgwick, Sekeris, Torrisi, Wohlschlegel.</i> • Finance: <i>Antonakakis, Chatziantoniou, Floros, Kizys, Paltalidis, Pescetto.</i> • Business Logistics: <i>Bitzios, Jack, Xu.</i> • Business Innovation and Growth: <i>Borodzicz, Hultink, Modi, Trott, Wheeler.</i> • Employment Relations and Human Resource Management: <i>Bozionelos, Fontinha, Rayner, Williams.</i> • Business Education: <i>Anderson, Tymon.</i> • Corporate Governance: <i>Craig, Hines, Page.</i> <p>Research within this UoA is organised in Research Groups in traditional areas of strength, and Research Clusters in areas targeted for further development. Each group and cluster has a Research Lead who works closely with the PBS Associate Dean (Research) who provides overall leadership to, and oversees the strategic direction of, the UoA.</p> <p>b. Research strategy</p> <p>Research in Business and Management has been strategically important to the University of Portsmouth for many years. The University entered substantial submissions to the Business and Management Studies panel in the RAE 2001 (42 FTE staff) and 2008 (56.8 FTE staff). In the 2014 REF submission, a revised demarcation of sub-panel boundaries has led to the submission of law and criminal justice staff, previously part of the Business and Management submission, to the Social Work and Social Policy sub-panel (UoA22 – 24 FTE staff), with a consequent reduction in the size of the Business and Management submission.</p> <p>The strategic importance of this UoA is evidenced by the prominence of the role of Associate Dean (Research) in PBS. The AD(R) is responsible for the overall leadership of this UoA, and for ensuring coherence between the University and the UoA research strategies. He has direct access to the University and School's leadership. He is a member of PBS Executive Committee and reports directly to the Dean. He is also a member of the University Research Committee and works closely with the Pro Vice-Chancellor Research.</p> <p>The 2007-2012 PBS Research and Knowledge Transfer Strategy was designed to embed a sustainable culture of research excellence in the School. This enshrined four strategic aims as outlined in the RAE2008 submission:</p> <p><i>Aim 1: Encouragement of research excellence through effective mentoring.</i> <i>Aim 2: Development of a collaborative and interdisciplinary research culture.</i> <i>Aim 3: Provision of support to Early Career Researchers (ECRs) and selective recruitment of staff.</i> <i>Aim 4: Improvement in the volume and quality of research grant submissions.</i></p>

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Effective staff support and mentoring was a strategically important element in delivering research excellence during the REF period (Aim 1). Academic staff benefited from several schemes designed to enhance the quality of research output, such as increased support for conference attendance and travel, research leave, development grants, and a general improvement of research facilities (see section c.i). Of the staff submitted to the REF2014, eleven benefited from research leave during the REF period. Early Career Researchers (ECR) developed individual mentor-aided research plans and were targeted for particular support. This policy had the desirable effect, with five staff (*Floros, Ishizaka, Tymon, Apostolakis, Cox*) of the seven who were categorised as ECRs in the RAE2008 returned to REF2014 (Aim 3), and one of them being promoted to Reader.

Demonstrable research achievements – or potential - became a prominent criterion for all academic staff recruitment (Aim 3). As a consequence of this, the *Foundation in Research* funding scheme introduced in 2008 to help ECRs kick-start their research careers was extended to all newly appointed academic staff in 2011. These measures led to tangible improvements in the quantity and quality of papers published by staff in receipt of the allowance, with 19 papers being published in leading international journals. A Research Bid Support scheme was introduced in 2008 to support staff in the submission of proposals to external funding organisations. This was combined with a scheme introduced in 2009 to give short periods of research leave to staff who were preparing proposals to attract external research grants (Aim 4). During the REF period external research income generation significantly outstripped the year-on-year 10% growth target, and staff submitted in this UoA attracted twenty-two new KTPs (see section d). The promotion of collaborative research was also successful (Aim 2). However, the interdisciplinary collaborations were fewer than expected and in some subject areas, notably in economics and human resource management, collaboration was largely with internal colleagues in the same discipline. The new 2012-2017 PBS Research Strategy therefore places increased emphasis on the applied nature of Business and Management research in Portsmouth, and thus on the need to respond to practical challenges with solutions that require cross-disciplinary approaches.

A subsidiary objective of the 2007-2012 Strategy was to promote a research environment that enabled PBS to increase the number of doctoral students. The combined effect of improved doctoral student accommodation, the introduction of a well-funded Conference and Training Scheme for doctoral students in 2009, podcasts informing students about the 'Portsmouth Path' (<http://www.port.ac.uk/research/pbs/research%20degrees/>), the enhanced use of bursaries and scholarships, and consistently excellent student feedback via the 2011 and 2013 PRES surveys enabled PBS to double doctoral student numbers over the strategy period to over 100 students. Consequently, there was a sharp rise in the number of doctoral graduates and the number of doctoral degrees awarded per research-active staff member, up from 0.86 in the RAE2008 to 1.45 in the REF2014. Moreover, a significant number of these graduates have published papers with their supervisors in leading international journals (see section c.ii).

The new 2012-17 *Research Strategy* for this UoA seeks to build on these successes and is driven by PBS's commitment to the creation, application and diffusion of knowledge to the benefit of individuals, society and the economy. It identifies six main *strategic aims*: (i) Encourage applied research of the highest quality; (ii) Encourage external and interdisciplinary collaborations of the highest quality; (iii) Further improve the research environment in a sustainable way; (iv) Increase targeted support to our best researchers; (v) Further improve the strategic links between research and educational activities; and (vi) Deliver social, economic and cultural impact of demonstrable benefit. Progress will be monitored against a detailed action plan with a number of discrete performance indicators and ambitious targets. Examples of performance indicators include the increased proportion of academic staff who are research excellent, with emphasis on outputs of international excellence; the further development of doctoral programmes in terms of student quality and numbers, completion rates, destination of graduates, and quality publications of graduates; the number of major national and international collaborative projects led by faculty in this UoA (including the number of interdisciplinary projects); and the regular publication of new impact case studies. The strategy is also designed to encourage greater external and

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interdisciplinary collaboration with researchers at the forefront of their disciplines. Consequently, the expectation is that by 2017 a larger proportion of all research outputs published in leading international journals by researchers in this UoA at Portsmouth will be co-authored with external collaborators of significant academic standing and reputation. Actions have already been implemented to support the achievement of the expected outcomes, including: (i) a *structural re-organisation* of research activity; (ii) *improved support* for high-quality research; and (iii) *an injection of leading research expertise in key strategic areas*.

The *structural re-organisation* of research has seen the School consolidate its distinctive research strengths by creating focussed research groups in areas such as operational research and finance, while at the same time creating new interdisciplinary research groups and clusters to support development of areas such as business education, business logistics, sport management, strategy and leadership in defence, and the digital economy. Each research group and cluster has formulated its own aspirational five-year strategic development plan, with specific targets that reflect the different stages of maturity of the research area. In all cases, targets include improved quality and quantity of output, increased supervision of doctoral students, and increased external research funding. New resource has been identified to *improve the support* given to groups and clusters to deliver against targets, and to support individual staff in delivering against their individual research plans.

Finally, *new research leadership and expertise has been injected in key areas*. A number of Professors and Research Fellows have recently been appointed from across the world. Some of these appointments have been made for an initial period of three years to invigorate research in traditional areas of excellence (such as *Greco, Chakhar, Sedgwick*), or to lead and facilitate growth in strategic new areas (such as *Bozionelos, Fontinha, Craig*). This newly appointed faculty, some of whom were already collaborating with staff submitted to this UoA, are expected to lead and facilitate new research initiatives, such as international research projects, research proposals for submissions to national and international funding agencies, and generally provide support and mentoring to staff and research students (see section d). This strategy has already begun to pay dividends, with *Paltalidis* collaborating with *Collins* in capturing a NERC scoping grant, and *Fontinha* working with *Williams* to secure funding for a project on European labour market discrimination. A number of major submissions, involving international and national networks of researchers, are also in preparation.

Monitoring and reviewing strategic outcomes takes place at three levels: individual researcher, UoA, and University. First, at the level of the *individual*, in 2012 the School introduced Individual Research Plans (IRP) evidencing main research outcomes over the last five years and reporting plans for the forthcoming 24 months. This allows individual staff to self-evaluate their progress, and identify what actions and support may be required to deliver future plans. It also facilitates longer-term career planning. Annual research meetings informed by the IRP with the relevant Research Lead and the Associate Dean (Research) permits identification of personal research needs and helps direct faculty research support to complement research mentoring. Second, at the *UoA* level, Research Leads report termly to the PBS Research Committee on performance against agreed targets for specific areas. Third, the *University* reviews overall research performance against targets for the UoA every six months. All research undertaken by staff and research degree students is subject to mandatory ethical review. There is a unified research ethics application and review process across the University. PBS Ethics Committee advises on, and monitors, the process at the level of the UoA.

Six developmental priorities have been identified as necessary for the delivery of the strategic aims and they are listed below: 1-3 relate to leading research in areas of comparative advantage across the University and/or in the national/international domain; 4 and 5 relate to developing the next generation of researchers; and 6 relates to improving the physical research environment.

Taking the Research Lead – The University of Portsmouth Research Strategy 2012-17 encourages

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the development of interdisciplinary networks and centres to consolidate existing cross-faculty research collaborations and to develop new initiatives. This UoA takes the lead in:

1. The Centre for Strategy and Leadership (CeSaL). The granting of a five year £5.3 million contract from the Royal Air Force and numerous other successful initiatives with the armed forces, public services and private sector organisations has provided the springboard for a Professorial appointment to head this new Centre and led to the appointment of additional academic staff in related subject areas. The Centre will develop strategy and leadership research and provide further opportunities for exploring interdisciplinary approaches. *Strategy and leadership in defence* has been identified as one of the priority areas, given the current strong collaborations already in existence. The intent is that CeSaL will become globally recognised for its contribution to knowledge creation and the dissemination of best practice in leading-edge research and pedagogy.
2. The Centre for Crowdsourcing Research (CCR). In 2013, Cox attracted (as Principal Investigator) £750K from the EPSRC to lead an interdisciplinary research team from Portsmouth and the Universities of Oxford, Leeds and Manchester to examine the motives for volunteer participation in citizen science ventures. As a consequence, Portsmouth was invited to become the first business and management members of the Zooinverse Citizen Science Project. This success, and the number of funding streams oriented to this new multidisciplinary research field, has prompted PBS to appoint a new Research Fellow in this area. Cox and other colleagues from UoA19 are expected to play a key role in setting up a Centre for Crowdsourcing Research within the next three years.
3. The Centre for Operational Research and Logistics (CORAL). The OR Research Group is collaborating with researchers in the Department of Mathematics to set up a new cross-disciplinary OR network across the University. This is designed to foster increased research collaboration and enhance our ability to exploit applied research opportunities in OR.

Developing the Next Generation of Researchers. This UoA is strongly committed to developing the next generation of researchers, mainly from:

4. Doctoral Programmes. The PhD programme in Business and Management is already highly successful in terms of quantity and quality of graduating students (see section c.ii). While further investing in the continuous improvement of this programme, a strategic priority is to further develop the DBA programme. This strategic objective is driven by the applied nature of research in this UoA, and the emphasis on research that is business relevant and aims at finding interdisciplinary solutions to real problems. A recently established partnership with the Hochschule Reutlingen is expected to greatly improve our access to the German market.
5. ECRs and other academic staff with research potential. In 2012 an ECR support group was established and an ECR representative was appointed on the Faculty Research Committee to ensure that ECRs have a voice on strategic decisions related to research. The key priority identified by the group related to training needs. In response, PBS introduced an advanced research methods training programme in 2013 to complement the wider University provision of training in research techniques and methodologies.

Improving the Physical Research Environment (see also section d):

6. The expansion of PBS's physical space into a newly refurbished adjacent building in Autumn 2014 creates an opportunity to rethink the space dedicated to research facilities for this UoA. It is expected, for example, that all doctoral students will be located in one place with upgraded facilities and in close proximity of their supervisors. Space will also be created for an expanded Business Services Research Office (BSRO) to support staff in this UoA.

c. People, including:

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i. Staffing strategy and staff development:

The Human Resource Strategy 2012-17 of the University of Portsmouth was drawn up with a view to supporting the aims of the University's Research Strategy 2012-17. This includes emphasis on the continued development of skills profiles and a framework to identify development needs and clarify career progression opportunities. The emphasis in this UoA on investment in developing and supporting new researchers and injecting additional international research leadership is fully in line with this University strategy.

The departure during the REF2014 period of a number of long-serving academic staff, mainly teaching-focussed, opened the opportunity for a re-balancing of skills in the academic faculty. A sustainable replacement strategy in Business and Management led to the recruitment of a number of promising ECRs with excellent teaching skills in areas of expanding student demand. Many of these newly appointed ECRs are submitted to the REF2014, sharply reducing the age profile of this current submission. Notable examples are found in economics (*Mitrokostas, Sekeris, Torrisi*) and operational research (*Barbati, Brabazon, Ries, Smart*). In the REF2014 submission 13 ECRs equivalent to 27.1% of the total submission are included, while in the RAE2008 only 6 ECRs equivalent to 9% were submitted. In areas where senior researchers have retired or left, such as accounting, the loss of research leadership has been addressed by appointing new Professors, such as *Jack* and *Craig*. This recruitment pattern has allowed greater emphasis on research mentoring and support of newly appointed staff. Every new member of academic staff is assigned a research mentor and their progress and specific needs are also discussed in an annual meeting with the Associate Dean (Research). The outcome of this meeting becomes an input in the annual Professional Development Review process.

Internal promotion mechanisms reward staff who develop and sustain research excellent profiles. Since the RAE2008, *Jaffry* and *Trott* have been promoted to Professorships, and *Williams, Ishizaka, Anderson* and *Xu* to Readerships. Promoted academic staff play a key role in driving research activity and strategy forward. A Professors Forum meets monthly, and advises on research strategy across the UoA. The Forum also discusses staff mentoring arrangements, helps identify new funding opportunities and the support needed in preparing bids, and offers expert advice on research proposals and papers. Research capacity and leadership in strategic areas have also been reinforced by the recent appointment of seven Research Fellows and five Professors (see section b). Some of these recent appointments have strengthened areas of already significant capacity, such as *Siraj, Chakhar* and *Greco* in operational research, and *Sedgwick* and *Paltalidis* in economics and finance respectively. Other appointments have provided much needed research leadership and capacity in less well endowed areas.

These more recent appointments, and a growing number of Visiting Scholars, Fellows and Professors from academic institutions across the world, have sustained the UoA's commitment to internationalise research. For example, in 2012 *Collins* was awarded the prestigious Hobart Houghton Fellowship and spent the latter half of the year at Rhodes University in South Africa researching the illegal trade in wildlife. This led to a new collaboration on water-footprinting, involving three REF-submitted staff (*Collins, Chatzantoniou, and Thorpe* – submitted in UoA7). The REF2014 Business and Management Studies submission comprises faculty of sixteen different nationalities. This richness of different cultural backgrounds and academic experience has contributed to a much improved and diverse research environment, where academic staff are exposed to innovative approaches from across several disciplines. One important vehicle in achieving this is the thriving seminar programmes (see section d). Increased international exposure is also creating new opportunities for staff.

Like many other business schools in the UK, PBS has been less successful historically in addressing **gender inequalities**. While 41.7% of the School's academic staff are women, female researchers represent only 20% of the REF2014 submission (slightly up on RAE2008). The School is making a concerted effort to address this, and pro-actively encourage greater female participation and development in research. For example, seven of the twelve full-time staff currently enrolled in a doctoral degree programme are female.

All academic staff, including staff on fixed-term and fractional contracts, are treated equally and are eligible for support, as part of the University's and School's commitment to equal opportunities and individual career development. There are no category C staff in the UoA19 submission. The University is fully compliant with the *Concordat to Support the Career Development of Researchers*. Staff in UoA19 are also actively involved in the design of the University's Researcher Development Programme launched in 2013/14. This programme addresses the training and development needs of all research active staff. It complements existing initiatives, such as support for research degrees and the advanced research methods training offered specifically to Business and Management researchers (see Section d). Research-active academic staff who have been in post for at least three years are eligible to apply for periods of research leave in response to an annual call for applications.

ii. Research students

Research students are an essential component of the research strategy of this UoA. They are offered support and facilities to complete their doctorates within the prescribed time and at the highest standard, as evidenced by the quality and number of their publications in leading international journals and their career destinations. In the REF2014 period, doctoral students in this UoA published 27 joint-authored papers with their supervisors in peer-reviewed journals of international standing. The UoA's doctoral graduates are highly employable in occupations commensurate with their newly acquired analytical skills. For example, of those who graduated in the REF2014 census period Deras (graduated 2011) is now Chief Economist at the Central American Integration Bank, and Al-Sabah (graduated 2012) is the Chief of the Kuwaiti Foreign Investment Bureau. A considerable number of doctoral students are also involved in academia, either in the UK or their countries of origin. These include Harrington (graduated 2011) Director of the Centre for Applied Positive Psychology at the University of Leicester, Chapleo (graduated 2011) Senior Lecturer at Bournemouth, Baio (graduated 2010) Senior Lecturer in Fisheries Economics at the University of Sierra Leone, and Wattanadumrong (graduated 2011) Senior Lecturer at Pibulsongkram Rajabhat University in Thailand.

During the REF period the number of doctoral students increased significantly from 66 in the 2008/9 academic year to 119 in the 2013/14 academic year. Consequently the number of graduating students also increased over the period with 60 doctoral students graduating in the REF2014 period against 34 in the RAE2008 period (N.B.: these figures are revised to exclude research degree students supervised by criminal justice staff who are now submitted to a different sub-panel). The table below illustrates the annual growth in the number of students in this UoA graduating from the PhD and DBA programmes:

Academic Year	2008/9	2009/10	2010/11	2011/12	2012/13	REF2014 Total
PhD	6	5	15	15	13	54
DBA	0	0	2	3	1	6

The current research student cohort of 119 students is drawn from 33 countries and 72% of the staff submitted in the current UoA19 submission are active in research degree supervision. To counter the stagnant UK market for DBA students, PBS has developed a collaboration with the *Hochschule Reutlingen* to enrol students in Germany onto the Portsmouth DBA programme from 2014/15.

At University level, responsibility for the training of research students and supervisors has been consolidated with the establishment of the University Graduate School in September 2011. The Graduate School Development Programme (GSDP) was developed by *Anderson* (UoA19) and provides over 120 GSDP workshop events on more than 65 topics annually. These events include the development of generic research skills and transferable career development skills as outlined by Vitae and the RCUK. Since the GSDP programme commenced in October 2011, 61 research degree students from Business and Management have attended a total of 523 sessions. PBS also

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provides additional subject-specific and advanced training in research techniques and methods in line with individual needs either internally, or by funding students to attend external training courses when circumstances warrant. Training needs are determined on an individual basis by students and their supervisory teams as part of the skills analysis planning process. The participation of both students and supervisors in appropriate training sessions is closely monitored by the Chair of the Research Degree Committee.

All research students in Business and Management are expected to actively participate in the relevant seminar series, as both audience and presenters. An annual PBS Research Student Conference, now in its 8th year, also offers opportunities for presentation and discussion of their research. Attendance to external conferences is also strongly encouraged and financially supported. Students with aspirations for an academic career are given the opportunity to teach after appropriate training. Research student representatives are members of the PBS Research Committee, Ethics Committee, and the University Research Degree Committee. They are invited to contribute fully to all matters discussed by these committees, and in particular to agenda items relating to doctoral student training programmes.

The quality of the research student experience in this UoA is evidenced by the outstanding student satisfaction ratings recorded in the PRES 2011 survey. The response rate (51%) was significantly above the sectorial response rate (32%), and the level of satisfaction was above average compared to all the other UK HEIs in 47 of the 50 categories assessed by the survey. These high levels of student satisfaction were maintained in the most recent 2013 PRES survey.

d. Income, infrastructure and facilities

Research Income: The generation of external research income streams is an integral element of the UoA's strategy of maintaining a sustainable research environment. In line with several aims of the research strategy, researchers are particularly encouraged to seek funding for collaborative, international and inter-disciplinary projects. While we aim at maintaining a steady stream of funded projects from diversified sources, larger projects that offer greater economies of scale and scope, and better opportunities for spin-off research activity are preferred, although this causes variations of research income from year to year.

To support revenue generation, the new post of Associate Dean (Innovation and Business Engagement) was created in February 2011. This role is designed to facilitate access to corporate and commercial funding. TSB and SEEDA KTP supported contracts involving Stork Amsterdam and Flight Data Services (*Brown and Smart*), work conducted with SCA Community Care Services and Powertech Ltd (*Trott*), Lane Telecommunications Ltd (*Xu*), and HiCom Technology Ltd (*Ishizaka*) have consolidated our reputation for research work in the UK Hi-Tech sector and helped to more than double the income received from industry and public sector organisations between 2008 and 2012. Staff in this UoA were involved in a total of twenty-two KTP projects during the REF period. The 2012-17 Research Strategy builds further upon this success. Nominated staff members across different research areas are responsible for coordinating the further development of these funding streams. As the Table below shows, the average annual research income attributable to staff submitted in UoA19 over the REF2014 period was equivalent to £838,657, an increase of 55% over the RAE2008 annual average of £542,670 (this figure has been adjusted to exclude the contribution of criminal justice staff who are now submitted to a different sub-panel).

Academic Year	2008/9	2009/10	2010/11	2011/12	2012/2013	Total (Average)
Annual Research Income	1,071,523	605,358	592,491	1,227,074	696,836	4,193,282 (838,657)

Income from the EU has declined since the 2008/09 academic year. This was the year of completion of the Euro 3.1 million ECOST project (2005-9) led by *Failler*, which produced 102 peer-reviewed journal articles. The income stream from this source remains approximately £275K annually on average. Other examples of projects funded by the EU include several projects led by

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Failler and *Bjorndal* on the economics and management of fisheries; a project on sea defences led by *Labib*; and a project on volatility testing in financial markets led by *Floros*. Engagement with RCUK during the REF2014 period is evidenced by projects funded by NERC on climate change, and an ESRC fellowship. The new 2012-17 Research Strategy prioritises funding applications to RCUK and research appointments have been made to facilitate this (see section b). This emphasis has already paid dividends with the award of the Zooinverse EPSRC £750K (2013-15) research grant to *Cox* as Principle Investigator, a NERC funded scoping pilot study on environmental data applications (*Paltalidis* and *Collins*), and a £1.2 million TSB Collaborative award to *Brown* and *Smart* to examine operational management techniques in the food packaging industry.

Infrastructure: The *operational* infrastructure for researcher support within the Business School was strengthened substantially with the creation of the Business Services Research Office (BSRO) in November 2011. This office has grown in line with the increase in successful funding applications over the last year. It now comprises a specialist Project Manager, a Bid Writing assistant, and three technical support staff. The Faculty Finance Manager advises on all funding application costings. A new web-based approval process has reduced the internal authorisation time to a matter of days, saving researchers' time without compromising quality. This infrastructure of support has been complemented at the University level by the appointment of two additional University Grants Officers, who seek out relevant national and international funding opportunities and help applicants structure and cost applications. Researchers in this UoA have also benefited from further support through the Principal Investigators Development Programme, Grant Proposal Hothouses, and Impact Dragons Dens initiatives, which have been introduced as part of a steadily evolving University programme of researcher support. Bid quality is further enhanced by the University's Peer Review College, established in April 2012. This ensures that all bids made to RCUK and other major funding agencies are subjected to a rigorous and extensive process of internal scrutiny prior to submission. The EPSRC £750K Zooinverse bid by *Cox* was one notable beneficiary of this process of internal peer review. Cross-faculty bids, such as the successful five-year £5.3 million bid to provide training in leadership and military strategy to officers in the Royal Air Force, which also contains an element of research funding, have benefitted from the combined strengths of the BSRO and the Faculty of Humanities and Social Sciences research support team.

The *scholarly infrastructure* underpinning research takes two related forms: physical and intellectual. The *physical* infrastructure encompasses a library collection of 68,000 texts in the business and management field, and an annual book and serials expenditure of just over £0.5 million on which academic staff is regularly consulted. Research staff and students can access 361 database and journal collections, including Bankscope, ESDS, Mintel and GMID. They are supported by a Business Faculty Librarian and three assistants who offer specialist support in different business research areas. The Institutional Repository (PARADE – <http://www.port.ac.uk/library/infores/parade/>) is a digital archive that encompasses the research outputs of the University's researchers. At 31 July 2013 it contained 9,226 items, of which 1,967 (21.3%) were authored by staff active in Business and Management Studies, with approximately half of these Business and Management outputs (995) published within the REF period. The total downloads from PARADE of articles authored by Business and Management staff during the REF census period were 29,213.

The *intellectual* infrastructure is underpinned by regular seminar programmes organised in various areas of research and presented by internal and external speakers. Several seminar series, such as in Business Education, have multidisciplinary reach and staff from across the University are invited to encourage a wider exchange of research ideas and experience. This is further strengthened by longer visits by Visiting Professors, Fellows and research collaborators, such as Callado, Cicek, and Lolli in 2012/3; specialist workshops, such as the 76th Multi-Criteria Decision Analysis workshop in September 2012; and conferences, such as the forthcoming conference on the UK Coalition Government and Employment Relations (December 2013). The intellectual development of ECRs and aspiring researchers has been fortified by the creation of a University Researcher Development Programme and the accompanying PBS programme in advanced research methods training. Thirteen of the UoA19 submitted staff also actively contribute to one or

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both of the two existing multi-disciplinary University networks, namely the University of Portsmouth Environmental Network (UPEN), and the Ageing Network (UPAN).

Further support for researchers during the REF period took the form of seven 'writer lock-ins', commencing in 2011/2. Each of these extended over three days. Twenty-seven staff benefited, with seventeen published articles and eight conference papers completed as a consequence of this scheme to date. Furthermore, an International Exchange Scheme was introduced in 2010/11 to encourage transnational collaborative research with four beneficiaries to date. A Research Project Fund was launched in May 2013 to support promising new research directions, and 14 staff benefitted in the 2013 round.

Facilities: PBS has an explicit policy of supporting researchers by investing in equipment, databases, software and other facilities. Plans are also well advanced to consolidate some of the Business and Management research activity within a new £1.8 million estate development from Autumn 2014 (see Section b). At the University level, the recent purchase of PURE, a research information management system, will capture data on all research-related activities. In particular, this will provide an evidence-based tool to monitor performance against strategic objectives more effectively. At the research group level, our research capabilities in finance have been significantly bolstered by the annual £97K investment in a suite of real-time Bloomberg trading terminals fitted in March 2010. A £398K investment in Technology Enhanced Active Learning facilities is expected to have a similar impact upon the research output of the researchers in business education. The 2012-2017 Faculty Research Strategy also supports research students in this area: all research degree students have allocated office space close to their supervisor's office, and benefit from access to new dedicated space in the Graduate School, including small meeting rooms and a large teaching and development room.

e. Collaboration and contribution to the discipline or research base

The 2007-12 Research Strategy included as a main aim the development of a collaborative and interdisciplinary research culture. Interdisciplinary and international collaborations are central to both the 2012-17 University and UoA Research Strategies. The most robust and enduring international research collaborations at Portsmouth have grown from associations forged initially at a personal and/or research project level. In UoA19 the best example of this is *Failler* who, through his co-ordination of the 22 partner, 11 languages, EU ECOST project (2006-11), has subsequently led further funded projects in China, Sub-Saharan Africa, and the Caribbean, in collaboration with five of the partners involved in the ECOST project. To facilitate such collaborations, PBS invest considerable resource in supporting staff to attend international conferences, and travel to establish research partnerships. The University also provides significant support for collaborative activities that build research capacity and profile, most notably via thrice-yearly calls under the Research Development Fund. To date there have been five such calls and UoA19 staff have led three successful cross-faculty collaborative applications: (i) to examine ways of tackling gender imbalance in STEM subjects in the UK and Arab countries, with Doha University; (ii) to develop applied interdisciplinary operational research methodologies, with the University of Hamburg, TU Delft, and Ecole Central Paris; and (iii) to investigate and evidence labour market discrimination across Europe, with the Universities of Linnaeus in Sweden, the University of Lisbon, and the Polish Academy of Sciences. Success in such ventures arises from focus and grounding in academic excellence.

Examples of on-going *interdisciplinary research collaborations* include those of: *Wohlschlegel* who collaborates with Grechenig (law, Max-Planck Institute, Bonn) on collective goods; *Collins* with Pahlow (environmental engineering, University of Twente) and Snowball and Fraser (University of Rhodes) on water footprinting in South Africa; *Torrissi* with Vale (geography, University of Lisbon) on urban studies and integration; *Chatziantoniou* with Holt (ecology, University of Sheffield) on water use in agricultural production in California's Central Valley; and *Williams* with De Cuyper (psychology, University of Leuven) on time and space flexibility in work relations. Further *international research collaborations* within the same discipline include those of: *Ishizaka* with Carmargo (University of Lorraine), Ihrig (Munich), and Lolli (Modena); *Tymon* with Kerschreiter

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(Berlin); *Kizys* with *Pierdzioch* (Hamburg); *Antonakakis* with various members of the Vienna University of Economics and Business; *Jack* with *Jeronimo* and *Lopez* (Seville); *Floros* with *Alghalith* (University of the West Indies), and *Salvador* (University Jaume 1, Catalonia); *Apostolakis* with *Papatheodorou* (University of the Aegean). *Trott* has just completed a five year 0.3 secondment as Professor of Innovation and Entrepreneurship at TU Delft in the Netherlands.

One of the most successful *research collaborations with industry and commerce* in the REF2014 period has been the EU-funded SEABILLA project to define the architecture for cost-effective European Sea Border Surveillance Systems. This involved a cooperation between the *Operational Research Group* in Portsmouth and researchers at University College London and the University of Murcia in a network encompassing cutting-edge hi-tech companies from ten European countries, such as BAE Systems, SAGEM Défense Sécurité, and Thales Defence Deutschland. The aim of the project was to demonstrate the benefits that can be derived from sensors and information sharing in the fight against drug trafficking and illegal immigration along Europe's sea borders. The DEEPFISHMAN project (2008-12), in cooperation with Imperial College London, CEFAS (UK), the University of Iceland, IFREMER (France) and five other internationally recognised marine research institutes in Europe, developed a range of strategy options for European maritime nations to manage the deepwater fisheries of the North-East Atlantic. These projects influenced public policy and contributed to the overall growth of the UoA's research income. They have also enriched the local research environment by allowing the involvement of ECRs, such as *Ries*, in project design and formulation, and publication in leading international journals with highly respected international collaborators.

UoA19 staff are on the *editorial boards* of international peer-reviewed journals such as: Accounting Forum; Accounting, Auditing and Accountability; Accounting and Business Research; Fuzzy Sets and Systems; Group and Organization Management; Human Resource Development Quarterly; International Journal of Analytic Hierarchy Processes; International Journal of Design; International Journal of Human Resource Management; Journal of Business and Management; Journal of Cultural Economics; and the Journal of Product Innovation Management. In total, staff in UoA19 are currently members of the editorial boards of more than 40 peer-reviewed international journals, and during the REF2014 period they reviewed articles for 158 different leading international journals. Peer recognition of the quality of our research is also evidenced by UoA19 staff winning four outstanding paper awards at the Emerald Literati Network Awards (*Ishizaka*, 2013; *Labib*, 2012; *Williams*, 2008 and 2013) and the best paper awards in the British Accounting Review (*Jack*, 2012) and Human Resource Development International (*Anderson*, 2009). UoA19 staff have also been highly active in *international conference organisation*. During the REF period, examples include: *Xu* for the Information Management Resource Association in various US cities; *Jack* for the Management Control Association in the Netherlands; *Ishizaka* for OR-themed conferences in San Diego, Pittsburgh, Metz, Sorrento and Marseilles; *Failler* for fisheries management and trade conferences in the Seychelles, Senegal and Quebec; and *Greco* for the 23rd European Conference on Operational Research in Bonn.

Staff submitted in UoA19 also hold a wide variety of *leadership roles in professional associations* and learned societies including: Chair of the Worldfish Centre (*Bjorndal*), Director and Honorary Treasurer of the Management Control Association (*Jack*), Member of the General Council of the OR Society (*Ishizaka*), Council Member of the Universities Forum for HR Development and Deputy Chair of the Programmes/Qualifications Committee (*Anderson*), Steering Committee Member [Careers Division] of the Academy of Management (*Bozionelos*), Executive Board Member of the Cultural Economics International Association and the REPEC International Committee on Plagiarism (*Collins*), Fellow of the Operational Research Society and Institute of Engineering and Technology and member of the ABS Research Committee (*Labib*), and Accreditation Panel Chair of the PhD Project Management programme for the British University in Dubai (*Read*). Finally UoA19 staff *assessed research quality* for the AHRC, EPSRC, ESRC and NERC, the Danish Council for Strategic Research 2008-13 (*Trott*), the EU, Canadian and French Research Councils (*Failler*), the Swiss National Science Foundation (*Torrisi*), and in the 2004-2010 the Italian Research Evaluation Exercise (*Ishizaka*).