Institution: University College London

Unit of Assessment: 19 - Business and Management Studies

a. Overview

UCL's submission to UoA19 comes from its Department of Management Science and Innovation, which was established in 2007 within the UCL Faculty of Engineering Sciences. The department's vision is to become a world-leading centre of research excellence, conducting theoretical, empirical and experimental analyses of managerial, organisational, and operational dynamics in innovation-intensive organisations. The department did not submit to RAE2008 and this is its first submission to REF.

As one of the world leading research universities, UCL is a wonderful environment in which to do research. It is entrepreneurial, open, collegiate and ideally placed intellectually and geographically. The department has maximised the potential of this outstanding environment to create a world-class research environment, surrounded by other world-leading scholars in science, engineering, humanities and the arts. UCL is also in the heart of London, giving the department access to many other world-leading academic and non-academic institutions. When it was established, the department made a strategic decision to focus its efforts on those areas of business and management studies that have the highest synergy and compatibility with the research strengths of other UCL departments, and in particular UCL's Faculty of Engineering Sciences. As a result, the department has strong focus on issues related to innovation, creativity, technology management and entrepreneurship. In this context the department also acts as a partner to a recently created department around Science, Technology, Engineering and Public Policy, which will explore and improve the ways academics engage with public decision-making and policy processes across all levels, sectors and cultures of our now globally interdependent societies. This new department is headed up by Professor Brian Collins, formerly Chief Scientific Advisor for the UK Department for Transport and the Department for Business innovation and Skills.

The department currently has 15 category-A academic staff members (2 professors and 13 lecturers). As the department is still young, many of the academic staff are early-career researchers. Nevertheless, the department is already a vibrant and emerging academic unit within UCL. The department's strategic plan includes the provision to recruit 20 more academic staff over the next five years, more than doubling its current size. The department's research is organised in two research groups, Strategy & Organisations, and Management Science & Operations. The Strategy & Organisations group has 9 members and is headed by Prof Martin Kilduff, who is also the Department's Director of Research. The Management Science & Operations group has 6 members and is headed by Prof Bert De Reyck, who is also the Head of the department.

- Strategy & Organisations: The S&O research groups draws on the behavioural sciences to explore how to design and manage innovative organizations. It examines the emergence, management, and consequences of new ideas, products, and processes across the individual, team, organization, and industry levels of analysis. For example, the diverse set of issues of interest to the department include the establishment and growth of entrepreneurial firms, managing creative individuals and teams, network structure and perception, promoting organizational learning, and strategy in innovative and technology-based firms. The group relies on various research approaches, drawing from psychology, organizational behaviour, strategy, and sociology to provide insight into these issues.

- Management Science & Operations: The MS&O research group focuses on the design and management of value-creating innovative systems and processes. Its science-based approach aims to help organisations develop better systems and make evidence-based managerial and operational decisions. The research employs analytical, mathematical and empirical methods to address critical questions, develop and validate theories with regards to operational dynamics, innovative practices and underlying technologies in complex business environments. The group employs a diverse set of methodological approaches, including managerial economics, decision theory, game theory, econometrics, and optimization.

The department has been able to create a world-class research environment, through the following mechanisms:

- Excellent academic staff: We have recruited 15 internationally leading scholars from top universities such as Harvard, Stanford, Cambridge, Columbia, Northwestern, UCLA and London Business School. Our faculty is also truly global, with members from Asia, Europe, North and Latin America, and the Middle East.

- Retention of staff: Since its inception, only one of the academic staff has left the department, to take up a position as Dean at a top US business school.

- A focus on high-impact research, published in top-tier international journals. The department is truly proud of the fact that every single member of academic staff managed to publish their research in the absolute top journals in their field, indicating the world-class nature of the faculty in the department.

- Strong central support: We have made optimal use of strong support from the college and the engineering faculty in which we reside to manage expansion and development.

- Strategic vision: We have a strategic vision of our distinct role in the development of the international research agenda that informs all our activities.

- Outstanding Infrastructure: We have a first-rate organisational and physical infrastructure enabling us to engage in world-leading research, attract funding and high levels of engagement from all sectors of academia, business, finance, industry, and government.

- Comprehensive staff support: We have an excellent staff support and development culture and processes that impact our researchers at all stages from lecturer to professor.

- Wide engagement: Our research is informed and developed by rich interactions with industrial sectors, policy makers, and the government.

b. Research strategy

The main objective of the department is to become a global leader of research excellence in the management of innovation-intensive organisations. To achieve this, the department requires research produced by its academic staff to be world leading, and meet the highest standards of originality, rigour, significance, with a focus on results that are relevant, impactful and influential. To support its strong research commitment and to provide an appropriate research environment, the department uses the following policies, incentives and resources:

1. Each research group has a set of top-tier journals designated as the main targets for publication. Publications in these journals and their impact are the main criteria for research output as well as promotion. The targeted journals include management journals such as Management Science, Operations Research, Organization Science, POMS, Academy of Management Journal, Organisational Behaviour and Human Decision Processes, but also journals from other disciplines such as the Journal of Applied Psychology, the Journal of Experimental Social Psychology, Nature, Science, PNAS and PLoS One, which reflect the interdisciplinary nature of the department's research. Additionally, the department sees value in publishing in high-quality practitioner-oriented outlets such as Harvard Business Review or Interfaces. Despite the young age of the department, the department has succeeded to publish in each of the outlets mentioned above, which is quite a remarkable achievement.

2. The department takes full advantage of the world-class research facilities and infrastructure that UCL offers. For example, researchers have full access to all the experimental facilities (including subject pools) of the world-leading UCL Division of Psychology and Language Sciences and Department of Economics. Also, by being embedded in a world-class Engineering Faculty, the department benefits from collaborations with the other 9 engineering departments, especially Biochemical Engineering (drug development and commercialisation), Computer Science (social networks, business analytics, and optimisation), and Civil, Environmental and Geomatic Engineering (project management). The Head of the Department of Management Science and Innovation interacts with the engineering departments through bi-weekly meetings,

chaired by the Dean of Engineering. Beyond engineering, the department also collaborates with the world-leading departments of Psychology, Economics and Statistical Sciences. Finally, the Department will benefit from UCL's planned tens of millions of pounds investment to further improve the library infrastructure in the Arts, Humanities, Social Sciences, Medical Science, Science, Engineering, and Management.

3. The department has created a vibrant research community, with a young but ambitious PhD programme, a successful seminar series, and a number of world-leading visitors:

a. Each research group organises weekly reading group meetings, in which members of academic staff, research fellows and advanced PhD students present their research in progress. The suggestions gathered during these meetings have proven to be very valuable, ensuring that the department's research is world-leading and impactful.

b. The department runs a visiting scholar programme, with distinguished and young promising scholars being invited to spend time in the department in order to foster research excellence through collaboration and exchange of ideas. Past scholars include Stephen Barley and Thomas Byers (Stanford) and Andrew Schaefer (Pittsburgh).

c. The department runs a research seminar series with external speakers, designed to facilitate their interaction with members of the department. Past prominent speakers include Max Bazerman and Teresa Amabile (Harvard), Stephen Barley (Stanford), Sigal Barsade (Wharton), Will Maddux (INSEAD), Madan Pillutla (LBS), Brian Little (Cambridge) and Tim Morris (Oxford).

4. Following UCL's enterprise strategy, the department integrates entrepreneurship in its research activities and this has imparted a distinctive flavour to its research and research education. The department has created a dedicated fund of £50,000 per annum to invest in start-ups created from research developed by students and staff. In addition, these start-up companies are given space alongside research groups to develop their ideas. For example, Vungle, a mobile video advertisement company powering world largest apps and games, was created in 2011 by students using technology developed in collaboration with Prof De Reyck. This company, which received seed funding from the department, is now located in San Francisco and London and has recently received $6 million Series A funding from major venture capital firms in Silicon Valley.

The above achievements are quite remarkable if one considers that the department is only 6 years old. As the number of academic staff members increases over the next five years, we expect many of current research activities to grow and flourish, giving them even more depth and breadth. We will also further enhance our research capabilities and infrastructure with the creation of dedicated research centres. We expect these centres to be interdisciplinary and push the boundaries of management research, and provide an intellectual exchange place for researchers and non-academic community at large. Given the success of our research endeavours in complex projects and organisations, the first of these centres will be focused on the management of complex systems, in a joint effort with the UCL Department of Statistical Sciences.

c. People

1. Staffing strategy and staff development

The department's staffing strategy consists of hiring only the most distinguished scholars and most promising young academics from the most rigorous PhD programmes from the top global business schools and industrial engineering departments, and providing an environment that allows them to achieve their full potential in terms of producing research that is world-leading and impactful.

a. The department currently has 15 category-A academic staff members (2 professors and 13 lecturers). All of these members have been recruited from top schools, including Stanford, Harvard, Columbia, Cambridge, London Business School, Northwestern, and UCLA. The department's strategic plan includes the provision to recruit 20 more academic staff over the next five years.

b. Reflecting the nature of modern business and management, the composition of the academic staff is truly global. More than 75% are non-British citizens, and all British citizens have at least one other nationality. Approximately 30% of the academic staff is female, and the department has a strict commitment to equal opportunities in the recruitment of research staff.

c. Following UCL policy and guidelines, the department has a clear procedure for career development, and a rigorous promotion review process for junior academic staff. The review process includes an interim review after 3 years' appointment and a major review after 7 years. During this period, they are also subject to annual appraisals to set research targets, provide research guidance, identify potential areas of concern, and to discuss other aspects that contribute to a successful research career, as well as teaching, enabling and knowledge exchange with the non-academic community. An important criterion used for appraisal and promotion is the staff member's involvement with knowledge exchange, i.e., their contribution to and impact on business, society, policy makers and the broader community. The department considers knowledge exchange activities to be an integral part of excellence in research as described in a greater detail in REF 3a.

d. In order to achieve its vision of becoming a world leader for research and impact, the department keeps the teaching load of its academic staff low, typically around 60 contact hours per year, with flexibility to concentrate teaching duties within short periods of time in order to create large blocks of uninterrupted research time. In addition, each member of academic staff is given an annual research budget that enables them to attend international conferences and collaborate with researchers around the world.

e. Early-career researchers are assured that the development of their research careers is our first priority. This is made manifest in a number of ways: allocating start-up funds that can pay for any research expenses as well as support their travel and subsistence for conferences, workshops and other research meetings; a guaranteed fully-funded PhD student; ensuring the transition to a full academic position does not interfere with their research momentum by limiting their teaching to just one course in their first year. Furthermore, we allocate each new recruit an academic mentor to advise on all matters that affect their work from understanding local administrative procedures to taking a strategic view of their research goals.

f. The department offers market-competitive salaries, which enables the recruitment of leading scholars in the field, as well as promising junior faculty, from top universities including top business and engineering schools.

2. Research students

The department's PhD programme was set up in 2008 to provide rigorous research training to a select group of highly motivated and talented students interested in pursuing an academic career as a faculty member in a top business school. The Department offers fully funded scholarships to all of its students. PhD students are first enrolled into a one-year Masters of Research programme and must successfully take several advanced research-oriented postgraduate courses showing their capability to continue into the four-year PhD programme.

Given the interdisciplinary nature of the research performed in the department, the PhD programme offers access to a wide variety of courses not just in the department itself, but also in other UCL departments (notably economics and psychology) and other London-based universities (notably London Business School and LSE). This gives the PhD students access to the best courses, and also to world-leading faculty in other departments and universities. Similarly, students from those other departments and schools also take PhD courses offered by the department. For instance, the course "Organisation Science" by Prof Martin Kilduff is attended by students and researchers from London Business School, LSE and Cass, and the course "Social Network Analysis" by Dr Soong Kang is attended by students and researchers from UCL's psychology, computer science and archaeology departments, as well from London Business School.

Since the department's PhD programme was introduced in 2008, the department has had 8 PhD students, with the first ones graduating in 2013. The intake has been gradually increased between 2008 and 2013, in line with the recruitment of academic staff. The 2013 intake was 5

students, which will be ramped up further as the department expands, to a steady-state intake of 10 students per year. Despite this significant growth, however, the department believes that the PhD programme should be kept at a relatively small size, ensuring that that each student receives personal attention and guidance from our faculty members throughout their doctoral study. We strongly believe that close mentorship process forms the foundations of a successful academic career. All doctoral students are guided by at least two supervisors. Supervisors and students both assess the progress of the research and the effectiveness of supervision through progress reports twice a year to the Director of the PhD programme. These are designed to ensure that any difficulties or specific needs can be identified and resolved at an early stage. In addition, all research students are required to record all key stages of their progress on UCL's online Research Student Log. The online log is designed to monitor each student's progress, but it also helps to identify skill gaps and direct them to specific training courses. The Research Student Log is a mandatory requirement of all UCL research degree programmes.

In order to ensure that graduating PhD students are able to compete for faculty positions at top global business schools, the department requires the students to:

- Attend and present papers at international conferences, for which the department provides funds. In 2011, one student received the Academy of Management Organizational Behavior Division's Most Innovative Student Paper Award.

- Spend at least a semester, and up to a year, in a top business school in the US as a visiting scholar. Previous visits include the University of Chicago, Michigan University and Boston University. This initiative, fully funded by the department, ensures that PhD graduates are connected to top scholars in the US as well as the UK, which is important for ensuring their success as early-career lecturers.

- Interact with industry, to ensure real-life impact of their research. For instance, PhD students have worked with the Department for Transport, Network Rail, the Noble Group, and start-ups in London and Silicon Valley.

- Have at least one paper in an advanced review round for a top journal before graduation.

As a result of the department's collaborative efforts, academic staff also supervises PhD students from other UCL departments. Finally, in addition to the PhD programme, the department also has a thriving postdoctoral research programme, with currently 5 postdoctoral researchers.

d. Income, infrastructure and facilities

The department's research activities are mainly funded internally through teaching revenues (which increased from £1.5 million in 2008 to £9 million in 2013, 65% of which is re-invested in the department), and therefore do not rely heavily on external grant income. Nevertheless, the department has been very successful in attracting funding, with a total research grant income of £710,811.91 during the REF period. The received funding includes grants from the Technology Strategy Board (£270,796), ESRC (£221,610), and the Centre for Science Enterprise (£189,134). The department also receives industry sponsorship to support its research activities, especially for projects with a high impact component. Examples of such sponsorship include the European Commission, the UK Department for Transport, Dunlop Aerospace, Eaton Aerospace, and Phytopharm, which is used to fund PhD students, postdoctoral researchers and to provide dedicated research time for faculty members.

The department has also developed strategies for both generating grant income and supporting the research environment. It has a dedicated Research Facilitator (Dr Jong) who has extensive experience of attracting research funding from the TSB, ESRC, NESTA and BIS. He forms the Department Grant Review Team, together with Director of Research and Department Manager.

The department has several specialised support staff as part of its research infrastructure. In addition to administrative support staff and IT specialists, the department employs several research assistants. They can be long-term or short-term support staff who possess deep knowledge in specialised areas necessary to support outstanding research such as specialised software,

database and methodologies.

In 2014, the department will move into a new state-of-the-art building dedicated to the department, which will offer opportunities to further improve our staffing strategy and staff development by enabling further substantial growth, inviting world-leading scholars and the creation of research centres.

e. Collaboration or contribution to the discipline or research base

The academic staff of the department collaborate closely with researchers around the world, to ensure global relevance and impact of their research. The department provides funds to enable such collaborations. Academic staff have co-authored with researers from schools such as Harvard University, Stanford University, University of Pennsylvania (Wharton), Columbia University, Northwestern University, Carnegie Mellon, University of Michigan, UCLA, University of Virginia, University of Texas, London Business School, Norwegian School of Economics, CNRS France, Singapore Management University, and Melbourne Business School.

The department also collaborates with non-academic organisations on major research projects, including the European Commission, PwC, the Department for Transportation, Network Rail, Transport for London, Eurocontrol, and the Noble Group. Examples of such projects include (a) Prof De Reyck's project with the European Commission's Single European Sky initiative, evaluating and selecting operational improvements in order to redesign the European air traffic network by 2020, (b) Dr Chapman's work with London's Inward Investment agency in order to analyse and optimise London's position in the world as a leading place for business investment, (c) Dr Jong's project (supported by a £1.2 million of Technology Strategy Board grant) with Lonza Biologics and Janssen Pharmaceuticals on commercializing regenerative medicines and new diagnostic platforms for Hepatitis, (d) Prof De Reyck's collaboration with the UK Department for Transport and Network Rail on improving forecasts of investments required for major UK infrastructure projects such as HS2, (e) Dr Kang's work on social network analysis with Transport for London, analysing people's movements across the capital using Oyster card data, and (f) Prof De Reyck's project with the Noble Group, on optimising their transhipment operations. Members of the department also work with several organisations to exchange research ideas and provide training, including Roche, Merck Serono, Shire, Lloyds, Oman Oil, and Continental.

Members of the department act as editors on a variety of journals, including Administrative Science Quarterly, Academy of Management Journal, Journal of Organizational Behavior, and the Strategic Management Journal. They are also active as referees for grants, including for the National Science Foundation (US) and ESRC, and are frequently invited as keynote speakers at international conferences.