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RECRUITING AND RETAINING EARLY CAREER RESEARCHERS

How the Entrepreneurial University Should Overcome Barriers to Recruiting and Retaining

Early Career Researchers

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Abstract

This paper will identify barriers to recruiting and retaining early career research talent in higher education today, and consider how to overcome these barriers. The need for a pipeline of research staff is being driven by a requirement for higher education institutes (HEIs) to commercialise their knowledge and research findings in support of socio-economic objectives, and to compensate for the ongoing reduction in state funding. Using the concept of the entrepreneurial university as a lens, this paper describes how higher education must adopt to significant forces for change, which if left unchecked, will outrun their ability to respond. To further understand the issues surrounding the recruitment and retention of early career researchers, interviews were conducted with principal investigators in Dublin Institute of Technology (DIT). This indicated a degree of correlation with the literature on issues such as pay and conditions, and the attractiveness of the competing universities for undertaking research. A further round of interviews with Human Resource (HR) managers in the TU4Dublin Alliance provided additional perspectives on this issue, and considered how to make research a more attractive career. This paper notes the necessity for HEIs to develop a workplace that will nurture, support, and harness research talent in order to fulfil strategic objectives, and concludes with a number of recommendations which have emerged from the research.

Keywords: recruiting, retaining, barriers, career, workplace, researchers, human resource, Dublin, institute, entrepreneurial, higher education

How the Entrepreneurial University Should Overcome Barriers to Recruiting and Retaining
Early Career Researchers

Introduction

In today's rapidly changing and highly competitive global economy, the value of a university education has never been as great (Crow, 2008). With professional careers shaped by frequent changes in job, occupation, and location, graduates today must adopt an entrepreneurial mindset in order to think and act, both locally and globally, and Higher Education Institutes (HEIs) have a key role to play in developing this capacity (EC, 2006; Rajan, Van Eupen, & Jaspers, 1997). However, pressure for change is also affecting HEIs which must wrestle with the problem of what role should higher education fulfil in society today (Shattock, 2005). Various societal needs have been identified, including the application of research to support industry, to generate regional and national economic development, and to increase social mobility (Etzkovitz, 2003; Hannon, 2013). Consequently, the pursuit of such a diverse range of needs has presented higher education with a number of significant challenges, which must be responded to if it is to remain relevant in the global economy. One approach that has been widely reviewed in the literature is that of the entrepreneurial university, which encompasses "an organisational framework that encourages fluid action and change orientated attitudes" (Clark, 2004, p. 174). Within such a framework, an enabling infrastructure can be created that will encourage innovation, and allow organisational barriers to be overcome.

Using the OECD definition of researchers as "professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems, as well as in the management of the projects concerned" (2016), this paper will focus solely on those individuals who are in the early stages of their research career within Irish higher education. Such researchers are typically attached to posts such as research assistants and postdoctoral

researchers (postdocs). The ongoing recruitment and retention of these researchers is of concern to HEIs if they are to fulfil socio-economic objectives, as well as compensate for the ongoing reduction in state funding. By using the entrepreneurial university as a lens, this paper will consider the barriers to recruiting and retaining early career researchers in HEIs today. This will be informed by research undertaken in 2015, where a number of Principal Investigators (PIs) were interviewed as part of a Masters in Business Administration (MBA) consultancy project. Having identified some of the key barriers, a further question explored is how the entrepreneurial university should overcome these challenges to ensure a sufficient pipeline of research talent is in place. This issue is of particular relevance to the development of the Technological University for Dublin, where a strengthened research capacity will support the intellectual capital of the Greater Dublin Region (TU4Dublin, 2014).

Methodology

This paper employs a philosophical approach based on interpretivism, which is seen as particularly relevant for business and management research, especially in fields such as organisational behaviours and human resources (Saunders & Lewis, 2012). The research tool applied was a case study of an Irish HEI: Dublin Institute of Technology (DIT). A number of semi-structured interviews were undertaken with five principal investigators (PIs) to identify barriers to the recruitment and retention of research staff. The use of interviews was preferred owing to the rich data, experiences, and attitudes which are not generally accessible when working with large surveys (Mason, 2002). Following the interviews, a survey of researchers was conducted to identify any correlation with the views expressed by the PIs. A further round of interviews was undertaken with senior Human Resource (HR) managers in the TU4Dublin Alliance to consider how such barriers could be reduced in order to make a career in research more attractive

The Changing Environment in Higher Education

The forces of globalisation and localisation have had a huge impact on Western markets, as evidenced by the increasingly heterogeneous nature of consumers, changes in technology that have reduced communications and transport costs, and a diminished “physic distance” separating global supplier and customer (O’Driscoll & Murray, 1998, p. 394). Consequently, HEIs are increasingly being judged by the ways in which they respond to the social and economic needs of society (HEInnovate, 2012). However, uniquely amongst state institutes, HEIs are open to the influence of global ideas through the mobility of faculty and students, and also to their role within higher education (Shattock, 2005). Today, some of the most significant changes facing higher education are noted below.

Increased participation. Over the past two decades, all European HEI systems have had to expand rapidly to meet a growing demand for places (Shattock, 2005). In Ireland, two-thirds of young people expect to enter higher education, compared to 5% of those born in the 1950s (Clancy, 2015). Demand for full-time higher education is expected to grow in Ireland by 28% between 2013 and 2028 (DES, 2014). Such students are becoming more demanding in their expectations for an education that will suitably prepare them for employment (Gibb, Haskins, & Robertson, 2009).

Reduced funding. Today, HEIs are coming under increasing pressure, not just to cut costs, but to simultaneously increase both productivity and the quality of teaching and learning (Sarrico & Melo, 2012). This is particularly evident in Ireland where up until the Global Financial Crisis of 2007-2008, the state provided 84% of the cost of higher education (Cassells, 2016). In spite of a larger student cohort paying an increased student contribution, total income per student has since dropped 22% across the sector (Cassells, 2016). The impact from such a drastic reduction in funding is “exceeding the capacity of many

institutions to respond” (HEA, 2014, p. 27). Consequently, HEIs have had to generate a growing percentage of their income from alternate sources (Shattock, 2005).

Support for national and supranational agendas. There is a certain irony in that while funding for higher education has declined, the level of state input has increased. Within Ireland, the National Strategy for Higher Education to 2030 has recommended the development of key performance indicators against which each HEI will be measured, and funding decided (Hunt et al., 2011). It has also called for the consolidation of Institutes of Technology, with some being designated as Technological Universities. Furthermore, “universities have been challenged to rethink the way they operate by a number of European initiatives” (van der Hijden, 2014, p. 20). Perhaps the most well-known and influential of these is the Bologna Declaration, which in seeking to improve the comparability and compatibility of different education systems, has signalled an increasing role for the European Commission in shaping higher education (Keeling, 2006; Marquardt & Wiesmeth, 2013).

Globalisation. HEIs are becoming increasingly competitive internationally as a way of raising their profile, developing partnerships, and attracting a higher quality of faculty and students (Gibb, Haskins & Robertson, 2009). This is also being driven by the growing importance attributed to ranking lists which has driven HEIs to differentiate themselves by joining the elite institutes (Hazelkorn, 2014; Sarrico & Melo, 2012). In recent years, there has been a sharp decline in the rankings of Irish HEIs, prompting Tom Boland, former Chief Executive Officer of the Higher Education Authority (HEA) to comment that “for all their flaws, [rankings] reflect international perceptions and we should take note of concerns that our universities are not in a position to compete” (Humphreys, 2014).

Against such macro-level challenges, a more competitive market amongst HEIs has emerged. This competitiveness has arisen with the development of a “third mission” for

HEIs, where in addition to their existing missions of teaching and research, they must support economic and social development through the commercialisation of knowledge and research findings (Altman & Ebersberger, 2013; Etzkowitz, 2003).

The Development of the Higher Education Research Mission

Up until the 1970s, universities were seen as providers of the fundamental science that business would draw upon as needed to solve industrial problems. It was the stereotypical ivory-tower where isolated scholars could pursue their intellectual agendas without regard to “real-world” relevance (Berman, 2011, p. 9). The perception of a widening innovation gap between Japan and the US, and subsequently the US and Europe, helped spread the idea that scientific and technological innovation could serve as engines of economic growth (Berman, 2011). Within Europe, the response has been driven in a top-down manner with a European Commission (EC) white paper calling for a greater focus on growth, competitiveness, and employment (EC, 1993) This paper highlighted the need for increased research funding, improved coordination between research bodies, and better exploitation of research outcomes.

Within Ireland, a programme for research infrastructure has provided €1.2bn in competitive funding between 1998 and 2015, thereby allowing HEIs to build up their research infrastructure, and develop the careers of researchers (Doran, Jordan, & O’Leary, 2012). While this funding has contributed to a significant increase in Ireland’s international reputation for research, it has coincided with a period of national economic crisis (HEA, 2014). With the current economic situation gradually improving, the Irish government has signalled a need for research excellence in strategically important areas that will benefit the economy and society. However, an improvement in funding remains a challenge, particularly if Ireland is to achieve a national target of investing 2.5% of GDP in research by 2020 (DJEI, 2015). This continues to fall short of European Union (EU) goals, with the Europe 2020

strategy calling for an investment of 3% of the EU GDP in research and development (EC, 2010).

To help incentivise research innovation that will generate products with commercial viability, the EC has launched a series of framework programmes (FPs). The current iteration of this programme, Horizon 2020, is the largest to date with an estimated €80bn of funding. The Irish government has signalled its intention to secure €1.25bn of this funding, which would double the level secured under the previous FP7 programme (DJEI, 2015). However, the attainment of such a goal in a highly competitive environment is heavily dependent on the creation of an enabling infrastructure under which research can flourish. Therefore, HEIs attempting to secure research funding from sources such as Horizon 2020 must position themselves as being attractive to potential researchers, and a number of difficulties have emerged in trying to achieve this. These are explored in more detail in the next section.

Challenges in Recruiting and Retaining Researcher Talent in Higher Education

It is easy to overlook the amount of research being undertaken within higher education today. Shattock (2010) cites reports that universities are responsible for 80% of the fundamental research conducted in Europe, and employ 34% of active researchers. Furthermore, the need for skilled research staff has been stated in several government strategies which call for a pipeline of talent to support industrial innovation (DJEI, 2015; HEA, 2015). Consequently, HEIs have joined the frontline in the “war for talent” as nation economies compete in a global environment (Gilliot, Overlaet, & Verdin, 2002). However, it has been suggested that within Irish higher education, researchers are the group that suffer most from insecure employment (Cush, 2016). From the data collected by this author in 2015, there was agreement amongst PIs that DIT is currently experiencing difficulty in recruiting and retaining early career research staff, and that this was having an impact on the

fulfilment of research goals. Some of the key challenges identified by the interviewees are noted below.

Pay and conditions not attractive. There was broad agreement amongst PIs that the use of fixed-term contracts created a significant challenge in attracting early career researcher staff, particularly if the research funding was not guaranteed beyond one or two years. Also, remuneration was seen as a barrier due to the availability of better pay and conditions in the private sector. The inability of DIT to admit researchers to the Institute's pension plan, in contrast with the universities, was also viewed as a concern.

The appeal of the university sector. The attractiveness of the competing university sector for conducting research was identified as a significant challenge by most of the interviewees, with DIT considered to have a greater focus on undergraduate teaching owing to its vocational mission. There have also been recommendations in the National Strategy for Higher Education to 2030 that the proposed Technological Universities (TUs) should continue to place greater emphasis on providing education from certificate to honours bachelor degree level, and that research should continue to be concentrated within the existing university sector (Hunt et al., 2011).

Recruitment bureaucracy. While all interviewees agreed that the recruitment process for researcher staff was fair and transparent, the length of time required to make an appointment was deemed to be affecting research projects. Concern was expressed that DIT may be placing itself at a competitive disadvantage by the manner in which it is interpreting legislation governing the appointment of researchers. An example cited was the use of two rounds of interviews if a candidate from the European Economic Area (EEA) was not selected in the first round. Consequently, the growing complexity of the recruitment process has made it "extremely cumbersome and time consuming" for PIs (O'Reilly, O'Kane,

Cunningham, Maciocha, & Mangematin, 2010, p. 20). However, the development of a HR business partner programme was considered helpful in navigating the recruitment process.

Lack of knowledge sharing. It was noted by interviewees that departing research staff take considerable expertise with them, and there were missed opportunities in commercialising this knowledge. One interviewee noted that the beneficiary of PhD research would be the university receiving a postdoc - not the graduating university. Furthermore, concerns were raised that the productivity of research staff declined as they entered the final year of their contract, and presumably planned their next role.

Having documented several barriers identified by PIs, a survey tool was circulated to a subset of DIT researchers to establish if the concerns of PIs were also shared by the researchers themselves. The findings of this survey indicated consensus between PIs and researchers on a number of issues including exclusion from the Institute's pension plan, a lack of career options for researchers, and delays in the recruitment process. Researchers were also asked to identify issues that had not been highlighted by PIs, and the main items of concern that they raised were:

- A lack of recognition for work performed
- Limited opportunities for personal development, and to learn new skills
- Lack of representation
- Insufficient access to research facilities

While this survey of researchers is comparatively small, the findings are comparable with similar surveys of postdocs in the UK and The Netherlands. These surveys show high levels of dissatisfaction due to the uncertainty of future academic prospects for postdocs, as well as not being given enough responsibility, and a sense of being used by the system (CST, 2007; van der Weijden, Teelken, de Boer, & Drost, 2016). Therefore, if barriers to a career in research, such as those listed above, are to be addressed, then there must be widespread acceptance within HEIs of the need to develop a 21st century workplace that will nurture, support, and harness talent in order to fulfil strategic objectives. This will require the creation

of an infrastructure that is both enabling and innovative, something that has been described in the literature as the entrepreneurial university.

The Emergence of the Entrepreneurial University

The traditional model for managing universities has been the collegial approach of a community of scholars backed up by a powerful academic council (Gibb et al., 2009). However, this approach has been criticised for a lack of accountability, and a failure to make hard choices (Felt & Glanz, 2002; Shattock, 2010). As the public sector embraces a “managerialist” approach with greater emphasis on performance appraisal, increased efficiencies, and cost-cutting, so too has there been a transition in higher education from ivory tower to managerialist university (Ackroyd & Ackroyd, 1999; Rhodes, 1991). With HEIs becoming increasingly aware of the need to differentiate themselves in a highly competitive market, the paradox of delivering high-quality education and low cost has emerged, with universities trying to resolve this through “the ivory tower within the mass university” (Sarrico & Melo, 2012, p. 92). In the face of such challenges, Clark has suggested that the demands on universities are outrunning their capacity to respond, and has called on HEIs to be more entrepreneurial, and to reduce their reliance on state funding (1998).

While the concept of an entrepreneurial university as a model for higher education has been in existence for some time, there is not yet shared agreement within the literature on its meaning or identity (Hannon, 2013). Consequently, it should be seen more as a model in which the internal processes and capabilities of a HEI can be aligned to the needs of stakeholders and the external environment through agility, flexibility, and responsiveness (Jameson & O’Donnell, 2015). It was noted by Drucker (1985) that the entrepreneur uses innovation as a means to create value, and this model can be applied to entrepreneurial universities, where value is realised in terms of economic, societal, cultural, and technological benefits (Jameson & O’Donnell, 2015). While the notion of an entrepreneurial

university has received criticism for an over-reliance on the views of senior management (Deem, 2001; Smith, 1999), as well for reducing academic freedom to undertake basic research (Albert, 2003), the concept has been embraced by Irish policy makers who have outlined a vision of Irish higher education being one of the most entrepreneurial knowledge systems in the world (HEA, 2015).

As evidence of its intention to face the challenges and opportunities presented, DIT and its partners, the Institute of Technology Tallaght (ITT Dublin) and the Institute of Technology Blanchardstown (ITB), have formed the TU4Dublin Alliance, and have declared their objective to amalgamate, and to subsequently apply for designation as a TU. The philosophy of the TU4Dublin is to be “an ‘entrepreneurial’ university always seeking to add value..., engaging in imaginative initiatives to increase income diversity and optimise resources” (TU4Dublin, 2014, p. v).

It has been suggested by Drucker (1985) that the entrepreneur “always searches for change, responds to it, and exploits it as an opportunity” (p. 25). Similar sentiments are echoed in the TU4Dublin implementation plan (2014) which notes that “inefficient and rigid systems and processes will not support the timely and flexible responses necessary to exploit opportunities as they arise” (p. 96). Therefore, in considering opportunities to improve the recruitment and retention of early career researchers, it may be worth noting some of the current initiatives to increase the attractiveness of a career in research.

European Initiatives to Improve the Attractiveness of Research as a Career

One of the objectives stated in the Lisbon treaty of 2007 is to create “a European research area in which researchers, scientific knowledge and technology circulate freely, and encouraging [the EU] to become more competitive” (OJEU, 2016, p. 128). To support this objective, a number of priority areas for the ERA have been identified, such as increased investment in research and gender equality. Also of interest is the creation of an open labour

market for researchers where barriers to researcher mobility, access to training, and attractive careers are removed (EC, 2012). Under this broad heading are a number of initiatives which research organisations are invited to implement. Those of most relevance to this paper are described below.

Human resources strategy for researchers (HRS4R). This strategy assists research organisations in fulfilling the principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers. Since its publication in 2005, the charter and code have been endorsed by 1,200 organisations (van der Hijden, 2014), including both DIT and ITT Dublin. Implementing HRS4R requires participants to assess their compliance against the charter and code, and publish an action plan to address gaps. Once the plan is acknowledged by the EC, organisations have the right to use the “HR Excellence in Research” logo, subject to on-going assessment. Appendix A outlines out the “strengthened” HRS4R process which is due to take effect on January 1, 2017. To date, over 260 European organisations have been awarded HR Excellence in Research status, and while the benefits are primarily for researchers, it allows HEIs to publicly demonstrate their support for researchers, and provide a competitive advantage in attracting the best talent (Synnott, 2015). Implementation of HRS4R is currently voluntary, but Article 32 of the Horizon 2020 Model Grant Agreement notes that beneficiaries must implement the charter and code, or face possible reduction of a grant (EC, 2015). However, there is no evidence to date of HEIs losing funding as a result of non-implementation of the charter and code

Mobile pensions for researchers (RESAVER). Within Europe, there is a concern that top researchers will not move to other countries if their existing pension will not follow them, and they might not wish to accumulate multiple small pensions. This barrier to mobility has prompted the EC to develop RESAVER, a pan-European, defined-contribution pension fund that will facilitate the movement of researchers across different organisations and

countries during their career (van der Hijden, 2014). The RESAVER scheme is due to go live in late 2016 with a small number of European universities participating in a pilot scheme. However, a more fundamental issue in Ireland concerns a significant difference that exists between research posts in the university sector, and those in the Institutes of Technology (IoT). In the former, research staff have an entitlement to future benefits from their university's pension scheme, and externally-funded posts must include an employer's pension contribution. However, the IoT sector is currently prohibited from admitting researchers to the pension scheme without the prior approval of both the Department of Education and Skills, and the Department of Public Expenditure and Reform

The scientific visa package for third-country researchers. Under this scheme, researchers from outside the European Economic Area (EEA) no longer require a separate work permit to take up a research post with an accredited research organisation. Instead, such organisations can issue hosting agreements to third-country researchers directly without seeking prior approval from government departments (DJEI, n.d.).

Having documented some of the barriers identified by PIs to recruiting and retaining early career researchers, as well as noting some recent initiatives to make research a more attractive career, this author undertook a further series of interviews with HR managers across each of the institutes within the TU4Dublin Alliance. This was to get a broader perspective on the issues raised, and to note improvements already enacted. It was also intended to identify a number of recommendations to removing these barriers.

Findings from Interviews with HR Managers

In advance of the interviews with the HR managers, a number of questions were circulated to provide a degree of structure to the conversation. The questions posed were as follows:

1. How should TU4Dublin address the challenges identified by PIs regarding pay and conditions?
2. What can TU4Dublin do to improve its attractiveness against the universities?
3. What can be done to reduce recruitment bureaucracy in TU4Dublin?
4. How might we reduce the impact of lost knowledge as researchers cease their employment?
5. Should TU4Dublin commit to initiatives such as the “HR Excellence in Research” award, and the RESAVER mobile pension scheme?

In response to question one, all interviewees concurred that the absence of a pension plan was a barrier to the recruitment and retention of researchers. There was agreement that senior management would have to escalate the issue with the relevant government departments, and seek their approval to admit researchers to the pension scheme. There were differing views as to whether HEIs should create permanent researcher posts, or to regard mobility an essential part of a career in research. This latter viewpoint better reflects current thinking by EU policy-makers on the effective transfer of knowledge in support of excellence (Ivancheva & Gourova, 2011). Perhaps the fundamental question is how to create parity of esteem for research careers, and is reflected in Clark’s key components of an entrepreneurial university where there is an expanded development periphery involving self-financing units reaching out beyond traditional university domains (2004). On the issue of remuneration, it was noted that current salaries are based on guidelines issued to Irish universities, and the imposition of a 10% cut for new entrants to entry-level posts applies across the public sector. Finally, it was considered that the availability of fixed-purpose contracts of up to five years, subject to funding, was a significant advancement for researchers, though there was an onus on both PIs and researchers to ensure a continuous funding stream was maintained.

With regard to question two, it was noted that while the universities enjoy a greater international reputation, the TU4Dublin Alliance has many experts in niche areas, and needed to do more to get this expert opinion into the mainstream media, thereby raising the profile of TU4Dublin. In order to attract and retain research staff, the need for a cohesive people strategy was highlighted, and is something already identified in the TU4Dublin implementation plan (2014). However, in the continued absence of approved legislation on the formation of TUs, and with growing discontent from staff representative bodies (TUI, 2016), it is clear that a people strategy is urgently needed in developing a pathway to TU designation.

The third question elicited strong responses to the finding that PIs considered the recruitment process to be overly bureaucratic to the detriment of research activities. The HR managers noted that recruitment processes have been tightened where possible, and hosting agreements were in place for non-EEA candidates. However, there remains an obligation to comply with government directives and legislation. The current selection procedures as determined by the Minister for Education and Skills were not considered fit for purpose, and requests to review these procedures have been submitted to the Department. Many of the delays in recruitment were considered to be outside the control of the Institutes, particularly where candidates had to submit documentation, or agree start dates. To address such issues, procedures have been put in place within DIT to ensure each recruitment exercise follows timelines agreed with line managers. It was reported that, where implemented, the use of HR Business Partners had been very effective in supporting managers through the recruitment process, and PIs looking to recruit research staff were encouraged to make greater use of this service.

In response to question four, the loss of institute knowledge, and its effect on succession planning, was of concern to all interviewees. The need for greater sharing of

knowledge was encouraged, and use of good practices, such as staff mentoring and maintaining adequate documentation, were noted as options available to line managers now. What is noteworthy is that none of the HR managers shared views on a lack of knowledge exploitation, something that would be of interest to a technology transfer office. What this suggests is that HEIs have multiple teams with a common interest in developing research, but who might not be aware of each other's work. By asking the question of who cares for researchers, Synnott suggests the answer is "everybody, but nobody in particular" (2015).

With regard to the final question, the majority of interviewees were familiar with the HR Excellence in Research award, and it was noted that the evidence to date suggests it is not being enforced. However, there was agreement that over time, implementation of the charter and code for researchers will become mandatory for research funding, and is something that TU4Dublin partners should examine more closely. There was no objection in principle to the concept of a pan-European pension scheme for researchers, but the consensus was that RESAVER is still in its infancy, and not yet a viable proposition. Finally, there was support for the attainment of the Athena SWAN award which recognises those HEIs working to address gender imbalance in higher education.

Conclusions

This paper has outlined how the environment in which higher education operates has changed significantly as a result of globalisation, reduced funding, and meeting national and supranational agendas. This has encouraged HEIs to develop their research capabilities in order to generate funding, and to support socio-economic objectives. However, research conducted by this author has helped identify a number of barriers to the recruitment and retention of early career researchers. The model of the entrepreneurial university, which emphasis flexibility and responsiveness, is seen to offer an attractive approach for the removal of such barriers. Through additional interviews with HR managers in the TU4Dublin

Alliance, a number of recommendations have emerged which HEIs, including TU4Dublin, may wish to consider.

- Seek approval from relevant government departments in Ireland to admit researchers to the IoT pension scheme
- Ensure there is a people strategy with a commitment to achieving the HRS4R award, complete a gap analysis against the Charter & Code, and publish an agreed action plan
- Improve the profile and attractiveness of a HEI through an increased media presence in specialist areas of public interest
- Encourage greater use of internal support structures such as HR business partners to assist PIs in navigating the recruitment process
- Promote the use of processes such as mentoring and documentation to mitigate the loss of knowledge following the departure of research staff

There are a number of limitations to this report including a small sample size, and a narrow set of recommendations that did not fully explore all of the concerns raised by PIs including the failure to exploit knowledge commercially. Therefore, further research is recommended to better understand these issues. However, notwithstanding these limitations, the recommendations provided offer options to nurture, support, and harness research talent, and will support HEIs such as TU4Dublin in fulfilling their strategic objectives as an entrepreneurial university.

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Appendix 1

Main phases in implementing the “strengthened” HR Strategy for Researchers

Following a review of the steps required to achieve the HR Strategy for Researchers (HRS4R) award, a “strengthened” process has been published (Cameron, 2015). The changes provide for a more comprehensive implementation of HRS4R, and will take effect from January 1, 2017. The key stages in this updated process are noted below.

- 1. Endorsement of the charter and code, and commitment to implement HRS4R:** Before implementing the HRS4R process, research organisations must formally endorse the principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers. This endorsement should come from the President/Rector, or other senior executive such as the Vice President for Research. Organisations should then notify the EC of their intention to implement the HRS4R process, ideally within the same letter.
- 2. Completion of gap analysis and submission of action plan:** The organisation must identify gaps between its current policies and procedures, and the 40 principles of the charter and code. This should reflect the views of stakeholders including researchers. An action plan describing how the gaps will be overcome is then developed with defined action owners and timelines. If the gap analysis and action plan are accepted by the EC, the organisation is awarded HRS4R status, and is considered to be in compliance with Article 32 of the Horizon 2020 Model Grant agreement
- 3. Interim review with external assessment:** Within two years of receiving the award, organisations submit a review of the action plan to the EC. This should provide an overview of progress against the charter and code, and offer evidence of how the HRS4R process has been embedded within the organisation.
- 4. The award renewal phase:** Five years after the initial HRS4R award, organisations submit a second internal review of their action plan. This review is externally assessed, followed by a site visit. For organisations that are successful, the award is renewed on a three-year cycle, subject to further assessment and site visit.