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DAIRY CREST AND HARPER ADAMS UNIVERSITY CREATE A LONG-TERM IMPACTFUL RELATIONSHIP

HOW CAN COOPERATION BETWEEN HIGHER EDUCATION AND BUSINESS PROVIDE GRADUATES WITH BETTER PATHWAYS TO EMPLOYMENT?

UNIVERSITY CARLOS III MADRID HELPING FUEL THE FUTURE OF THE AEROSPACE INDUSTRY

EMPOWERING SMES WITH CUTTING EDGE SCIENCE AND CAPACITY BUILDING

UNIVERSITY OF TARTU CULTIVATES ENTREPRENEURIAL SPIRIT THROUGH EXTERNAL ENGAGEMENT

EMPA: WHERE RESEARCH EXCELLENCE MEETS INNOVATIVE LIVING LABS FOR MATERIALS SCIENCE AND TECHNOLOGY
Editors & Authors

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EUROPE NEEDS TO RECOGNIZE EXTERNAL ENGAGEMENT AS A PROFESSION

European universities rank amongst the top in the world and host some of the best leadership, academics and students in the world. Yet, we seem to neglect to ignite their full potential and not offer them the right skills and knowledge to, together with external stakeholders, ensure their skills are used to the foster economic and social growth.
In support of the findings, the policy priorities identified in the 2017 renewed agenda for higher education stress once more the redefined roles of the HE workforce, of academics and practitioners, as core actors who steer the change in their own institutions. While the priorities to a large extent match with those presented in the 2011 agenda, the renewed report puts particular emphasis to the most recent concepts of external engagement, such as ‘civic’ and ‘entrepreneurial’ universities, which involves universities developing close partnerships with regional stakeholders to create a better social and economic impact.

These concepts are well aligned with current regional development policy directions in Europe. The European Joint Research Centre (JRC) has committed itself to Smart Specialisation Strategies and the leading role HEIs have in contributing to regional growth. Simultaneously, the new EU university ranking tool U-Multirank provides performance data on a broad range of external engagement activities of the ranked universities and the European Commission’s DG EAC has launched a self-assessment tool, HEInnovate, for universities to assess their entrepreneurial and innovative potential.

Within this context, it is questionable how well the HE staff are prepared to adopt and internalise the new institutional approaches, and knowledge on broader regional dynamics, strengths and challenges to adjust their practices.

These expectations require (a) academics to take immediate action on reorienting their resources and expertise beyond merely adopting new pedagogical methods to improve student-centred learning, and (b) practitioners to take a strategic and institutionalised approach in the governance of external cooperation.

If it is more engaged and entrepreneurial universities that we want, why do governments and universities invest significant funds in education & training to improve teaching and research but continue to neglect the area of knowledge valorisation? Rather than offering tools and indicators and references on the ‘ideal’ role of university staff in policy and strategy documents, European universities and government need to dedicate more resources and activities towards training staff at universities to become more entrepreneurial and engaged with the HEI’s external stakeholders.

Practitioners’ professional education is crucial to help create the synergies and foster implementation of a coherent engagement strategy among researchers and academics. Yet, such training support is almost non-existent, with current provisions limited to only a few areas, e.g. technology transfer and intellectual property (IP) at a handful of universities. There are also a number of national and international networks (including UIIN), that offer training in this area, but it is not enough and does not yet do justice by the craft that the engagement with external stakeholders has become. It is time to shift focus from, and not solely look at investments in R&D, infrastructure or other more tangible elements and provide more support towards skill development of our higher education practitioners.

A recent report on the state of university-business cooperation in Europe (www.ub-cooperation.eu), sheds a light on the dependency between the various modes of interaction with business, and importance of facilitating and enabling cooperation to take place. Here the human factor is seen as one of the strongest drivers and determinants of success in external partnerships. This aligns with other studies, indicating the need for a qualified higher education (HE) workforce with an entrepreneurial mindset, knowledge and equipped with the skills to manage long-term strategic partnerships and manoeuvre in the university-business ecosystem.
THE SOUTH MORAVIAN INNOVATION CENTRE SPURS REGIONAL INNOVATION IN CZECH REPUBLIC

Authors
Habtamu Diriba & Hacer Tercanli
Over a period of three years, JIC has created in excess of 1,700 jobs and more than 200 innovative companies have been accelerated by JIC over its 13 years of operation.
Developing relationships between universities and business brings forth the analogy of one being from Mars the other Venus, when comparing the different institutional cultures, functions, and motivations. Given that these two don’t naturally cooperate and that one of the most important facilitators of university-business cooperation are the relationships between people, supporting mechanisms are often needed for successful cooperation.

The 2016-2017 European study on the state of university-business cooperation (UBC) in Europe, investigated the development of these mechanisms across Europe, specifically in relation to the question: Are European higher education institutions equipped with the right organisational structures to reduce the impact when the two worlds of universitites and businesses collide?

The study findings show that these structural mechanisms are often not present and therefore jeopardise the development of university-business relationships.

European university managers indicated that there is only moderate development of these structural mechanisms with the most developed being employability and career services, followed by bridging structures (including agencies dedicated to UBC, board-level position appointed and industry liaison offices) with bridging infrastructure (such as institutions, incubators, co-working spaces) and external...
WHEN CREATING A STRUCTURE TO SUPPORT UBC, KEEP IT SIMPLE

Simplicity and flexibility is the key when it comes to universities and businesses establish long, strategic relationships. It allows both academics and companies (particularly SMEs) to engage more successfully, since one of the main barriers of both actors is their lack of time. Such structures provide a framework into which stakeholders can invest time and finances without getting lost into formal procedures or lengthy conversations.

In support of these findings, many best practice institutions indicated their structures are complex and rigid by nature, which require greater efforts by the leadership and staff to simplify the cooperation processes. Meanwhile, those who identified this as a challenge and generated solutions confirmed that simplified structures have contributed considerably in the extent and intensity of the cooperations they formed.

WHAT ARE SOME OF THE BEST PRACTICES INSTITUTIONS ADOPTED TO FOSTER COOPERATION?

The staff of Warwick Manufacturing Group (WMG) is very aware of the SMEs’ lack of time and resources, and therefore facilitates as much as possible the work that SMEs have to do to collaborate with them. The same applies to one of the leading Swiss research centres Empa, which permits easy demonstrations of research in practice and allows for easy-access to its facilities to test research in practice through its Demonstrators concept. The Empa Portal launched 10 years ago serves the same purpose by allowing stakeholders to find the right contact person for their needs, and establish direct links.

One other common characteristic of the good practice cases is that certain structures are established to provide greater tangibility to the activity. This tangibility made the concept easier to understand and align internal regulations to support rather than hinder UBC. AMS Institute is a tangible and clear concept co-created by a large number of stakeholders, whose collaborative work has been successfully ‘labelled’. Founding framework of the institute is described in detail, in an exhaustive vision and roadmap document with references to its three pillars of education, research/valorisation and value platform that allows stakeholders to comprehend the model AMS adopts.

Whether it is from the perspective of business or universities, founding, naming and framing the UBC activity allowed common clear communication of the concept and reduced uncertainty. This is for example the case of Vytautas Magnus University in Latvia, whose Centre for Enterprise Practices (CEP) offer three structured and interrelated entrepreneurship programmes. The programmes gradually prepare students for an entrepreneurial career towards clearly identified set of goals for the reference of all stakeholders involved.

Simplified structures can prove much higher impact in the extent and quality of the cooperations than the partners anticipate. It is therefore of utmost importance that businesses and universities invest time to establish feedback structures to identify the bottlenecks in their communication, and implement solutions to maximize benefits from their partnership.
UBC METRICS AND EVALUATION NEED ATTENTION OF ITS STAKEHOLDERS

Authors
Hacer Tercanli & Arno Meerman

At first glance, a holistic metrics development and implementation would appear to be a logical step for improving quality and extent of university business cooperation (UBC) activities. Yet, the recent research shows more work needs to be done not only at institutional, but also at the regional, and national policy levels towards generation of comprehensive qualitative and quantitative monitoring systems, addressing both short and long term UBC results. Development of such systems requires involvement of all UBC actors, which would allow improvement of the key measures, as well as increasing stakeholder engagement during the process.

Recently, a consortium led by the Science-to-Business Marketing Research Centre and involving among others UIIN has conducted the largest survey yet undertaken on the state of university-business cooperation in Europe. Here university managers participating in the study reported a high extent of development when it comes to their paper-based strategies – as first step into institutionalizing UBC – in contrast to actual monitoring and assessment practices of UBC performance, which is considerably less developed. Similar results were found in the good practices published as part of the same study, with only a limited number of good practices developing and implementing performance measures. Amongst those who adopted a certain level of monitoring and measurement system, the majority was found to neglect the long-term impact assessment, and focused on only short-term quantifiable aspects of UBC. For the universities involved, this translates as measuring the extent of R&D funding, patents/licences, spin-outs and start-ups, while for businesses, it means focusing efforts on immediate problem-solving results and revenue from new products generated through R&D instead of a longer-term approach.

Given that many of the benefits flowing from UBC take full effect in the long-term and in less quantifiable or less attributable ways, much of the impact of cooperation is difficult to capture. This factor alone makes a holistic approach to UBC less accountable to policies and strategies, and puts pressure on university and business managers to deliver shorter term, tangible and measurable benefits. More, relying on only quantifiable measures paints an incomplete and inaccurate picture of the impact of UBC activities for both university and business, which reduces the quality of the cooperation to mediocre standards.

This leads us to the question whether there is an ideal way of measuring the impact of UBC, or if, with the involvement of all stakeholders, there should be a mixture of measurements applied from various perspectives to capture this?

Activities and measurements governed at the national level

The Higher Education Funding Council for England (HEFCE) performs monetary and non-monetary impact assessments emerging from HEFCE funding for knowledge exchange, and the use of Higher Education Innovation Funding (HEIF) via online surveys and interviews. The 2015 report “Assessing the economic impacts of the Higher Education Innovation Fund: A mixed-method quantitative assessment” provides some evidence to the policy makers whether the investments tied to the policies are fully exploited, and if re-allocation is necessary to address market and system failures.

The model takes the level of knowledge exchange income generated by the HEIs as proxy for economic impact, which carries the risk of favourable results obtained from research intensive universities. This challenge is overcome by the evaluation of non-monetary impact of HEIF.
funding. This evaluation includes collecting feedback from businesses and social and community groups on the benefits they received from working with universities. Although the measurement yields some insights into the impact of UBC, it is definitely not exhaustive and requires additional quantitative results to measure more the long-term results of UBC activities. For example, start-ups coming out of universities are a great way to extract knowledge from university. However, are those start-ups still around after 5 years, and how many jobs have they provided? Did those start-ups stay in the region, or move out to other regions or nations?

**Activities and measurement at unit level**

The business incubator iAccelerate of the University of Wollongong sets a good example on how to combine a range of metrics diverse in nature, when it comes to UBC progress and impact measurement. Some of the quantitative assessment metrics adopted by the institution include number of event attendees who apply to iAccelerate Programmes, successful applications to the iAccelerate Start and Advanced programmes, number and background of founders, jobs created, number of employees, revenues, new investments, number of student internships, any awards or grants, and press releases.

To complement this numeric information, iAccelerate keeps feedback channels open with their clients as stakeholders via a number of modes, that include an annual client satisfaction study, feedback from iAccelerate advisors at the Monthly Advisor meetings, ad hoc discussions, review of workshops, and presentations with the CEO and GM start-up company progress that could be tracked online in incuTrack.

In the example of University of Twente, comprehensive monitoring and evaluation systems are in place to measure the impact of entrepreneurial activities, yet, the impact is mostly seen in the tangible results obtained as result of quantitative assessments. Most indicators are focused on quantifiable outcomes, such as number of spin-offs, collaborations with the industry, and percentage of third-party funding, as part of the performance agreement with the Dutch government, without any input provided for the project quality or stakeholder satisfaction.

While this being the case at the institutional level, the two individual programs TOP and Venture Lab adopt a combination of quantitative and qualitative assessment methods to foster the quality and impact of the programs. The business start-up program TOP is regularly monitored by the progress of the start-ups once per year, looking at survival, employment, regional base, need for further support. This involves per year at least three contacts/meetings between Novel-T staff and TOP graduates. Similarly, the MBA level business development program VentureLab implements an extensive monitoring and quality management tool that includes participants using a diary system and an initial intensive assessment of 3-4 hours. Every few months a follow-up survey is administered, complemented by an exit survey before graduation.

**Measuring UBC and its impact is complex**

Although a straightforward and comprehensive method for the measurement of UBC and its impact is yet to be created, the current methods show potential when it comes to assessing UBC on both a national and institutional level. One of the key issues in measuring the tangible and intangible impact of UBC, is the lack of access to data and a centralised approach. Going forward, there needs to be a mixed-method approach driven by regional policy makers. Through engaging the relevant stakeholders on a regional level in the collection of data, this can be aggregated on a national and international level to provide greater insights into the activities. Here, a mixture of both quantitative and qualitative metrics, as well as a short and long-term perspective in these measurements would provide policy makers, universities and business alike with greater insights into the actual benefits of UBC.
REPORT REVEALS GAP IS HIGH BETWEEN CURRENT ADVANCEMENT AND FUTURE PRIORITIES IN UBC

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THERE ARE SEVEN BROAD CATEGORIES OF PRIORITIES FOR THE FUTURE ADVANCEMENT OF THE UBC.

The report entitled “Future of University-Business Cooperation: Research, Policy, Practice” released last week suggested ‘more work needs to be done’ to reach the desired advancement in the policy, practice, and research priorities identified by a diverse group of European and Australian UBC stakeholders.

The multi-method study presented in the report aimed to investigate future directions for UBC, drawing from over 1000 responses by groups of HEI managers, academics, technology transfer professionals and businesses based in Europe and Australia. Executed in two steps (i) identification of priorities and (ii) assessment of future importance vs. current performance in UBC, the study has generated a line of insights for the stakeholders looking towards the future of UBC.

The two-steps process

The qualitative first phase of the study included a survey with three open-ended questions inquiring the priorities of the stakeholders for the future of the UBC. The nature of the questions allowed participants of all groups to make their voices heard, particularly of the practitioner experts, who represented 43% of all participants. The analysis of the data led to the identification of 80 priorities across seven broad categories of priorities for the future advancement of the UBC.

The second phase of the study surveyed HEIs and businesses in 33 European countries, asking the participants to rate these 80 priorities based on their (i) importance for the future, and (ii) current advancement. The findings show that of all future priorities ranked, current advancement lags behind. Specifically, the largest gap between importance and advancement was found in the area of UBC research in regards to priorities “Investigating UBC across different industry sectors and cultural contexts”, “Understanding the impact of UBC on research”, and “Developing innovative business/partnership models for HEI engagement with SME”. The findings also indicate that while the discrepancy is high between the importance and advancement, perceptions across priorities show strong similarities between the two respondent groups.

With its large geographical coverage and substantial amount of participants from diverse groups, the study provides us with a good snapshot of how UBC experts perceive the future of the UBC in the context of Europe and Australia. While the priorities of the stakeholders differ within the triangle of policy, practice, and research, this might also help identify areas for new opportunities to emerge. The findings revealed in the report are therefore expected to start conversations not only within, but also between the groups of stakeholders who have the potential to shape the future of the UBC together.
CU-ICAR REVOLUTIONIZES THE FUTURE OF AUTOMOTIVE INDUSTRY

Technological innovations in machinery, logistics, and global manufacturing in the 20th century have led to drastic changes in the textile industry around the world. Existing business models became irrelevant to most small firms, and entire regions faced economic downfall because of this. With its large textile industry, the United States became one of the countries hurting the most from this disruptive change. The majority of the plants were closed, particularly in the states of North Carolina, South Carolina and Georgia by 2000s, a time that marked the end of the textile era for those regions. Communities were left behind with no jobs, and skills that did not fit the needs of the new labour market. However, today Greenville in the Upstate region in South Carolina, with a population of just over half a million ranks 11th in the most export-intensive metropolitans’ listings in the United States.

After the German giant BMW took the decision to launch its first full offshore manufacturing plant in Spartanburg in 1994 – which later has grown to become the largest BMW plant in the world with a record production of more than 400,000 vehicles in 2016 – the discussions started with the Clemson University to train skilled technical workforce. This meant engineers with advanced automotive degrees for the future operations of BMW and the capacity building for the local suppliers. CU-ICAR was born as a result of this partnership, a project that has been realized over the course of a decade.

Opening to business in the year 2007, CU-ICAR today is a cutting-edge education facility and an industrial scale-lab, pursuing their vision to become the “premier automotive and motorsports research, innovation and educational facility in the world”. The centre has developed close partnerships with numerous other major corporate companies, such as Microsoft, IBM, Bosch, Timken Company, and Michelin, a network of organisations that help boost the synergy and innovation through joint initiatives. The growth of industry partners and student base of the graduate program have had immense regional impact on the Greenville community through job creation and attraction of number of industries into the region. CU-ICAR has created 720 on-site jobs and announced an additional 720 jobs. According to South Carolina state records, in 2012 unemployment rates dropped to 9.4% from 10.5% in 2011, in part explained by the growing concentration of automobile industries.
THE ART OF STAKEHOLDER ENGAGEMENT: THE FIBRENAMICS COMMUNITY OF INNOVATION

Awareness of this complex socio-technical terrain drives the engaged approach to socio-economic development adopted by Fibrenamics at the University of Minho (UMinho) in Portugal. Fibrenamics is a platform that connects national and international HEIs and businesses who strive for innovation in the field of fibres and advanced materials. Emerging from the School of Engineering at UMinho, Fibrenamics aims to create, transfer, and communicate frontier knowledge from the research domain to the market, through the co-design and development of products that respond to societal challenges and stakeholder needs.

In less than 6 years, Fibrenamics has transformed itself from a modest university-based research group into an international “fibre-hub” where its diverse members can engage, prepare and implement a variety of scientific and practical projects. The Fibrenamics platform currently engages with 18 national and international universities, 19 research centres, 17 technology and collaborating centres, and more than 120 companies in the course of their activities. With such a wide organisational outreach, Fibrenamics also supports an online community that provides services to its more than 1,250 members.

Fibrenamics’ fundamental research group unites researchers and academics from various fields, together with Masters and PhD students, to produce new scientific knowledge – seeking answers to profound theoretical and technical questions concerning a sustainable fibre future. These attempts underlie the development of solutions to real societal issues, in the form of innovative products designed and developed by the Fibrenamics team and its partners. The Fibrenamics applied research group involves companies directly in the implementation of these innovation projects. The applied group collaborates directly with firms to design products in terms of their functionality and to fully assess the materials and processes required.

A true innovation at Fibrenamics is the integration of a specialist technology-marketing group as the third, and equal, focus of the organisation. The technology-marketing group promotes Fibrenamics’ projects and products, and help firms to link with other Fibrenamics partners in choosing their innovation path. This includes providing a comprehensive market assessment and consultation to new contact firms. The technology marketing group is also responsible for building capacity in the fibre sector, whether this is through knowledge transfer activities, such as workshops and advanced training courses, or by encouraging the development of an innovation culture and strategy in partner SMEs. The technology marketing group also runs the online presence and social media strategy of Fibrenamics.

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The reciprocal interplay between stakeholders, thoughtfully coordinated by the Fibrenamics team, has so far resulted in 15 registered patents, more than 40 completed, and on-going projects. Two success cases provide particular validation, and continuing inspiration, for the Fibrenamics approach:

Registered as a medical device and currently sold in 17 countries Pro-techdry© is an underwear designed for men and women who suffer from low impact incontinence. The product has received very positive feedback from users, due to its durability and flexibility that allows patients to enjoy their social life, despite their medical condition.

Another health product, Pradex, is a multifunctional sleeve designed for lymphatic sufferers and mastectomy patients with swollen or distended upper limbs. Cancer patients express satisfaction with the sleeve's unobtrusive and natural look, whilst maintaining compression behaviour similar to traditional products.

Besides these quantifiable outcomes, the Fibrenamics team seeks to foster a vision for a better fibre future, though organising an annual conferences, and other activities. For example, the documentary TV series ‘Fibrenamics: The Extraordinary World of Fibres’ has been seen by around half a million people via multiple media platforms, and is still being watched today on YouTube.

All in all, Fibrenamics is indeed a platform that embodies connectivity. With its activities and strategies for stakeholder engagement, it exemplifies a robust model for University-Business Cooperation that fosters open innovation for a technologically advanced and sustainable model of social and economic development.
DAIRY CREST AND HARPER ADAMS UNIVERSITY CREATE A LONG-TERM IMPACTFUL RELATIONSHIP

Author
Adam Krcal

Starting from the partnership aimed at joint research and development R&D projects between the company and the specialist university, the establishment of the new innovation centre as a shared facility is taking the partnership to a new more comprehensive level.

In November 2015, Dairy Crest (DC), a leading British dairy company, opened its Innovation Centre (IC) on the campus of Harper Adams University (HAU), the UK’s largest specialist higher education institution in the field of agri-food, in Edgmond in Shropshire. It is a unique development between a major food business and a university, perhaps the only big partnership in the food processing sector in the UK so far. The establishment of the IC followed pre-existing, though more occasional, relations between the two partners. Both partners have had traditional links to the region (Shropshire), which has a historic association with dairy production, and HAU is well known and respected for its leading role in food, farming and science education. The IC came at a time when universities and businesses were being increasingly encouraged to work together to support economic growth.

A mutually beneficial partnership...

The common motivation of both partners to set up the IC was to encourage young people looking at their career options to consider the opportunities presented by the food industry. However, there were also economic motivations. DC aims to deliver 10% of year-on-year growth through new product development; with scientific research, technology and product development at the core of this objective, the new IC contributes to achieving this goal. In a world where issues of food security and sustainability are now at the top of political and agri-food industry agendas, finding ways to increase interaction and knowledge flow between academia and the food industry for commercial and societal benefits is important. Sharing the campus with the university allows DC to benefit from cross-fertilisation of people and ideas with the university and to consolidate their technical and research expertise. HAU, in return, established a working academic collaboration, which entails more than having a commercial site on the university campus, and gains support from DC for the university’s curriculum in the form of opportunities for undergraduate students and graduates to apply their skills and knowledge in an industrial setting.

...leading to several strands of activities in research and education, ...

Students and graduates are at the core of the education activities and have access to the technical expertise and state-of-the-art facilities of the IC. The aim is to improve students’ experiences and add value from the commercial environment. The IC take two students for placements annually, principally in the field of product and packaging innovation. Students on placement spend one year fully integrated into the IC research teams’ work. Another way
for the IC to engage with HAU students is through their final-year projects, which students must conduct as part of their Honours Degree.

The IC’s staff also provide numerous lectures at HAU every year and are involved in curriculum development at HAU. The IC staff participate in the panels responsible for the design of modules and courses, and they provide both informal and formal contributions. Earlier in 2016, HAU and DC created a new lectureship in Animal Science and Bioinformatics, the aim of which is to help expand the portfolio of research into a prebiotic food ingredient, which has dairy origins, to the animal feeds sector.

There are also joint research projects conducted between HAU and the IC. These provide HAU academic and research staff with opportunities to experience the commercial environment, but they also give DC a link into leading academic research within the agriculture and food sectors. For HAU, these projects might potentially deliver some high-quality scientific research outputs that can be submitted as the university’s results to the UK’s Research Excellence Framework (REF).

...whilst achieving considerable impacts

Students’ testimonials show that they are happy with the placements at the IC and find this experience extremely valuable, giving them real hands-on experience from a workplace in a big commercial company. Being able to work on products for a retailer or major brand is an exciting opportunity and it gives them a better understanding of new product development. 99.4% of the HAU graduates who undertook a placement are employed.

There are already signs at HAU that the IC has shifted the focus of their research, for example in livestock farming. HAU has already started to build on this partnership and one hub of the brand-new Engineering and Precision Farming Innovation Centre (Agri-EPI), which is government-funded, is now being built in physical proximity to the IC. The Centre will involve 70 companies and three universities. There has also been an impact on the region because integrating the IC in the campus has preserved jobs and business opportunities in the region and retained valuable knowledge in Shropshire.

The collaborative partnership between HAU and DC has been awarded the ‘Most Innovative Contribution to Business-University Collaboration’ category in the Times Higher Education (THE) Awards 2016. The award recognises the embeddedness of DC researchers in HAU as an effective method to develop a pioneering knowledge sharing partnership in an industry with traditionally low R&D.
HOW CAN COOPERATION BETWEEN HIGHER EDUCATION AND BUSINESS PROVIDE GRADUATES WITH BETTER PATHWAYS TO EMPLOYMENT?

Author
Balzhan Ozarbayeva

For today’s employers, an academic degree is no longer enough. Graduates are increasingly expected to be knowledgeable, skilled and experienced, ready for their professional career. The responsibility for this employment readiness is justifiably being placed on universities to provide them with more relevant higher education.

In the face of ongoing change, universities are being called to take a stronger role in developing future workforce and building a highly skilled human capital. The issue is however not the number of graduates, but their skills and competences, which are increasingly being measured through employability metrics and new jobs created.

Today, like never before, it is essential for higher education institutions (HEIs) to better attune themselves to the needs of both students and their future employers. In a practical sense then, the question arises: what can universities do to ensure that their students are well equipped with practical knowledge and skills and are capable of meeting demands of a tough job market?

Being seen as one of the central challenges for Europe, a so-called ‘skills mismatch’ can be addressed through the systematic cooperation between universities and employers. Through university-business cooperation (UBC) HEIs become increasingly capable of translating education into meaningful competences for the workplace and providing smooth transfer of graduates from “students” status to “employees”.

Management Center Innsbruck is a strategic partner for employers

To ensure the relevance of its education, Management Center Innsbruck (MCI) approaches employer-engagement and business partnerships very strategically. Founded in 1995 as an autonomous academic spin-off of the University of Innsbruck in Austria, MCI systematically engages with employers to improve teaching and enhance student employability.

But how exactly does MCI cooperate with its business partners? On a practical level, the institution strongly focuses on a collaborative curriculum design and its delivery as well as mobility of students.

Uniquely at MCI however, not only does this occur throughout the life of its degree and post-degree programmes, but also, during the programme intake and following the end of programme. This therefore involves specifically-chosen industry representatives who are invited into MCI as partners in the development and delivery of the teaching programmes.

As an example, in the case of the Medical Engineering programme, MCI involves professionals from hospitals, the IT sector and medical engineering companies in course-design and delivery. Furthermore, they are also systematically involved in the student admission process, helping to select students who are more likely to fit the profile of the employer, and introducing students to a ‘employment-like’ recruitment.
needs of the industry, generates a more direct path for students to employment, whilst benefiting businesses by providing opportunities scout and win top student talent and developing graduates who are job-ready.

As for student mobility and placement, MCI has established a special administrative unit – the MCI Career Center – which acts as an interface and interaction point between students and graduates, on one side, and potential future employers, on another. To make the screening and communication process for the companies easier and more efficient, MCI provides them with a “Career Partnership” platform for posting job and career opportunities for students.

The institution’s strong focus on practical relevance and its commitment to close collaboration with the business community helps to ensure that MCI graduates will become job-ready employees for the labour market due to their combined academic knowledge and work-oriented skills.

One of the indications that MCI education creates an impact on graduates’ careers is that the average graduate receives 2.15 job offers at the time of his or her graduation from MCI, whilst 91.6% of MCI graduates have a job within three months after graduation. Furthermore, substantial salary increases and noticeable career progression for MCI graduates highlight the impact of MCI’s education on their successful career paths.
UNIVERSITY CARLOS III MADRID HELPING FUEL THE FUTURE OF THE AEROSPACE INDUSTRY
Championing the motto “Flying together, flying as one”, the Airbus Group is one of the world’s leading corporate organisations when it comes to believing in the value of collaboration with universities. The recognised leader in aeronautics and space services, Airbus has built high profile strategic partnerships with 21 universities in 11 countries across the world as part of its Airbus Global University Partner Program, which constitutes a vital element of their ongoing success. Airbus interacts with around 2,500 university students every year through the Partner Program, supported by a team of 83 Airbus employees. Universidad Carlos III de Madrid (UC3M) is one of three Spanish universities which cooperates with the aerospace giant, helping to prime the talent pipeline for the future of the aerospace industry via a number of joint initiatives.

The university meets industry

The collaboration between Airbus Group and UC3M commenced formally in 2008. The partnership contributes to Airbus’ aim to sustain and improve its productivity and competitiveness in the aerospace industry. Airbus accomplishes this by cultivating globally minded students with the current and future skills it has identified as essential, and by tapping into the innovative potential of both students and academics at UC3M. UC3M has welcomed the collaboration as a pathway to nurturing world-class human capital with an unmatched understanding of the aerospace industry. For UC3M, the partnership also provides the opportunity to engage in R&D projects that enhance its in-house capacity, whilst simultaneously leading to the development of potentially patentable innovations, and to participate in exchanges of ideas and best practices at the industry frontier.

In order to achieve these objectives, the collaboration is organized around four areas: education; research and knowledge transfer; valorization; and entrepreneurship. The collaboration agreement included the creation of a joint R&D Center, the development of a jointly owned educational program at a Masters Level, and paid industry internship opportunities for students.

Wide range of initiatives

The joint Centre for Aerospace Systems Integration (CASI) was established within the UC3M Science Park in 2008. CASI currently hosts 38 interdisciplinary research groups that are tasked with knowledge generation and transfer. A focused effort is made to facilitate the transfer of tacit knowledge, through space sharing and the promotion of formal and informal interactions between Airbus staff and UC3M faculty and research students.

The other major initiative of the collaboration is the Master’s in Aircraft Systems Integration (MASI) programme, which has been operating since 2009. MASI is tailored to meet the needs of the aerospace industry in general and Airbus Group in particular. What makes MASI unique is not only the fact that the courses are offered by renowned scholars and practitioners, but also because students are required to undertake projects that engage with solving actual real-world problems confronting Airbus. Educational activities have now been expanded to incorporate a joint PhD programme in 2012.

The results of the Airbus Group-UC3M collaboration have been very encouraging thus far. CASI has engaged in several highly relevant local and European projects, some of which have been translated into patentable innovations. Similarly, the joint educational programs have been very successful. The Master’s program enjoys a track record of 100% employability of its graduates, many of whom have been recruited by the Airbus Group itself. The joint doctorate program is now successfully producing PhD graduates, while more than 1,150 industry internships have been completed by students since 2008.
The Warwick Manufacturing Group of the University of Warwick is a dedicated SME Team offering a wide range of programmes to support manufacturing SMEs, which include access to their state-of-the-art facilities and capability to support research development and innovation and enhance sustainable skills.
he University of Warwick is consistently ranked in the top 10 UK universities for highly recognized teaching and research. Attaining as much quality and prestige, WMG, formerly known as the Warwick Manufacturing Group, has grown into one of the largest departments of the university, as a world-leading institute of 500 researcher staff and an £180m annual programme. WMG aims to help reinvigorate UK manufacturing by ‘bringing academic rigour to industrial and organisational practice’ through value added innovation. To achieve this, the department works with companies in many sectors, i.e. automotive; aerospace and defence; digital; security; energy and utilities; food and drink; government; healthcare and pharmaceutical, that include corporates such as Jaguar, Land Rover, Tata, TVS, BAE Systems, AstraZeneca, Siemens, GlaxoSmithKline, Airbus, and over 4,000 SMEs.

THE SME TEAM

WMG incorporates a dedicated 20 people to form the SME multidisciplinary team to support manufacturing SMEs. Many of the research staff possess industry backgrounds, coupled with extensive experience of technology applied R&D, which allows them to relate with both SMEs and academics. The team can also tap into the extensive academic resources of the University of Warwick. The wide range of programmes implemented by the team to support SMEs fall into three main areas: awareness, research and education.

The WMG SME Team carry out activities to help raise awareness of SMEs, that involve regular demonstrations and workshops delivered at their buildings using innovative technology and equipment. This increases SMEs awareness of the latest developments and helps introduce them to new technology and thinking. The team also organises collaboration-focused events to provide the chance for SMEs to develop new contacts and create business opportunities while attending events from other organisations.

Beyond awareness-raising activities, WMG supports business at different stages of their R&D process. This can be done supporting SMEs with collaborative funding applications from national and international organisations. WMG also undertakes collaborative R&D with SMEs. The support of the WGM team ranges from initial specification and design to feasibility testing, R&D and validation testing from concept and laboratory to industrial scale. Additionally, SMEs can be allowed to access WMG’s state-of-the-art facilities.

As the third stream of collaborative activity, WMG engages with SMEs through education in three different ways. SME employees can take part in some educational programmes to update and improve their skills, such as the Professional Executive programmes or part-time degrees. Moreover, SMEs can contribute to education providing input into the students curriculum. Finally, SMEs can access graduate level skills from the student community through internship programmes.

KEY SUCCESS FACTORS AND RESULTS

The success of the WMG SME programmes is based on a large number of factors, most important of which are considered to be the resources invested by the University Warwick and WGM in the form of facilities and expertise to keep WMG at the forefront of innovation in its research, education and knowledge transfer activities.

The role of the WMG SME Team is prominent in the success and impact of the activities, with their expertise in forming collaborations and in-depth understanding of the SME context. Their expertise allows them to provide simple and timely support to SMEs, recognising their particular needs, along with lack of time, finances and personnel. Accordingly, they adapt their educational and training programmes to SME needs in terms of time, content and structure. More, the team has established mechanisms to select students with the right skills and match them with companies for internships. They establish links between students and businesses not only via internships, but also by involving SMEs in the joint curriculum development for University of Warwick students.

The team does not try to expand their interest beyond their capabilities, but rather, chooses to specialise in a specific sector - manufacturing - with specific type of companies - SMEs that already have products in the markets and are trying to innovate - and specific type of projects - those that add value to SMEs. This approach undoubtedly leads them gain better expertise with what they do. Good selection of SMEs not only fulfils the requirements of size or sector but also helps WMG team work along with an open culture, and an interest to invest significant efforts.

In all these cooperation arrangements, support provided by the University of Warwick leadership is extensive, with regards to access to the university wide high-quality research and facilities, proving being an excellent research university and collaborating with industry is not mutually exclusive. The impact of the WMG activities also confirm the department is on the right track, given that the WMG SME team has successfully supported over 1400 SMEs, created 190 jobs, safeguarded 330 jobs, developed 270 new products and processes and created 20 new business, in the context of an SME collaboration network of over 500 members over the last 10 years. WMG has become a trusted partner for regional SMEs, operating as an extension to their R&D department, which has added value for £55m (£65m) to the West Midlands economy.
UNIVERSITY OF TARTU CULTIVATES ENTREPRENEURIAL SPIRIT THROUGH EXTERNAL ENGAGEMENT

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How to encourage unconventional thinking and a shared passion to break the economic boundaries, and invigorate a region with new, innovative solutions? Confronted with this question, universities worldwide have started to reinterpret their traditional practices through more agile and externally fluid approaches. Likewise, the University of Tartu (UT) has accepted the challenge of fostering organizational change towards becoming more entrepreneurial, and recognized the importance of well-established interactions with community stakeholders, to better prepare students for their contributions to the advancement of Estonian society.

This renowned national research university with more than three centuries of history, UT has taken the leap to go under a major transformation. The institution’s 2015-2020 strategic plan reflects its motivation to become an entrepreneurial university, focusing on two major areas: promotion of student entrepreneurship via start-ups and the enhancement of entrepreneurial education. In accordance with this strategy, university-business cooperation (UBC) is reflected in UT’s entrepreneurship courses, practical learning or internships, pre-incubation and idea incubation programmes, technology transfer activities, and spin-offs.

External engagement in UT’s curricular activities

The university adopts a customized approach to external engagement when it comes to entrepreneurial education.

UT Network of Centers of Entrepreneurs, which is also called Mentor Network, connects more than 100 entrepreneurs and specialists who work within companies to actively participate in UT education activities. The members are invited to mentor, supervise, lecture and collaborate with students and academic staff in the respective courses. Project-based internship option also emerges as an attractive curricular activity that promotes connectivity between the student body and the business representatives. As part of their internship, the students are encouraged to connect with the industries by developing a project, to offer solutions for specific market challenges. A specially organized platform for master students, ‘student web’, serves as a meeting point for companies to submit or suggest their practical problems to be resolved by the students.

Besides targeted curricular content, the annual pre-incubation programme STARTER gives students the opportunity to receive substantial practical guidance from more experienced counterparts in the development of their business ideas or start-ups. The programme invites industry and business supervisors to evaluate and pilot the participants’ business models or prototypes, with Vega Fund reward of €80,000 for the best student idea. The programme is organized by IdeaLab service, a platform that supports extracurricular activities for student-entrepreneurs at UT, and is co-designed in collaboration with other eight Estonian universities.

Cooperative technology transfer through ADAPTER network

Strategic external links are also established in the technology transfer unit that oversees the transfer of new research from UT to companies, and supports the establishment of spin-
offs. To expand its external outreach, UT serves as a leading partner in the cooperation network ADAPTER, which pair up young companies with the universities for service exchange. The network has established a single-entry online point for the companies to easily send their requests to the participating universities for support, which has collected 50 enquiries in a couple of months. In such pace, ADAPTER is expected to be hosting as many as five inquiries per week in the nearest future.

Beyond successful implementation of entrepreneurial strategies in place, UT shows its commitment to further strengthen its practices by cooperating with external institutions for evaluation and feedback. The university has recently been selected in the first pool of the universities to be accredited by ACEEU, Accreditation Council for Entrepreneurial and Engaged Universities, according to the extent and quality of its engagement and entrepreneurship activities. The outcome of this assessment is expected to provide a clear view to UT to progress further with its goals in creating the innovative society it aims for.
Empa is not your typical research center where the innovation takes place inside the walls of high-tech laboratories. What really makes Empa special is their unique materials science and technology demonstrator platforms that allow you to live in, visualise, interact and test the outcomes of your research.

Empa – Swiss Federal Laboratories for Materials Science and Technology focuses on application oriented materials science and technology, with the goal of knowledge development and the creation of marketable innovations from research. It is one of the six members of the National Alliance of Research Institutes and the Federal Institutes of Technology, ETH Domain, a strategic network affiliated to the Federal Department of Economic Affairs, Education and Research.

Despite being situated in three small Alpine towns – Dubendorf (main), St Gallen, and Thun campuses – spread across Switzerland, the center produces world-class research and innovation with a team of over 1,000 staff members. Empa engages in more than 150 new research projects each year and at any given point could be involved in as many as 250 projects financed by the Swiss National Science Foundation (SNSF), the Swiss Commission for Technology and Innovation (CTI) and the EU framework programmes. More than 60% of all its research projects are launched in cooperation with industry partners, where industrially “commissioned” research and services account for around 10% of all activities.

The innovation process occurs in a
unique way at Empa. The institution accelerates the innovation process through a set of ‘demonstrators’, or Research and Technology Transfer Platforms (RTTPs) as living environments, in which researchers collaborate with industry partners to find solutions in building, mobility, and energy sector. For instance the NEST unit name Vision Wood, hosts Master students as tenants in its laboratory apartment, involving them in the project as research subjects to test the wooden construction materials used in the indoor and outdoor decoration. Similarly, SELF, an independent living and working unit for two people, is designed to develop and test innovative energy technologies.

The most recent tech collaborations of Empa include development of a 3D model of human placenta to filter harmful substances that might harm fetuses, fertility app paired with a sensor wristband that detects women’s fertile days, and a watchstrap with motion sensors that can control mobile devices, e.g. drones, or garage doors. A follow up research is still at its infancy to integrate the sensors in a plaster that will make the bands redundant.

It is this ability to demonstrate research outcomes, which makes Empa so unique, as students, researchers and industry collaborators can not only see the results of the research, but ‘live’ in these innovation labs testing and interacting with the innovative outcomes.

The success of the institution becoming a key player in the Swiss research and innovation ecosystem is not a coincidence. Empa has a set of specific frameworks in place, whilst simple in their description, shouldn’t be underestimated in their ability to create the trust required for research collaboration and resultantly, a sustainable environment for innovation. A fine combination of external and internal factors – a strong national innovation system steered by the closely cooperating network of ETH Domain, stable basic funding financing about 60% of its total budget, strategic staff recruitment policies, and continuity and maintenance of the institutional memory ensured by permanent contracts signed with 40% of the employees – all contribute to the significant impact Empa makes, at local, national, and global levels in the field of materials science.