

The 3M Buckley Innovation Centre: A case study of alternative finance for universities from England

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ABSTRACT

The University of Huddersfield is a publicly funded university in West Yorkshire, England, with a mission which covers the spectrum of university activities including teaching, research and engagement with business. The focus of this case study is the 3M Buckley Innovation Centre (3M BIC) in Huddersfield which aims to facilitate business growth, encourage business to academia collaboration, and actively promote innovation. The chapter particularly focuses on the innovation and financial models which the University of Huddersfield has implemented to optimise relationships with industry. The innovation model and impact of the Centre is described in addition to the funding and governance structures which have been implemented to establish and sustain the Centre. National recognition of the unique approach to university-business engagement is also highlighted.

Keywords: university-business engagement, business growth, innovation, financial model.

El 3M Buckley Innovation Center: Un caso de estudio de financiación alternativa para universidades

RESUMEN

La Universidad de Huddersfield es una universidad financiada con fondos públicos en West Yorkshire, Inglaterra, con una misión que cubre el espectro de actividades universitarias, incluida la enseñanza, la investigación y el compromiso con las empresas. El enfoque de este estudio de caso es el 3M Buckley Innovation Center (3M BIC) en Huddersfield, que tiene como objetivo facilitar el crecimiento empresarial, fomentar la colaboración entre las empresas y las instituciones académicas y promover activamente la innovación.

El trabajo se centra especialmente en los modelos financieros y de innovación que la Universidad de Huddersfield ha implementado para optimizar las relaciones con la industria. El modelo de innovación y el impacto del Centro se describen además de las estructuras de financiación y gobierno que se han implementado para la creación y mantenimiento del Centro. También se destaca el reconocimiento nacional del enfoque del compromiso entre universidad y empresa.

Palabras clave: compromiso universidad-empresa, el crecimiento del negocio, innovación, modelo financiero.

1. Introduction

The University of Huddersfield is a publicly funded university in West Yorkshire, England. The town of Huddersfield is located in the centre of a triangle formed by the better-known cities of Leeds, Manchester and Sheffield, and is in the heart of what is currently referred to by the UK government as the ‘Northern Powerhouse’ (see figure 1)¹.

Figure 1. Map of UK showing location of University of Huddersfield.



Source: University of Huddersfield.

While the University of Huddersfield has held university status since 1992, it has its origins in organisations dating back to 1841. Today it is a thriving English university with (in 2016/17) a total of 14680 full time students (HESA)², total income of £165m, and income from tuition fees and education contracts, and funding body grants of £144m, making it a slightly above average-sized university for the English higher education sector which is comprised of over 130 publicly funded higher education institutions (HEIs). Locally the University is one of 12 universities in the Yorkshire region (which combine to form ‘Yorkshire Universities’³) and is also a typical HEI in the region in terms of student numbers and income. As one of the universities in Yorkshire, the University of Huddersfield contributes to regional economic growth, to cultural diversity in the region, and boosts socio-economic well-being. For example, it is estimated that universities in Yorkshire contribute £3.7b each year to the regional economy, and produce over 55000 graduates⁴.

In recent years, the university has invested in its buildings at its main campus, known as Queensgate (see table 1), and this includes a £10.2m investment in the 3M Buckley Innovation Centre (3M BIC) opened in 2012. The 3M BIC is part of the University’s infrastructure

¹ See <https://northernpowerhouse.gov.uk/>.

² See <https://www.hesa.ac.uk/data-and-analysis/students/whos-in-he>.

³ See <https://yorkshireuniversities.ac.uk/members/>.

⁴ Source: <https://yorkshireuniversities.ac.uk/facts-figures/> accessed 10th September 2018.

supporting enterprise, business start-ups and business engagement and, in the same year as the 3M BIC opened, the University was awarded the Times Higher Education Entrepreneurial University of the Year.

Table 1. Recent investment in buildings at the University of Huddersfield

Year of opening	Building	Purpose	Investment
2008	Creative Arts Building	School of Art, Design and Architecture	£14m
2010	Charles Sikes Building	Huddersfield Business School	£17m
2012	3M BIC	Buckley Innovation Centre including the Duke of York Entrepreneur Centre	£10.2m
2014	Schwann Building	Student services	£22.5m
2017	Oastler Building	Law and School of Music, Humanities and Media	£27.5m
2019 (predicted)	Barbara Hepworth Building	New location for School of Art, Design and Architecture	£30m (predicted)

Source: University of Huddersfield. <https://www.examiner.co.uk/news/west-yorkshire-news/huddersfield-universitys-creative-arts-building-5022842>

A notable feature of this building work is that the University of Huddersfield has not borrowed funds in order to finance the investment; it has instead been funded from its own reserves. The University of Huddersfield is regarded as financially secure as is evidenced by its position in HESA's financial security index. The index is a composite measure calculated by combining 4 key financial indicators covering the University's surplus, reserves, liquid balances and borrowings. The University is currently amongst the top 5 in the sector in terms of financial security (see figure 2), a position held consistently for over 5 years. This means that the University's financial performance has been in the upper quartile of the UK sector for many years. This has been achieved by using a financial strategy which focuses on delivering against an annual target for cash generation sufficient to meet its investment needs without recourse to external debt.

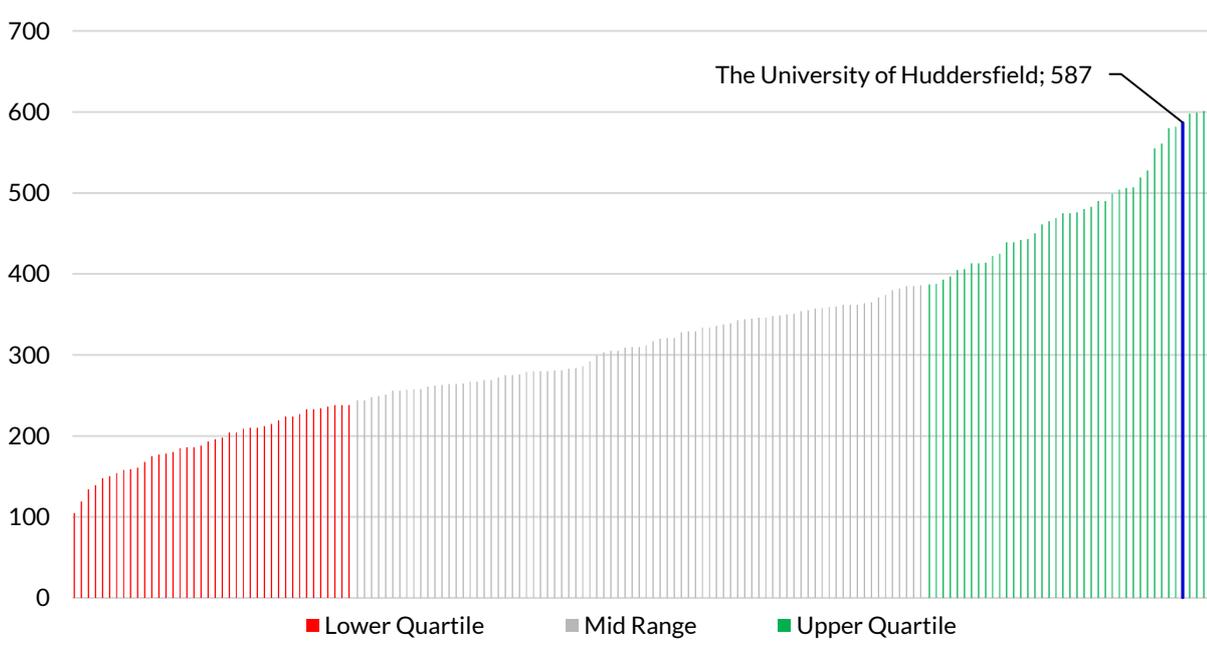
The focus of this case study is the 3M BIC, and in particular the innovation and financial models which the University has implemented to optimise relationships with industry. The innovation model and impact of the Centre is described in addition to the funding and governance structures which have been implemented to establish and sustain the Centre. National recognition of the unique approach to university-business engagement is also highlighted.

2. The 3M Buckley Innovation Centre Innovation Model

The 3M Buckley Innovation Centre was established by the University of Huddersfield as a wholly owned subsidiary company in 2011 and, following building renovations, was officially opened by the Duke of York in May 2013. The establishment of the centre coincided with a Governmental review (Hauser 2010) looking into the role of technology and innovation centres within the UK.

Recommendations arising from the review were taken into consideration when creating the 3M BIC innovation model. The primary outcome of the Hauser review was to establish so-called Catapult centres⁵ across the UK focusing on technology and sector-specific needs of predominantly larger businesses and corporations rather than SMEs. The focus on support for and engagement with small and medium-sized enterprises (SMEs) has been a key differentiator for the 3M BIC and the University of Huddersfield.

Figure 2. The financial security index for the UK Higher education sector, 2016/17.



Source: Higher Education Statistics Agency.

Lessons learned from the establishment of the UK National Science & Innovation Campuses⁶ at Harwell in Oxfordshire and Daresbury in Cheshire were also taken into consideration to inform the innovation model, especially the approach to working with SMEs. Understanding the needs of SMEs, micro-businesses and their supply chains is key for the centre as the business demographics of the Leeds City Region, where the 3M BIC is located, is predominantly (84%)⁷ micro businesses with very few large enterprises and original equipment manufacturers (OEMs).

⁵ See <https://catapult.org.uk/>.

⁶ See <https://stfc.ukri.org/innovation/campuses/>.

⁷ Source: ONS <https://www.nomisweb.co.uk/articles/764.aspx> (accessed 13th September 2018).

Over recent years, the Open Innovation model (Chesbrough 2006), has become increasingly important. Universities are now seen as important sources of knowledge and innovation for companies to access to facilitate growth. No longer is research and development (R&D) activity undertaken and resourced entirely from within a company, but is out-sourced or delivered collaboratively with external organisations such as universities. Ensuring ease of access to the knowledge base for business is becoming a primary consideration for universities and was an important aspect when establishing the 3M BIC. Traditionally, innovation and enterprise centres, especially those associated with research intensive universities, have adopted a spin-out model to exploit intellectual property through start-up companies. The 3M BIC has adopted a spin-in model to co-locate businesses alongside the University of Huddersfield to drive collaborative relationships with companies.

The 3M BIC provides a primary focus for the University's engagement with business and offers access to services and support to facilitate business growth and productivity – aligning strongly with the key aims of the UK Industrial Strategy (BEIS 2017). Through a variety of mechanisms and partnerships, the centre offers access to markets, finance, technology and skills, and is an important interface with the University to drive collaborative R&D, consultancy and employer engagement for our students and graduates. In addition, the 3M BIC houses the Duke of York Young Entrepreneur Centre (DOYYEC) which is an incubation facility supporting students and graduates wishing to establish business start-ups. Rather than being located on campus and within a careers and student services environment, which is typical of many facilities of this type in UK universities, the DOYYEC students are immersed in a true business environment from the outset resulting in better business longevity and outcomes (Godfrey and Hubbard 2018).

One of the primary challenges of working at the industry-academia interface is managing the different aims and objectives of both parties and the misconceptions which often exist on both sides. Forging collaborative relationships with SMEs and micro businesses can be particularly challenging for universities, so establishing the 3M BIC as an arms-length company was a business-facing mechanism to achieve this.

3. The 3M BIC Financial Model

3.1 Establishing the Centre

Huddersfield Enterprise and Innovation Centre Ltd (HEIC) was incorporated on the 5th October 2011 as a wholly owned subsidiary company of the University of Huddersfield to manage the 3M BIC operations. Refurbishment of an existing University owned mill building, on the edge of the University campus, was developed as a location for the centre, and a 10-year lease-hold arrangement to HEIC was the basis of the 100% shareholding arrangement.

The refurbishment project, along with capital equipment and revenue funding to employ dedicated staff within the company, was funded through a 3-year £6.13m European Regional Development Fund (ERDF) grant. £4.1m of additional match funding was provided by the

University and Kirklees Metropolitan Council (KMC), a local authority within the West Yorkshire area of England. The KMC contribution was capital funding in recognition of the support the centre would provide for local businesses fostering economic growth and productivity. As a condition of the grant award, the University was required to evidence State Aid compliance and the flow through of aid to beneficiary companies being supported. The project adheres to Article 3 of the EU Research, Development and Innovation (RDI) Framework and to the operational principles of Commission decision 2005/782/EC – the German Incubator/technology centre model of flow-through of aid. In addition, support to SMEs for R&D activity falls either under the headings of Allowable State Aid (R&D) or is subject to De Minimis rules. Compliance with De Minimis was evidenced on project records for each company supported. The ERDF grant ended in December 2014.

In recognition of the unique University-business innovation model, 3M acquired the naming rights to the building in recognition of Sir George Buckley's⁸ achievements and retirement from 3M in June 2012.

3.2 On-going Developments and Business Engagement

Over the past five years, the programme of activities delivered by the 3M BIC has grown significantly and additional funding has been secured from various regional and national routes to support business engagement initiatives.

In addition to the schemes detailed in table 2, in-kind private sector contributions have been received via strategic relationships with industrial partners. For example, during procurement of the Huddersfield Innovation and Incubation Project (HIIP) capital equipment, significant discounts were offered on purchases in addition to software upgrades and bolt-ons at no additional cost. These in-kind contributions represented significant gearing for the public sector grant investments.

Whilst most of the initiatives detailed in table 2 are grant schemes to foster University relationships with SMEs through the 3M BIC, most are for an initial single intervention to promote innovative working with the University. Many SMEs and larger companies have paid for technology services and collaborative R&D activities through the 3M BIC, or applied for major R&D innovation grants from Innovate UK such as Knowledge Transfer Partnerships (KTP)⁹. The University currently holds 15 KTP awards with business and is in the top 10 of UK universities for the number of KTPs currently awarded¹⁰.

⁸ Sir George Buckley is an alumnus of the University of Huddersfield. More information can be found here: https://en.m.wikipedia.org/wiki/George_W._Buckley.

⁹ Knowledge Transfer Partnerships, supported by Innovate UK, are available across the UK to help businesses improve their competitiveness and productivity through the better use of knowledge, technology and skills. See <http://ktp.innovateuk.org/> for more details.

¹⁰ See <https://info.ktponline.org.uk/action/search/current.aspx> for more information.

Table 2. Examples of 3M BIC Business Support and Engagement Initiatives

Start date	Name	Funder	Funding scheme	Amount (£)	Description
Oct 2018	Leeds City Region Supply Chain Programme	UK Government Department (DCLG) Private sector contributions University of Huddersfield	European Structural Innovation Fund (ESIF)	4,400,000	Revenue grant delivering business support to SMEs for optimisation of business productivity through supply chains. Includes small business support grants.
Sept 2017	Huddersfield Innovation & Incubation Project (HIIP)	Leeds City Region Local Enterprise Partnership	Local Growth Fund	2,900,000	Capital equipment grant. Advanced technology such as 3D metal printers, imaging and visualisation equipment for SME access.
Mar 2015	Technology Adoption	Santander University of Huddersfield	Innovation Vouchers	60,000	Small revenue grants to local SMEs to facilitate access to 3M BIC/university technology facilities and academic staff
Mar 2103	Turbocharger R&D Centre	UK Government (BEIS) Private sector	Regional Growth Fund	7,400,000	Tenancy for private sector partner in 3M BIC and access to additive manufacturing facilities. Establishment of a Turbocharger Research Institute in the University
Ongoing	University of Huddersfield Collaborative Ventures Fund (CVF)	UK Government Research England	Higher Education Innovation Fund (HEIF)	80,000 per annum	Small revenue and capital grants to support 3M BIC and academic/industry relationships

Source: 3M BIC and University of Huddersfield records

3.3 Financial Sustainability

Following the end of the ERDF grant in December 2014, the 3M BIC financial model changed and sustainability of the company is now based on a mixed income model. Income is generated via a number of mechanisms including:

- Rental from offices, laboratories and hot-desking space;
- Events and room hire;
- Network membership payments from non-tenant companies and professional support organisations;
- Technical support services;
- UK Government Research & Development tax credits.

The company status of the 3M BIC opens up funding opportunities which are not routinely accessible to the university, e.g. those which are only available to businesses as Principal Investigator rather than public sector organisations. In the future, this characteristic will be exploited as a means of generating income to sustain the Centre and generating research grant and contract income for the University.

To date, the 3M BIC has not considered taking equity stakes in companies in return for support given, as is the case in many business incubator and accelerator facilities worldwide. Now the centre is fully established and support infrastructure embedded, this could form part of a longer term sustainability model which the company and University may consider.

4. 3M BIC Outputs and Impact on Regional Business

The University and 3M BIC are currently working with approximately 1500 companies in the Leeds City Region area¹¹. Of these companies, the biggest number by far (30%) are in the Advanced Engineering and Manufacturing sector, with companies in Professional Services and Administrative Support next (17.9%), and Digital third (at 10.5%). Over the 3-year period of the ERDF grant, the 3M BIC delivered 200 individual business assists, predominantly technical projects, to local companies.

To date, the Centre has accommodated 55 tenant companies and engaged approximately 50 network members. The Centre is fully occupied and grow-on space will be available from October 2018 at the Globe Innovation Centre in nearby Slaithwaite, West Yorkshire. All tenants of the Globe centre will automatically become network members of the 3M BIC to ensure continuity of business support activity and relationships with the University.

The DOYYEC facility within the 3M BIC supports student and graduate business start-up activity in an incubator environment. In 2017, 160 hot desk licences were issued and on average 30 companies per annum are established by students using the facility. 3M BIC tenant companies also employ University of Huddersfield work placement students and to date 25 students have been employed. Following completion of their studies, a large proportion of these have been employed ensuring graduate retention within the region. One 3M BIC tenant alone has employed 10 Huddersfield graduates and the CEO of the company acts as an industrial mentor to current students on the computer gaming course in the School of Computing & Engineering.

The business engagement and business start-up statistics generated by the Centre are included in the University's annual HE Business and Community Interaction (HEBCI) survey¹² which drives UK Government Higher Education Innovation Fund (HEIF) income to the University. In addition, the 3M BIC was returned as an impact case study to the 2014 Research

¹¹ Note that there are around 119000 companies in the area (<https://www.nomisweb.co.uk/articles/764.aspx>).

¹² See <https://www.hesa.ac.uk/definitions/hebci>.

Excellence Framework¹³ by the University and has subsequently contributed to the generation of Quality Related (QR) income from Research England to the University.

An example of good business engagement is with a local SME which makes scalp coolers for cancer patients undergoing chemotherapy treatment to reduce hair loss. The company initially engaged with the 3M BIC via a small CVF grant to 3D print scalp cooler moulds. Following this successful work, the SME secured two KTPs and major Innovate UK grants to work collaboratively with the University. The company is now a strategic partner of the University and closely associated with the 3M BIC. Since working with the University and 3M BIC, the company has generated new intellectual property, published patents and expanded into new global markets.

To date, the majority of the 3M BIC activity has been regional or nationally based. However, providing a focus for inward investment is becoming increasingly important as a 'soft landing zone' for international companies. Representatives from the Centre have attended UK trade missions to China, the US and Eastern Europe and one of the tenants is a major Chinese company collaborating with the University.

5. 3M BIC National Recognition

The innovation model and approach to university-industry engagement delivered via the 3M Buckley innovation Centre has been recognised in numerous UK Government reports and studies. Even at the early stages, when the Centre was only just being established, the planned innovation approach and proposed model of engagement with SMEs was recognised by Professor Sir Tim Wilson in his review of business-university collaboration within the UK (Wilson 2012). This was further endorsed the following year by Sir Andrew Witty's report (Witty 2013) which reviewed the regional strengths of universities and their contribution to business and economic growth. The 3M BIC was highlighted in the Witty Report as an exemplar for University engagement with SMEs.

Specific aspects of activity within the Centre have also been recognised in national reviews such as the support delivered to students through the DOYYEC. Lord Young's report (Lord Young 2014) reported on the importance of Enterprise Education at all levels and the DOYYEC, embedded within the 3M BIC, was highlighted as a good practice case study for higher education. More recently, access to new and emerging technologies offered by the 3M BIC has been recognised in the Made Smarter Review (DBEIS 2017) published alongside the UK Industrial Strategy. In particular, the technology demonstrator approach and ease of access to support and necessary skills to facilitate technology adoption by SMEs has been recognised.

Finally, as mentioned in the section 1, the University was named Times Higher Education Entrepreneurial University of the Year in 2012 and the establishment of the 3M BIC was a key

¹³ See <http://www.ref.ac.uk/2014/>.

factor contributing to this award. In 2013, the Chief Executive Officer of the 3M BIC received a Queens Award for Enterprise Promotion in recognition of the unique approach which has been adopted for engagement with business by the University and through the 3M BIC.

6. Concluding remarks

The 3M BIC has been recognised as a unique model within the UK for the University's approach to working with business. This is not just because of the focus on SMEs and open innovation methodology but also because of the financial and governance model which the University has implemented through the establishment of the wholly owned subsidiary company. The project has represented a strategic and cultural change for the University to position the University as a national hub for enterprise and innovation contributing to regional economic growth and productivity.

The Centre is now fully occupied with grow-on space becoming available in autumn 2018. The University intends to build on the success of the 3M BIC and extend its business engagement activities within Huddersfield. The concept of a Digital Innovation Zone within Huddersfield is now under consideration with regional partners and approaches to funding this initiative are being evaluated.

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Liz Towns-Andrews es química, con una amplia experiencia en el campo de la industria. Ha dirigido el desarrollo de los campus nacionales de Ciencia e Innovación en Harewell y Daresbury antes de unirse a la Universidad de Huddersfield en 2009. Como profesora de Innovación del 3M Buckley Innovation Center, Towns-Andrews se encarga de potenciar y respaldar las estrategias de investigación y empresariales de la Universidad y de identificar oportunidades para el desarrollo de actividades de investigación, alianzas estratégicas e I + D colaborativa. Towns-Andrews obtuvo la cátedra en 2012 y recibió el premio Queen's Award por la promoción empresarial en 2013 al fundar el 3M Buckley Innovation Center, siendo directora ejecutiva del centro. También fue galardonada, en 2016, Mujer de Negocios del Año por Forward Ladies STEM. En 2017, fue nombrada como Chartered Fellow and Companion del Chartered Management Institute (Reino Unido).



Jill Johnes es profesora de Economía de la Producción en la Universidad de Huddersfield desde enero de 2015 y decana de la Escuela de Negocios Huddersfield desde octubre de 2016. La investigación principal de Johnes se centra en la productividad, la eficiencia y la eficacia de la organización, y explora cómo las organizaciones pueden mejorar su rendimiento. Johnes, gracias a un conjunto de publicaciones de revistas ampliamente citadas y de dos libros de gran influencia, ha conseguido una destacada reputación de investigación nacional e internacional en economía de la educación, con la publicación, además, de numerosos artículos en revistas de prestigio internacional. Como consecuencia de ello, ha realizado varios proyectos de consultoría con varias organizaciones, incluidos los departamentos del Gobierno del Reino Unido y Europa, sobre cuestiones políticas estratégicas.



Andrew McConnell es graduado en Matemáticas por la Universidad de Manchester y está acreditado como contable (Chartered Accountant) por la Manchester Office of Grant Thornton. Actualmente ostenta el cargo de gerente de la Universidad de Huddersfield, responsable, entre otras cuestiones, de la planificación estratégica de la institución, de proporcionar asesoramiento financiero y de asegurar la sostenibilidad económica de la universidad. McConnell ha desempeñado varios cargos relacionados fuera de la Universidad, como el de presidente del British Universities Finance Directors' Group. También es miembro del Consejo de la Higher Education Statistics Agency Ltd. (del que preside su Comité de Auditoría), del Bradford Teaching Hospital Foundation Trust y del Wakefield College. Ha sido condecorado con la Orden del Imperio Británico por sus contribuciones a la contabilidad y a la comunidad en la Lista de Honores de Cumpleaños de Reina de 2015.