REPUTATIONAL IMPACTS OF INTERNATIONAL RESEARCH AND INNOVATION

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3.2. Research Organisation-focused international knowledge transfer, exchange and networks

Research organisations engage with international ecosystem for knowledge transfer or exchange using mechanisms such as engaging with international research networks, publishing in academic and practitioner journals, exchanging knowledge at international conferences, commercializing (e.g. selling IP and licensing patents), providing international consultancy and advisory services and educating the international workforce.

Knowledge transfer or exchange, unlike co-creation, mostly involves the transfer of knowledge or resources from one organisation to the other rather than closely working together. Such engagements enhance the reputation of the UK's research organisations and universities as world-leading knowledge producers and influencers has significantly bolstered their standing as premier research hubs. This enhanced status not only highlights their expertise but also improves their legitimacy as key members of the global network, further solidifying their role in advancing knowledge and innovation. Such positive reputation building improves financial, relational, resource, research, and innovation as well as social and environmental impacts [Figure 3.2].

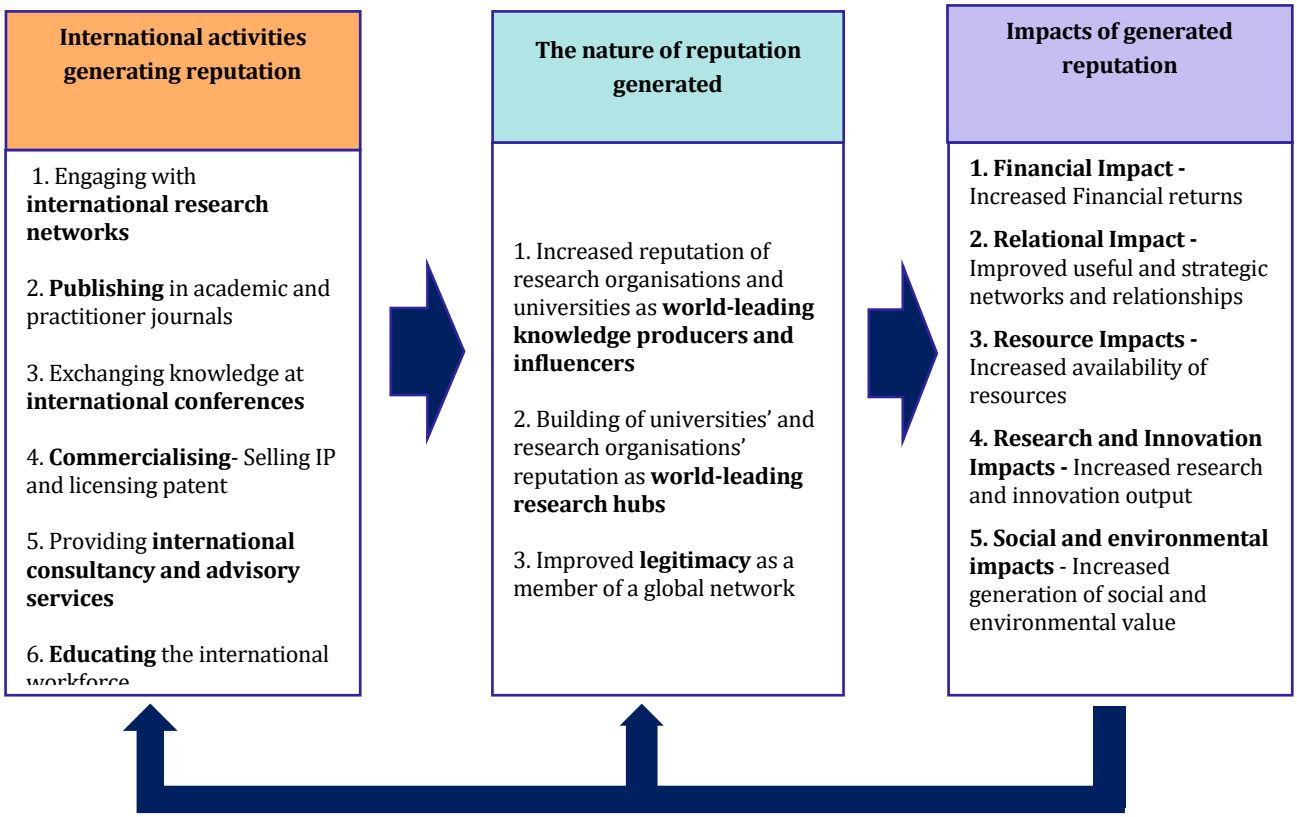

Figure 3.2: Research Organisation-focused international knowledge transfer, exchange and networks generating reputational impacts

3.2.1 International activities

Engaging with international research networks

The exchange of resources and individuals within an international research network is crucial in enhancing collaborative efforts and leveraging institutional strengths. Research networks are composed of various research organisations, often higher educational institutions, and are structured based on the exchange of research facilities, libraries, specialized equipment, and other resources as well as personnel including researchers and academic staff across organizations, independent of political, social, and geographical boundaries (Lepori et al., 2013; Seeber et al., 2012; Glänzel & Schubert, 2005; Jones et al. 2008; Heller-Schuh et al., 2011). This exchange enhances the collaborative potential and output of research organisations by pooling resources and expertise. It allows institutions to undertake more ambitious research projects and educational programs, which are visible indicators of institutional capability (Lepori et al., 2013). In the context of UK universities, collaborative initiatives within European networks have demonstrated how shared resources and joint research efforts can bolster the research and educational outcomes of participating institutions (Eurydice, 2020).

Publishing in academic and practitioner journals

Publications are a means of knowledge exchange with academic and non-academic communities. Geographical proximity is not necessarily required for accessing publications, which enhances the potential for international knowledge exchange. Since the evidence for some established economies suggests that publications with international co-authors have more than doubled over 30 years, these publications are likely to share new knowledge produced through international R&I and of relevance to more than one country. While the domestic research output (i.e. those with authors from a single country), including that of the UK (47,500 papers per year), Germany (45,000) and France (30,000), have not shown a dramatic change since the mid-1990s, their publications through international collaboration has increased more than ten-fold, further indicating the value of publications as a source of knowledge exchange of relevance to more than one economy (Adams & Gurney, 2018; Adams & Gurney, 2016).

Exchanging knowledge at international conferences

Another means used by research organisations to exchange knowledge with academic and non-academic communities are presenting at conferences and research seminars. International conferences and events enhance knowledge exchange and networking opportunities and increase visibility within the academic and non-academic communities (Lepori et al., 2013). In particular, these events offer a platform for institutions to present their latest research findings and innovative projects, and discuss funding opportunities and the relevance of research to academic and non-academic communities (Glänzel & Schubert, 2005; Jones, Wuchty, & Uzzi, 2008; Dolmans et al., 2022). For instance, The International Congress of Immunology (IUIS) is an international conference in the field of immunology, bringing together immunologists from universities, health providers, independent research organisations and industry, each year. The congress aims to extend knowledge exchange among all attendees – from early-career professionals to globally recognized key opinion leaders (IUIS 2023). Another example is the University of Oxford's Innovation Forum Leaders Conference which attracts top national and international leaders from industry, academia, and government, as well as early-stage venture investors and researchers. The conference brings together over 1,300 delegates, stimulates conversations and catalyses numerous partnerships for the next generation of innovative technology. The conference provides a platform for Oxford's researchers to share their latest advancements in science, technology, and innovation.

Commercialising- Selling IP and licensing patent

Research commercialisation involves commercially exploiting intellectual property through market mechanisms, including patenting, licensing, and spin-outs (Siegel et.al., 2003; Siegel et.al., 2007; Siegel & Wright, 2015). A Europe-wide study demonstrated that patenting in universities is on the rise, although it remains heterogeneous across institutions and disciplines (Geuna and Nesta, 2006). In UK universities, IP-related income accounted for 2-3% of total income coming to the HE sector between 2003- 04 and 2012-13 (Source: HE-BCI Report 2014), and this is especially attributable to STEM disciplines (Moutinho et al., 2007; Owen-Smith & Powell, 2001; van Rijnsoever et al., 2008). Universities share their expertise by successfully selling and licensing patents, showcasing their ability to translate research into practical applications (Gong et al., 2020).

Providing international consultancy and advisory services

Universities and research organisations provide international consultancy services, leveraging their faculties and researchers' expertise to address global challenges. This positions the institution as a trusted advisor and opens collaborative opportunities across various sectors, enhancing its status as a thought leader (Perkmann et al., 2013). Organizations that engage with academia benefit from accessing cutting-edge scientific knowledge, innovative equipment, academic networks, and diverse perspectives on problem-solving (Guan & Zhao, 2013; Arza, 2010; Broström, 2012; Heidrick et al., 2005). These interactions can lead to significant technical, economic, input-related, and intangible improvements such as learning, training, and knowledge sharing (Nuñez-Sánchez, et al. 2012; Perkman et al., 2013).

Academics and researchers who secure industry grants and contracts are significantly more involved in industry-related activities and policy advisory roles compared to those without such funding. Those with industry grants are twice as likely to be approached for their research expertise by private industry and to be hired as paid consultants for industry projects as well as for policy-related roles (Bozeman & Gaughan, 2007). In a similar vein, universities participating in European projects like Horizon 2020 work together to shape research and innovation policies at the European level (Heller-Schuh et al., 2011). Universities positioned at the core of these networks have a greater influence on leading policy discussions due to their central role in the flow of information and resources (Borgatti & Everett, 1999).

Educating the international workforce

Universities and research organisations also offer education and training for industry and future workforce. Considering the UK universities' role as prominent international knowledge

providers, many beneficiaries of these educational provisions are international. According to the latest data from HESA, international students make up a significant portion of the student population in UK universities. In the 2022/23 academic year, international students accounted for 26% of the total student population (Bolton et al 2024). The engagement by students in collaborative projects with industry offers an excellent opportunity for students to benefit from both academic rigour and industry applications. Similarly, universities offer numerous executive training programmes, the graduates of which are equipped with cutting-edge knowledge and skills. Universities also offer tailored training programmes to the industry. These educational activities enable universities and research organisations to share knowledge and skills with the international workforce (Guan & Zhao, 2013; Arza, 2010; Broström, 2012; Nuñez-Sánchez et al., 2012).

3.2.2 Nature of the generated reputation

- **Increased reputation of research organisations and universities as world-leading knowledge producers and influencers**

Recognition through numerous knowledge exchange mechanisms establishes the university's and research organisation's status as leaders of global knowledge, enhancing their prestige and competitiveness (Ulrichsen, 2018; Ambos et al., 2008). Universities and research organisations known for cutting-edge research and staying in frontiers of various fields due to various knowledge exchange efforts, build a reputation for excellence and innovation. These engagements enhance visibility among stakeholders and reinforce the institution's global reputation as world-leading knowledge producers and influencers (Bozeman & Gaughan, 2007).

- **Building of universities' and research organisations' reputation as world-leading research hubs**

Due to the engagement in knowledge exchange activities, recognised as neutral sources of expertise, universities and research organisations earn the trust of the general public, stakeholders, and partners of their research capabilities to address societal challenges and contribute to economic growth (Fulop & Couchman, 2006). Participation in knowledge exchange activities reinforces their status as global leaders in research (Lepori et al., 2013) of value to scholars, industry, governments, and the public, further improving their reputation as world-leading research hubs (Sengupta & Rossi, 2023).

- **Improved legitimacy as a member of a global network**

Engagement in international knowledge exchange activities offers opportunities for universities and research organisations to be valuable members of global networks, which enhances the credibility and legitimacy of these organisations on the global stage, fostering trust with

institutions worldwide (Lepori et al., 2013). Through the formation of ties during these knowledge exchange activities organisations build identity (i.e. belonging to the same social space) (Rivera et al., 2010), seek legitimacy (i.e. preferentially linking to high-status organizations) (Cattani et al., 2008), and facilitate resource mobilization (i.e. connecting with organizations that control a large share of resources) (Lepori et al., 2013).

3.2.3 Impacts of the generated reputation

Table 3.2: Impacts of reputation generated through international knowledge transfer, exchange and networks

Types of Impact	Specific Impacts
1. Financial Impact - Increased Financial returns	Increased opportunities to generate income through knowledge/technology transfer and exchange e.g. patents, commercialisation, training, and consultancy Enhanced access to funding
2. Relational Impact - Improved useful and strategic networks and relationships	Increased acceptance within the broader international scientific community Enhanced opportunities to access, strengthen, collaborate with, and develop new, useful networks Improved attractiveness to recruit and collaborate with high-profile academics Increased international student enrolments
3. Resource Impacts - Increased availability of resources	Enhanced opportunities to access and develop new national and international resources, funding, capabilities, knowledge, and networks
4. Research and Innovation Impacts - Increased research and innovation output	Enhanced opportunities to extend transfer/exchange to co-creation
5. Social and environmental impacts - Increased generation of social and environmental value	Increased generation of social value and impacts Increased opportunities for research organisations and academics to engage in policy-making and advisory roles

Case Study: Ten U- an international collaboration in research commercialization

TenU is an international network formed to capture effective practices in research commercialisation and enhance the societal impact of research and brings together leading HEIs in the UK, US and Belgium to develop and share best practices on research commercialisation.

International R&I activities:

TenU is engaged with International Research Networks of Higher Educational Institutes (HEIs) through its research commercialization offices of ten leading universities including Cambridge (UK), Oxford (UK), MIT(US), Columbia (USA), Leuven (Belgium), University College London (UK), and Stanford (US). TenU leverages collective knowledge and experience to promote innovation and economic growth through university-led research.

TenU has established itself as a leader in research commercialization through several key activities, including securing a £4 million grant from UKRI's Research England for funding for its programmes over five years. This funding supports TenU's mission to gather international evidence on best practices in ecosystem building and strengthen partnerships with investors, developers, and local communities. Through its partnership with Research England and its collaboration with top-tier universities, TenU acts as an advisor on best practices for research commercialization, intellectual property management, and ecosystem building. TenU's members provide consultancy to various stakeholders, including governments and private sector partners, on how to create resilient networks and support economic growth through university-led innovation. As Quoted by David Sweeney, then executive chair of Research England: "I am pleased to provide Research England funding to support TenU's ambitious international collaboration which is already leveraging its combined knowledge of research commercialization to inform the UK and wider policy and practice. We look forward to working further with TenU in the future, building on its insights on international best practices in university intellectual property management, as well as sharing experiences across continents on building ecosystems and developing talent."

The TenU members have a strong track record of successfully commercializing their research outputs. For instance, Oxford University's partnership with AstraZeneca led to the rapid development and global rollout of a COVID-19 vaccine, which has reached 180 countries and accounted for over 25% of COVID vaccinations worldwide. Other examples include innovations like rapid whole genome sequencing (Cambridge), fiber optics (Imperial), and the page rank algorithm technology (Stanford).

TenU strives to expand its initiatives such as organizing training programmes, and sharing effective practices across cultures internationally. Through its collaborative efforts and strong relationships with governmental bodies, such as the UK Department for Science, Innovation, and Technology [DSIT], TenU actively contributes to shaping policies that support research commercialization.

The nature of reputational impacts generated:

By participating in TenU, universities demonstrate their commitment to global collaboration and innovation. This enhances their reputation as leaders in research and technology transfer, attracting top-tier faculty, researchers, and students from around the world. Sharing of best practices helps them improve their own processes and outcomes, further enhancing their reputation for excellence in research and innovation. Being part of an influential network like TenU provides universities with greater visibility and recognition in the global academic and research communities. This can lead to increased funding opportunities, partnerships, and influence in shaping research policies. The UK's involvement in TenU highlights its leadership in research commercialization and innovation. This strengthens the country's reputation as a hub for cutting-edge research and technology transfer. TenU's activities and insights influence national and international research policies. The UK's active participation in shaping these policies through TenU reinforces its role as a key player in the global research landscape

SOURCES: TenU ; https://techfundingnews.com/tenu-with-members-from-top-global-universities-gains-4m/; Introducing TenU, a new international tech transfer collaboration — TenU

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The IRC supports the use of robust evidence and insights in UKRI's strategies and investments, as well as undertaking a co-produced programme of research. Our members are leading academics from across the social sciences, other disciplines and sectors, who are engaged in different aspects of innovation and research system. We connect academic experts, UKRI, IUK and the ESRC, by providing research insights to inform policy and practice. Professor Tim Vorley and Professor Stephen Roper are Co-Directors. The IRC is funded by UKRI via the ESRC and IUK, grant number ES/X010759/1. The support of the funders is acknowledged. The views expressed in this piece are those of the authors and do not necessarily represent those of the funders.

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