Chapter 8
Fostering Research with Societal Impact in Higher Education Institutions: A Review and Conceptualization

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Abstract There is an increasing pressure on Higher Education Institutions (HEIs) to produce societally relevant and impactful research, and to actively engage with non-academic stakeholders who are looking for answers to their challenges. This is a special challenge for social sciences, such as business, management, entrepreneurship, as opposed to natural sciences that rely largely on quantifiable data and statistics. The present chapter addresses this challenge and introduces the dimensions of societal impact of research produced by HEIs and describes the mechanism through which HEIs can provide impactful research needed for economic competitiveness and societal well-being. Illustrations are offered on how HEIs can boost their ability to transform the results of academic and applied research into beneficial knowledge and management practice for stakeholders, including business, industry, economy and civil society at large. The chapter sheds light on how to reinforce collaboration with non-academic stakeholders and partners within research and innovation ecosystems. To support the HEI's work, a framework for managing research with societal impact in HEIs is proposed.

Keywords Societal impact of research · Higher education institutions · Academic research · Applied research · Research impact framework · Social change and innovation

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The Key Points of the Chapter Are the Following

- To discuss societal impact of research produced by modern HEIs.
- To describe the mechanism through which HEIs can provide impactful research needed for economic competitiveness and societal well-being.
- To explain how HEIs can boost their ability to translate research results into the economy and civil society.
- To understand how to reinforce collaboration with non-academic stakeholders and partners in the research and innovation ecosystems.
- To propose a framework for managing research with societal impact in HEIs.

1 Introduction

The research system plays an important role for the economic competitiveness of a nation as well as the individual and community well-being. Multidisciplinary and transnational cooperation is the key for a more extensive success and impact of research tackling "wicked problems" (Kolko, 2012), "grand challenges" (George et al., 2016; Nowell et al., 2020), or sustainability issues (Clark et al., 2016; Griffiths, 2020); and research that integrates perspectives of several co-creators (Janinovic et al., 2020). Nowadays societies expect scientific research to be oriented not only towards the interests of the academic community, but also to the ways people in society work and live, and the pathways that governments draw for the future of the planet and the humanity (Spaapen & Sivertsen, 2020).

There is an increasing pressure on higher education institutions (HEIs) to produce societally relevant and 'usable' knowledge (Rau et al., 2018) and to actively engage with non-academic stakeholders who are looking for answers to their challenges (Clark et al., 2016). HEIs operate within the environments of rising costs of education combined with reduced government funding, which invites academics and HEIs to convince society of the benefits of their research. This is a special challenge for social sciences as opposed to natural sciences that rely primarily on quantifiable data and statistics (Powell & Walsh, 2018). One of the greatest challenges faced by universities is the effective management of their research portfolio that is relevant to business and society, to ensure sustainability in a steadily more complex and competitive global environment. It is increasingly essential for HEIs to translate the results and outcomes of research to practical implications and management practice across disciplines. Ability to use research findings in innovation opportunities and policy making varies, and there is a lack of systemic approach to involving non-academic stakeholders in research, development and innovation.

The chapter argues on the societal mission of academic research. It enters a broader line of discussion that takes place in Europe on investigating societal impact of research. The current call around the topic focuses on three main dimensions: understanding the nature of societal impact, addressing the measurement of societal impact, and developing the policy implications of societal impact (European University Association, 2019). The chapter stresses the importance of generating research results and outcomes, which are multi- and interdisciplinary, valued by a broad range of

stakeholders, and are closer aligned with social, economic, environmental, and other society goals (D'Este et al., 2018). Societal impact of research produced by HEIs is discussed, with the special emphasis on and consideration of the fields of business and management. A perspective is offered on assessing the societal impact of research. A framework for managing research with societal impact in HEIs is developed and introduced, encompassing a range of managerial considerations—from an individual researcher's perspective to HEI's community and ecosystem that it is a part of. The framework is inspired by the most recent theoretical developments in managing impactful research, as well as best practices in assessing societal impact of research in different countries and from various disciplines. The methodological approach employed is exploratory and inductive. It is exploratory as the chapter aims to investigate and explain the nature of societal impact of research, its different spheres of influence, and the measures used to assess it. And it is inductive as it involves development of a provisional step-by-step guide for replication of best practices in managing research with societal impact in HEIs.

2 Defining and Understanding Research with Societal Impact

2.1 Defining Societal Impact of Research

Nowadays, when the world is undergoing constant change, higher education institutions worldwide are looking for the opportunities to make a greater impact with their research, development and innovation activities that tackle current and emerging societal challenges, be those of social, environmental, or ethical. Particularly in crisis situations, scientific community is called to generate concrete and effective solutions to emerging problems and to convey how their research can help to address them. HEIs are asked to demonstrate the impact of their academic research on societies and explain how it can help understand and influence the ways people, organizations and communities think, behave, or perform (Wickert et al., 2020). As a result, academics and researchers worldwide struggle to broaden their understanding of what constitutes impactful societal research (Wickert et al., 2020). They strive to learn how their research can better serve the public interest by addressing key societal challenges, such as, for example, gender equality, implementation of circular economy across sectors, digitalization, and the related transformation of work globally. To support this, HEIs need to partner with other institutions, companies, and entities in their ecosystem and demonstrate research impact, efficiency, and innovation throughout. Talented researchers and skilled research managers and administrators are key players in this process that are enabling HEIs to achieve maximum research impact (Muhonen et al., 2020; Wickert et al., 2020).

Any present value or future benefits brought by research to intended stakeholders is recognized as research impact. According to Donovan (2007), the research impact was initially related to social, economic, and environmental effects. The cultural impact

Table 8.1 Defining societal impact of research

Definition	Source
Intermediate (novel/amended products, partnership-based collaboration), or ultimate (enhanced industry competitiveness) returns (outcomes)	Lähteenmäki-Smith et al. (2006)
Societal products, use and benefits of research expressed as: "Outputs", "societal references" and "changes in society"	Bornmann (2013)
Contributions that address current and/or future social, economic, environmental, and other society demands outside academia	D'Este et al. (2018)
Social and economic benefits, productive partnerships, academic credibility	Phillips et al. (2018)
University innovation that generates sustained impact on (regional) economic performance	Yeo (2018)
Response and contribution to current societal needs and anticipation of future societal demands	D'Este et al. (2018)
„socially desirable outcomes that will benefit the public" Multi-dimensional results which measure economic, socio-territorial, health, political, capacity building, and environmental impacts	Holbrook (2019, p. 85) Chams et al. (2020)
Benefits to society resulting from productive interactions between academics and stakeholders, in which knowledge is exchanged and used, in national, organizational and disciplinary contexts	Muhonen et al. (2020); Muhonen et al. (2020); Spaapen and van Drooge (2011)
Research contribution to social challenges by engaging in public debates and inspiring social activism or civil society interventions	Reale et al. (2018)
New knowledge resulting from science-society interactions, created, exchanged, and used to further achieve organizations' goals	Sivertsen and Meijer (2020)
Results broadly measured in all areas in a society, such as environment, culture, politics, economics, and health	Tahamtan and Bornmann (2020)

aspect and the ethical perspective were added later (Donovan, 2008). Improving quality of life, increasing the knowledge of the nation, stimulating better policy making, improving equity, inspiring new attitudes to social challenges and changes in community attitudes, encouraging improvements in health, security and safety are some general examples of expected societal impacts of the research produced by HEIs (Donovan, 2008). In Table 8.1, a few definitions of the term societal impact are briefly presented, which are relevant for business and management research.

In literature, the terms "social impact" and "societal impact" are used interchangeably (Bornmann, 2013). The term societal (social) impact has different interpretations, since both "narrower" and "broader" definitions of the term are used, which either focus on the nature of societal impact (for example, planned vs. accidental, positive vs. negative, short-term vs. long-term), or are

verbalized so that quite overlapping definitions arise, such as social impact and economic impact (Ateca-Amestoy et al., 2019).

There are multiple interpretations offered of the term "societal impact" adopted by research organizations, some of examples of which are offered hereafter. In Sweden, research bill 2021–2024 on 'Research, freedom, future knowledge and innovation for Sweden' was recently presented with the great focus on the requirement for research to benefit society and promote sustainability. Under the proposed law, "universities and university colleges in their work shall promote sustainable development that will lead to present and coming generations being secured a healthy, equal and good environment, economic and social welfare and justice" (Myklebust, 2021). Spain in its evaluation of the research activities has emphasized the need to transform practices at HEIs on the level of researchers and research institutions towards them being more sensitive and acting more responsibly towards society (Parellada & Menéndez, 2017). It has been further highlighted that advancing the research practices and increasing their impact on the economy and on Spanish society is a task for all the actors and stakeholders involved (Menendez & Castro, 2017), indicating a call for greater cooperation, networking and consideration of societal interests. The Netherlands employ Standard Evaluation Protocol system for evaluation of university research, and societal relevance is one of the essential considerations, with such criterion as social, economic and cultural impact of research. In practice, the assessment includes evaluations of societal quality of work (how the institute/research group interacts productively with users of research), societal impact of the work (how the research has affected specific users or specific processes in society) and/or valorisation of work (how the HEI is working actively to make research results available and adapted for use in products, processes and services). (Monaco et al., 2015).

Furthermore, in recent years greater emphasis is placed on such impact areas as assessing the quality, scope and relevance with which research is directed at specific economic, societal and cultural user groups, how research is used as evidence to back policy, and how it contributes to the general societal debate (Grant et al., 2010). This involves enabling the knowledge exchange from science to society, providing professional users with the knowledge needed for developing new products and services, and providing benefits to the public in general and individual target groups (Spaapen et al., 2007). For the Russell Group universities, including 24 world-class, research-intensive universities in UK, production of research with social impact contributes to supporting a nation to meet its social needs and enhanced quality of life, inspiring informed public and policy debate, increased understanding of ethical and social values that lead to a democratic, enlightened, and secure society. The UK Research and Innovation Economic and Social Research Council regards social impact as a noticeable contribution to the society, as well as research benefits to individuals, community, organisations or nations. It has an instrumental influence, inducing the creation of policy, practice or service provision, determining legislation, and changing behaviour. Impactful research has also a conceptual influence, enabling the understanding of policy issues and re-evaluating debates, and a building capacity influence via skill development. The UK Research Excellence

Framework—the system for assessing the quality of research in UK HEIs, aimed to enhance research impact outside academia and to provide accountability for public investment in research—defines social impact as any influence, change or benefit to community, organization or individuals in terms of the "activity, attitude, awareness, behaviour, capacity, opportunity, performance, policy, practice, process or understanding". This occurs either locally, regionally, nationally, or internationally and is often associated with the avoidance of harm, risk, cost or other negative consequences. Interestingly, recent research found that the existing citation-based metrics for impact measurement, which are widely employed at HEIs, do not correlate well with research excellence framework impact results (Ravenscroft et al., 2017). This leads to an interpretation that scientific excellence may be a necessary but not a sufficient condition for societal impact. This further calls for complementary and dedicated impact assessment methodologies and data sources (Reale et al., 2018), especially highlighted in multidisciplinary, social sciences and humanities research.

Academic research targets broad-ranging audiences, from individuals, private companies, public organizations, to communities, regions, nations, or other entities. A variety of beneficiaries with whom researchers interact is likely to enhance awareness and understanding of their distinct, wide range of unmet social needs (D'Este et al., 2018), which in turn leads to increased societal impact. The extent to which these actors benefit from scholarly research is highly dependent on interaction between academia, businesses and society, as well as value and skills of academic community or university open philosophy in research, open innovation practices and dissemination (Phillips et al., 2018). As per Morton (2015), societal benefits of scientific research occur over time and are assessed in close connection with the interests of different constituencies who might benefit from the research.

Ozanne et al. (2017) claimed that academic researchers should work more with invested stakeholders to define problems that address their interests and include insights of the end users, and thus create and use knowledge that can benefit society. For researchers to create societal impact, "they may need to seek out communities and engage with consumers and groups [...] to co-create and pursue transformative goals." (Ozanne et al., 2017, p. 10). Thus, engagement of researchers in activities such as co-production of knowledge with end users, community outreach, policy advice, and action research involving communities facing sustainability challenges (Rau et al., 2018) should be a key element of the HEIs' research and innovation strategy. Wickert et al. (2020) stress the importance of building researchers' ability to better valorise the results of their research for the benefits of society, as it becomes "an important assessment indicator, not only in requests for funding and in achieving accreditation but also in merit evaluations, promotion decisions, and other assessments" (p. 2). Benefits created for society extend from new products or services, improved processes, systems, behaviours, up to changed policies and new practices, and are measured at individual, institutional, community or societal level.

According to Phillips et al. (2018), societal relevance of academic research, resting in improving the quality of life and the ultimate wellbeing of society, can clearly influence academic credibility. It does not only lead to social and economic benefits but contributes to increasing public understanding of scientific research and

influences development of management practices as well as public policies. Lakiza and Deschamps (2019) suggest that impactful research can be attained by applying the four guiding principles that help to bridge the gap between the two worlds, academia and industry, that seem to live in different paradigms. These principles are reflecting the university capacity to build trust, encourage teamwork, prove understanding of the system (context) and continuously iterate (Lakiza & Deschamps, 2019). By applying these four principles, researchers help develop new theoretical knowledge useful for research and transfer relevant management knowledge to support the organizations and communities in developing their innovation capabilities.

A recent research of Sivertsen and Meijer (2020) discusses two types of societal impact: a normal societal impact resulting from the "active, productive, and responsible interactions" (p. 67) between individual researcher, research group or research organization and society, developed to fulfil their purposes in this collaboration, and an extraordinary societal impact, where interactions between research organizations and society have unexpected widespread positive or negative implications for society. In both situations the focus should be on improving the relations between the two sides that work together to better align the outcomes of the research and innovation process with the values, needs, and demands of society (Sivertsen & Meijer, 2020).

The social impact of research is, therefore, valorised across disciplines, for different groups of audiences, in both short and longer term and by taking into consideration multiple levels of analysis and methods and complex interdependencies between academia, businesses, government, and society (Wickert et al., 2020). The Quadruple Helix Model of innovation recognizes the distinctive roles that these major actors have in the innovation system, highlighting the importance of actively integrating the public into research, development and innovation projects (Kristel et al., 2016). The next section presents several approaches discussed in the literature for assessing societal impacts of research.

2.2 Assessing the Societal Impact of Research

Governments and research funding agencies acknowledge that there is an increasing need for assessing the societal benefits of scientific research, in addition to measuring scientific quality. National science policies and guidelines that incorporate social impact assessment are needed to settle requirements for granting funds and a better allocation of resources. To demonstrate the value of the research and to justify the investments made, HEIs need to evaluate their research impact. Tahamtan and Bornmann (2020) stress that the measurements of the research impact should be intended to show whether pressing "societal needs have or have not been (successfully) targeted by research efforts" (p. 9).

The assessment of research impact is conducted by means of generally accepted standard methodologies, tools, metrics, and (data collection) processes (Bornmann,

2013). Instead, the use of case studies is the favoured approach for evaluating the societal impact of research (Noyons, 2019; Tahamtan & Bornmann, 2020), as the research can be evaluated by the direct beneficiaries for whom the research was intended. Acknowledging the challenging and critical aspect of measuring the societal benefits of science, de Silva and Vance (2017) stressed the importance of use of the alternative metrics or altmetrics in assessing societal impact of scientific research, given the advances of information and communication technology and development of social networking environment. Altmetrics—a range of web-based metrics that are complementary to traditional (citation-based) metrics—are non-traditional metrics proposed as ways to assess non-academic research awareness. For example, Rau et al. (2018) found that "extensive dissemination through project publications, creative online resources and social media activities has ensured that the research findings have attained an international profile and audience beyond academia" (p. 271). This in turn may lead to enhanced research impact outside the academic world where various audiences use the research results but not cite it. Stakeholders' engagement metrics are frequently used to assess societal impact regardless engagements of stakeholders were beneficial or not (Mårtensson et al., 2016). To assess the connection of research areas with society and measure societal impact, Noyons (2019) used metrics such as co-authorship of industry in publications, mentions of publications in policy documents or social media metrics, which indicate technological application, commercial use and/or political interest of research. According to Muhonen et al. (2020) societal impact of research can be achieved through popular academic publishing but also through extensive media and public engagement, commercialization, stakeholders' collaboration and discipline interactions or by building epistemic communities.

Nevertheless, assessing societal impact of research is challenging and varied. As per Belcher et al. (2020) societal impacts are achieved when engagement and productive interactions between researchers and non-academic stakeholders influence and contribute to the creation and use of knowledge and lead to changes in behaviours and actions of stakeholders, even if they are gradual. Therefore, societal impact can be easily achieved by enhancing productive discussions between researchers, business professionals and policy makers (Janinovic et al., 2020). The more complex the social change generated through research becomes, the more diverse impact assessments and metrics are needed. Table 8.2 illustrates briefly the different societal dimensions of research impact relevant for the fields of business and management.

As a practical example, one of the tools used to assess the research impacts is ImpactFinder, a tool which helps universities evaluate the impact of their research portfolios across a broad range of social, cultural and economic aspects (Hirunsalee & Punyakumpol, 2019). Also, the Social Impact Open Repository, launched by the European Commission in 2015, acts as a tool for evaluating the social benefits of research and communicating different impact pathways (Janinovic et al., 2020).

For addressing the most pressing societal challenges, European HEIs are expected to develop advanced solutions through research and innovation, which are in the centre of the EU's economic strategy (European Commission, 2017).

Table 8.2 Societal dimensions of research impact

Spheres of impact	What it is	How it is being assessed
Scientific impact	Knowledge products, thinking tools, business models	Articles, books, case studies, textbooks, theories, decision-making tools, guidelines, government reports, webinars (Ozanne et al., 2017) Public awareness of important real-world problems relevant to a broader community (Wickert et al., 2020) Changes in institutional practices, new data and resources to cope with for professionals (Muhonen et al., 2020) Alternative pathways and specific solutions for real-world problems (Janinovic et al., 2020)
Economic impact	New products/ processes/ practices, changed behaviours	New products/services (Muhonen et al., 2020), new technologies, service change, business performance measures, jobs created/protected, knowledge transfer partnerships
Social impact	Impacts on societal welfare	Social activism or civil society interventions (Reale et al., 2018) Social equality, welfare or inclusion, public behaviour Changes to social policy (Noyons, 2019)
Education impact	Impacts on learning	Work-integrated learning model providing various co-creation opportunities for university-society research collaboration (Olsson et al., 2020) Case studies, participation of the case's actors in class discussion, elective courses (Wickert et al., 2020)
Cultural impact	Impacts on behaviours, creative practices	Evaluative reviews in the media, citations in reviews outside academic literature, testimonials (Tahamtan & Bornmann, 2020)
Practical impact	Impacts on practitioners and professional services	Enhanced understanding and development of communities of practice with shared values (Ozanne et al., 2017) Change to professional standards, codes of practices, protocols, and performance appraisal systems Change to working guidelines and practices
Public policy impact	Impacts on public policy and law	Specific solutions to matters of public concerns, change to existing policies, policy briefings (Wickert et al., 2020) Citation in policy, regulatory, practice or other documents, partnership agreements, consultancy (Noyons, 2019)
Environmental impact	Avoidance of harm or the waste of resources	Case-specific improvements to environment-related issues (Chams et al., 2020) Changes to environmental policy

(continued)

Table 8.2 (continued)

Spheres of impact	What it is	How it is being assessed
Quality of life impact	Impacts on the individual, collective and community welfare	Actionable and responsible knowledge and practices that consider individual and collective welfare and social interests (Wickert et al., 2020) Opportunities for self-development and self-management

Higher education institutions participate in various EU funding programmes and initiatives aimed at making a significant, meaningful impact on society. For example, the following EU-level actions are included in the updated "EU agenda for higher education": EU STE(A)M coalition, Strategic Erasmus+ support for higher education teachers, post-graduate and post-doctoral graduates, Erasmus+ business consortia + / Erasmus+ work placements with digital focus, Higher Education for Smart Specialisation (HESS), Marie Skłodowska-Curie actions, etc. (European Commission, 2017). In the frame of Horizon Europe programme, the European Research Council offers long-term grants for supporting revolutionary research (ERC Work Programme, 2021). In light of this, enabling research with a societal value is now being pursued rather than solely being of a commercial value, which call for applying special research evaluation criteria.

The role of HEIs in production of research with societal impact is reflected in the research assessment principles used worldwide. University research, as well as associated innovation and related social benefits, are evaluated based on a set of internationally accepted principles using a wide assortment of qualitative and quantitative criteria. One of the most essential evaluation principles presupposes that all cultural, social and environmental effects of research have to be considered with due account for specific local, regional and national contexts (AUBR, 2010). Therefore, multi-dimensional and multi-factorial assessments are common (European University Association, 2019), and various criteria are employed in different settings (Abramo & D'Angelo, 2015). The criteria are categorized according to the aspect (effect) they should evaluate (AUBR, 2010). Cultural, social and environmental effects of research include its academic, economic and societal impact, quality and productivity, accompanying innovation, sustainability, etc. The evaluation dimensions embrace the output of individual researchers, project groups, university departments and university itself (Moed & Plume, 2011).

To support the HEI's work, the following section of the chapter proposes a framework for managing research with societal impact in HEIs.

3 A Framework for Managing Research with Societal Impact in Higher Education Institutions

3.1 HEIs' Ecosystemic Role in Producing Research with Societal Impact

Societal impact implies making a difference for a society, and for HEIs this translates primarily into teaching, supported by research and community engagement activities. However, from the perspective of a HEI, the focus in research activities is often limited to and guided by the number of produced publications in the right journals, "research, especially quantifiable outputs and publications in the right journals, has emerged as the key to enhanced individual and institutional status and reputations" (Alvesson et al., 2017, p. 13). However, research, development and innovation (RDI) activities of HEIs call for a broader view, cooperation and ecosystemic thinking.

It is proposed here that the future is shaped by megatrends that inevitably translate to the need to be accounted for in HEI's RDI activities for the field of business and management. These are, for example, the second wave of digitalization, sustainable development from the perspective of green and socially responsible solutions, the changes in the worklife structures, continued learning as the norm and entrepreneurial and innovation knowledge as basic skills. As these megatrends impact across contexts, the societal impact of HEI's RDI work calls for the widening of co-operation between HEIs and their communities, extending beyond a single area of research, considering knowledge in terms of its social impact, creating a space for debate and the exchange of views. This line of thinking is supported with the increasingly ecosystemic role assigned to HEIs in recent years, where they are required to take on a more entrepreneurial role as core actors within regional innovation ecosystems (e.g., Etzkowitz & Leydesdorff, 2000), resulting in new and varied opportunities for producing research with societal impact. Universities have been observed to evolute towards areas of innovation, expanding their role as dynamic integrators with their surrounding city or environment and, therefore, progressing towards increased visibility and impact within their community at large (Nikina-Ruohonen, 2021).

HEIs are central hubs for talent accumulation and growth. As such, they form the backbone of an ecosystem by bringing together the actors within the community, including students (talent), startups, diversified faculty, professors and researchers with a private sector background, companies as corporate partners, RDI infrastructure, such as Sales & Interaction Labs (Nikina & Pique, 2016). Producing research with societal impact implies bypassing the focus on the number of produced publications and moving towards the ecosystem consideration and engagement in RDI work.

Identifying the spheres of impact expected through the research process should be central to achieving the HEIs' research objectives. Research findings are impactful when they influence business and management practice and behaviours. De Jong and

Muhonen et al. (2020) stress the importance of creating motivation for researchers to commit to a specific societal impact endeavour. Such motivations include either a personal desire to show the societal value of the research or are driven by external pressures: requests from government and stakeholders, expectations of academic communities, requirements resulting from societal impact policies (De Jong & Muhonen, 2020). In line with the need for creating motivation and supporting continuous professional development, Holbrook (2019) pointed out the importance of empowering researchers, through training and learning exchange, "to recognize and pursue ways in which their research can have impact" (p. 88). In their search to understand the effects on scientists of increasing demands of policy makers for research with societal impact, de Jong et al. (2016) found that HEIs' funding procedures and research assessments should include impact criteria, and university job profiles should consider including impact responsibilities. By improving interactions between academia, scientists, research councils and government, universities are stimulated to transfer their knowledge to society.

Various factors in the HEIs ecosystem, such as the institutional and organizational setting in which the research is conducted, the research networks and interactions with non-academic stakeholders, might act both as enablers or inhibitors in the researchers' pursuit of distinct societal goals (D'Este et al., 2018). Therefore, researchers should be given bilateral learning opportunities to enhance their capacity to contribute to creation of knowledge that is both scientifically robust and socially relevant, through productive interactions with stakeholders and partners from outside academia (Spaapen & van Drooge, 2011). The presence of societal impact of research should be interpreted in close consideration of the contexts within which the impact emerged and the conditions that support the impact process (Muhonen et al., 2020). D'Este et al. (2018) stressed the importance of setting a working environment for scientists that is supportive of socially-oriented research activities (to enable social engagement, peer community practices, knowledge and technology transfer), includes interdisciplinary research teams and accommodates diverse cultures, and holds a supportive infrastructure. The RDI infrastructure may be employed to identify suitable non-academic stakeholders and partners, assist in the management of research networks and enable dissemination of results.

Research networks act as vital mechanisms for sharing best practice amongst researchers across institutions, managing knowledge exchange and dissemination activities for the public and/or private sectors, and evidencing societal impacts as research practical outcomes (Hewlett, 2018). Societal stakeholders, such as civil society groups, NGOs, educators, governmental agencies, environmental guardians or social workers have different characteristics, expectations, and understandings of what is impactful and, therefore, impact for one group might not have the same meaning as for another. Research networks that are complex and multidirectional allow for productive interactions between researchers and end users because contextual demands and features were included (Ozanne et al., 2017). As per Rau et al. (2018) "dedicated outreach roles and well-resourced support systems for tailored communication and dissemination of research to policy-makers and wider communities are urgently needed" (p. 274).

3.2 Illustrations of HEIs' Strategic Objectives in Impactful Research

Nowadays, international rankings of worldwide universities are focused on increasing social recognition of academic research. University rankings would enhance HEIs' commitment to improving outcomes associated with the social dimension (Nyssen, 2018). In this context, it is also significant to provide students, academic community and society with accurate and comprehensive information on these outcomes (Nyssen, 2018). To achieve this goal, modern universities develop research strategies aimed at improving their rankings through generating significant societal impact and promoting social innovation at local, national and global levels.

A few examples of strategic objectives with relevance for societal impact of research are given in Table 8.3. They are based on the research strategies of several selected European universities: University of Amsterdam (the Netherlands), Universidad Carlos III de Madrid (Spain), Warwick University and University of Surrey (UK), University of Oslo (Norway), Transport and Telecommunication Institute (Latvia), Masaryk University (Czech Republic). The following criteria were used in the selection of the universities. The universities represent different geographic regions of Europe. Their strategies are publicly available; this approach allows them to effectively leverage publicly available data to increase their "visibility" and better target stakeholders. As emphasised in their research strategies, economic and social benefits of research are very important and extensive; the first-class research conducted in these universities is a vital element for their competitiveness in the context of the country's international competitiveness. As a result, they develop and regularly update their research strategies.

3.3 Societal Impact through the Lens of Researcher

Ultimately the societal impact of research manifests in the work produced by HEI researchers. Therefore, the adoption of the mindset of the societal impact by researchers takes the central stage as an individual researcher or a research team progress in their planning, execution and follow-up of the research. D'Este et al. (2018) discussed four factors that create a favourable disposition for researchers to achieve societal goals in research activities: motivations for conducting research that exhibits bilateral learning opportunities, a positive attitude toward setting the scientific research agenda in cooperation with non-academic actors, holding diverse skills and intellectual capital, and appropriate professional trajectories within disciplinary domains. In this chapter societal impact considerations are projected against the main phases of the research process.

Identifying Research Problems In selecting the research angle, the impact of it for business and society at large may be considered through tackling a real-world

Table 8.3 Increasing societal impact of university research

Strategic objectives set with relevance for societal impact (examples)	Supporting initiatives
Creating an "innovation ecosystem": Sustaining the research environment that encourages innovation and addresses social challenges	– Creating a pool of internationally recognized researchers conducting pragmatic research driven by strong relations with industry (e.g., research parks) – Improving the research infrastructure with emphasis on improving data sharing – Attracting external funding schemes designed to meet social challenges – Developing the capacity to influence public policy and practice through strategic partnerships with industry around multi-disciplines and multi-sectors – Awarding internal grants for innovative ideas with high potential for future societal impact
Aligning degree programmes with research priorities and values, as well as with the requirements of the society	– Developing inclusive interdisciplinary programmes with industry, introducing new learning modules on sustainability, cross-cultural perspectives, social justice, etc. – Integrating technology and social sciences, arts and humanities in the campus culture of cooperation – Creating new doctoral programmes through collaboration with industry with international exposure
Communicating forefront research with relevance for societal impact and innovation through active dialogue and cooperation with the society-at-large	– Establishing a closer dialogue with the authorities and with the business sector in the region – Distributing research results communicated through top publications, academic and professional forums to the community and industry – Delivering impact across multiple sectors through various innovation activities: Industry-university sponsorships, shared research projects with practitioners, university museums, etc. – Pragmatically commercialising research through establishing ventures, licenses, etc. - Using social media to publicize the results of research

Source: Based on the analysis of the selected universities' research strategies: University of Warwick Research Strategy 2018–2023 (https://warwick.ac.uk/research/edit-contents/uow_research_strategy.pdf); University of Oslo Research Strategy 2020 (https://www.uio.no/english/about/strategy/Strategy2020-English.pdf); Transport and Telecommunication Institute Research Programme 2015–2022 (https://tsi.lv/wp-content/uploads/2020/02/tti_research_programme_2015-2020.pdf); Masaryk University Research Framework for 2021–2025 (https://www.muni.cz/media/3177483/annex_mu_research-framework-for_2021_2025.pdf); University of Amsterdam Strategic Plan 2021–2026 (https://www.uva.nl/en/about-the-uva/policy-and-regulations/policy/strategic-plan/strategic-plan.html?cb); Universidad Carlos III de Madrid Strategic Plan 2016–2022 (https://www.uc3m.es/about-uc3m/plan-programme-2016-2022); University of Surrey Research and Innovation Strategy 2019–2022 (https://www.surrey.ac.uk/sites/default/files/2020-03/research-and-innovation-strategy.pdf)

phenomenon, identifying an ongoing debate and participating in it—for instance, through engaged scholarship, collaboration, consulting and mobility (Muhonen et al., 2020). Societal research impact may be reached by addressing specific solutions to matters of public concerns. Adopting a perspective of interdisciplinarity supports thinking across boundaries when observing socially important phenomena. Involving a combination of two or more academic disciplines into one research activity allows for the knowledge to be drawn from several fields, such as sociology, anthropology, psychology, and economics. Identifying the research problem of a meaningful and far-reaching impact is an act of cross-examining the real-world issues against the research priorities set by the HEI. Ozanne et al. (2017) stressed that, from a researcher's perspective, societal benefits are only indirect outcomes of research that occur later, over which they have far less control.

Reviewing Literature and Best Practices Dedicating time to thorough understanding of the existing body of knowledge and pinpointing the unique research gaps is critical for any impactful research. However, when the reference is made to research with societal impact specifically, there are additional considerations. First, the classical aim of the review of literature remains the same—to make a meaningful, novel, original theoretical contribution that leads to deeper understanding of important real-world problems (Belcher et al., 2020). Second, in distinguishing the relevant research gaps, a good grasp of the practical, confirmed experiences is needed—which refers to the mix of scientific and other professional literature and best practices. In the end, for every real-life problem, a conceptual framework or a theoretical reference can be established. And, third, hearing and taking into consideration the multitude of voices and perspectives is imperative for a genuinely impactful research—the aspect that needs to be reflected in the dialogue of literature and sources (Olsson et al., 2020).

Setting Research Questions, Objectives, Hypotheses Setting the objectives and research questions is aligned with what type of impact is expected from the research, be that leading to the purely theoretical implications or aiming at shaping management practices and behaviours. Certainly, both have value. However, it is to be considered that it is the applied research that is more development-oriented rather than academic knowledge intensive. Applied research seeks to solve specific problems or provide innovative solutions to issues affecting an individual, group or society. In applied research, the practical application of scientific methods to everyday problems is prevalent, and this is an essential contribution to formulating research questions and setting research objectives.

In this phase of a research process, engaging the network of HEI's university and corporate partners is of value (Hewlett, 2018). Corporate partners, trade unions and business support organizations bring to the table real-life tangible cases and problems in need of solutions. Local and international university partners help to attract the best minds and reach impact through partnering. Integrating the networks throughout the phases of the research process enhances the potential for creating research with societal impact.

Selecting Research Design In choosing the study design, research that is not purely academic but rather applied in nature calls for the respective methodologies. Characteristic approaches to applied research are action research, phenomenon based, research and development, evaluation research, case studies. In addition to the established, vastly used and published methodologies, both qualitative and quantitative (and respective data gathering tools, such as interviews, surveys), other approaches may be employed, including research and development workshops, collaborative development techniques, experiments, and hackathons.

The critical point of evaluation is the approach to sample in aiming to produce research with societal impact. There are several angles to digest. For example, can a widely researched societal concern be revisited with a novel sample? Is there sufficient dialog between stakeholder perspectives within sampling? Are minority and niche perspectives considered? Has a wide scope of contexts been addressed?

Reporting Research Results Effective communication of results often makes or breaks the research in terms of its factual impact. Academically tailored peer-reviewed publications are certainly about quality and impact factors of the journals where they are published, rather than the number of publications. Simultaneously an impact is created through the use of a wide range of dissemination channels, such as public presentations to non-academic stakeholders, public media, exhibitions, networks outside academia (Davison & Bjorn-Andersen, 2019). Journals connecting managerial and academic audiences are popular and well-referenced, including such examples as Harvard Business Review, MIT Sloan, and California Management Review. Professional blogs, podcasts, social media (Twitter, LinkedIn), management books—are all examples of how to scale up and report on research results broadly. Discussing or offering specific solutions for business or matters of public concerns is highlighted in this context. Davison and Bjorn-Andersen (2019) stressed that a confirmation of the societal impact obtained by researcher is when their research results were picked up by relevant non-academic stakeholders and the researcher receives funds from industry and government and works in partnership (engaged scholarship, innovation projects, consulting, action research) with non-academic stakeholders in order to solve societal challenges.

Integration with teaching is an important avenue for HEIs to ensure societal impact of research. It is essential to consider student engagement upfront, when the research project ideas are brainstormed. These may include, for instance, engaging students in the research activities either through coursework or thesis writing benefits, inviting students for internships within research projects. It is equally important to consider the integration of the research results in teaching, course modules, open-access lecture materials and other pedagogical outlets.

4 HEI Management Framework for Producing Research with Societal Impact

The production of research with societal impact by HEIs is a multidimensional task that calls for the vision of the global trends combined with designing the research strategy and activities at the nexus of academia, businesses, government, and society. Identifying research and innovation networks as well as key partnerships for RDI, not only understanding the role of key societal stakeholders in research networks, but actively interacting and engaging them is essential (De Jong & Muhonen, 2020). Table 8.4 brings together the key elements that HEI management needs to incorporate in order to reach notable societal impact in its RDI pursuits. The managerial considerations are shaped around HEI internal and external environment.

Context and Strategy In pursuing research work with high societal impact, the overall HEI context is influenced by the size, the guiding mission of the organization, organizational and ownership structure (Lakiza & Deschamps, 2019). These are projected against the opportunities and threats of the external environment, the global trends, the observations of the HEI surrounding community and ecosystem within which it operates. The HEI RDI strategy and vision are shaped with the examination of the above (Holbrook, 2019). Furthermore, RDI focus areas and range of impacts are defined by HEI's strengths and main spheres of expertise (D'Este et al., 2018). For example, among the leading universities of applied sciences in Helsinki, Finland, Haaga-Helia University of Applied Sciences holds the position of the principal business and management HEI, while another partner-HEI in the same region Laurea University of Applied Sciences specializes in social services, nursing and wellbeing industry focus. The spheres of HEI expertise form across the years and are rooted in organizational history. RDI efforts aiming at societal impact need to be designed with these specializations in mind. This will enable the integration of RDI processes and results in teaching, which is one of the key direct ways of how the results of RDI benefit future young talents and are thereafter translated to societal impact together with students' future employment.

In social, management and business sciences less attention has been typically given to the design of infrastructure and facilities for supporting research and facilitating its impact. However, in the recent years more HEIs seek to develop forward-looking RDI infrastructure with the use of new technologies and experimentation facilities, allowing higher societal impact of research by the employment of contemporary digital solutions. One example is LAB8 Service Experience laboratory by Haaga-Helia University of Applied Sciences in Helsinki, Finland. The laboratory's focus is on service and experience design. LAB8 conducts trend research, provides event production services and applies the latest technologies to construct a customer journey and experience. Another example is GEM Labs in Grenoble, France—a campus created by the principle of an immersive business lab, where researchers, students, decision-makers and their teams come to experiment with new ways of seeing and doing business, developing their activities and creating value. This and other strategic approaches strengthen the impact of HEI within

Table 8.4 Framework for managing research with societal impact in HEIs: Main elements

Element	Internal managerial concerns	External managerial concerns
Context and mission	Size, structure, mission, ownership	External settings and forces, emerging opportunities and threats, business ecosystems, global trends, RDI priorities
Strategy	RDI vision and strategy, focus areas and spheres of expertise Forward-thinking RDI infrastructure and experimentation facilities for enabling research impact Shifting to science-based applied research with high societal impact Integrating RDI in teaching Funding schemes based on RDI priorities Internal societal impact reporting	Facilitating external research impact in community Spheres of impact within HEI's ecosystem Funding schemes to facilitate societal impact of research External societal impact reporting
People	Cross-sectorial managerial capacities which are RDI and industry versed Internal RDI personnel strategy Advanced training and development to support RDI work with societal impact Internal research grants and other incentives RDI merit evaluations, promotion opportunities	External staffing strategy at the crossroad of RDI—industry—teaching Internationally connected research groups and clusters External research grants within HEI's priority areas Distributing research impact across multi-sectors and multi-stakeholders
Partnerships	Multi-stakeholders involvement in RDI processes Cross-discipline cooperation in RDI projects	Involving external multi-stakeholders and networks in RDI Government, local authorities, industry-commissioned RDI projects University partnerships locally and internationally aiming for international scalability of RDI results and its societal impact
Communication	Communication tailored at non-RDI personnel to take part in RDI activities Operating HEI internal research accelerators Visibly positioning RDI news and engagement opportunities in internal communication channels	Strategic and phased approach to RDI project communication Communicating the tools for project results' implementation to relevant stakeholders Balanced publication strategy, consideration of all academic, professional and wide-audience outlets

Source: Adapted based on (D'Este et al., 2018, Holbrook, 2019, Janinovic et al., 2020, Olsson et al., 2020, Spaapen & Sivertsen, 2020, Wickert et al., 2020)

the ecosystem where it operates and advance the correlation between HEI's RDI strategy with the external impact within its community, internal and external stakeholders. The parallel implication is the shifting of the focus from purely scientific, fundamental research to science-based applied research with high societal impact.

People and Partnerships Human resources considerations are the heart of managerial decisions in the process of increasing societal impact of research projects. At the management-level recruitment and personnel development within HEIs, the capacities and capabilities need to be (a) cross-sectorial, (b) RDI and industry versed, (c) with managers having a grasp on both RDI and teaching as well as their integration. Other notable personnel decisions include the processes and tools for involving teaching faculty in RDI activities, as opposed to limiting the research projects only to the dedicated personnel. The personnel recruitment, involvement and incentive support to advance research with societal impact will benefit greatly from addressing it at the level of HR strategy and policy development of HEI overall. Other considerations include integrating HEI's researchers and faculty within internationally connected research groups and clusters, pursuing external research grants within HEI's priority areas, rewarding the distribution of research impact across multiple sectors through various innovation activities, top publications, forums.

Partnerships and the network that HEIs develop holds notable implications for HEI's success in producing research with societal impact (Hewlett, 2018). From the perspective of internal organizational considerations, this implies fostering the internal innovation ecosystem by including all relevant stakeholders—not only research personnel, but students, student startups, teaching faculty, in RDI processes.

Furthermore, there are several RDI disciplines that HEI typically pursues, and the essential notion is not to limit the RDI project creation within single disciplines, but rather to advance cross-discipline cooperation in research projects' ideation, creation and implementation. Just like in business and outside world, there is a great call for the interdisciplinary approach.

Every HEI has its own network of corporate and organizational partnerships, which takes years and notable effort to build (Olsson et al., 2020). Some of the typical formats of cooperation with such partners include student recruitment and co-branding and positioning efforts. However, inviting and incorporating HEI's corporate partners' network in RDI projects offers great potential both to extend the cooperation to a new sphere and increases the chances of making the research relevant, valuable and applicable for the real-life business and management context. On an additional note, this could open the doors for government, local authorities or industry-commissioned RDI projects (Janinovic et al., 2020), providing HEI with a revenue stream for its research activities. Forming university partnerships locally helps to seek complementarity of skills and research competencies in order to jointly pursuit of RDI projects and respective research financing. International-level university partnerships often aim at scalability of RDI projects, their results and extended geographical societal impact.

Communication is critical in translating research activities and results into meaningful outcomes and development suggestions for industry, business and society at large. The communication efforts start with the well-coordinated efforts aimed at internal stakeholders. It starts with communication tailored at inviting non-RDI personnel (such as teaching faculty) to be aware of and take part in RDI activities and projects. HEIs may operate an internal research accelerator, where

current RDI opportunities are addressed with everybody who is interested. Giving visibly and positioning RDI news, current projects and engagement opportunities in internal communication channels generates discussion and attention.

From the perspective of external communication, a strategic and phased approach to RDI project communication is required, integrated and implemented within every RDI project (upon project launch, implementation and conclusion). More often than not this remains an un-noted and under-resourced aspect of a new research project in the planning. Organization-level procedures and guidelines help to anticipate the external communication needs related to individual research initiatives.

Integrating the tools for project results' implementation is an essential part of an RDI project and communicating the availability of such tools to relevant non-academic stakeholders. Be that a process chart, a model, a guidebook—or another key research output—packaging it for the relevant audience and supporting its spread via appropriate channels (partner channels, conferences, workshops, etc.) and accessible means (newspapers, podcasts, blogs, MOOC, etc.) creates exponentially more value (Janinovic et al., 2020). Research projects often call for academic publications in high quality peer-reviewed journals. However, a balanced publication strategy is something to be considered and advanced at HEI level. Muhonen et al. *(*2020*), for instance, stress the importance of interactive dissemination of research results via various channels* including scientific publications, social media, websites, databases, and broadcasts, by involving stakeholders and users of the research. This way they become aware of the research results and can offer a societal response. Dissemination of research results through a broad range of publications and in their various formats, publication in vernacular languages with the consideration of both academic, professional and wide-audience outlets, will aim to generate constructive discussion, facilitate development efforts and, ultimately, achieve meaningful impact (Wickert et al., 2020).

5 Conclusion and Implications for HEI Management

HEIs are under the pressure for renewal and re-imagining of their work, processes and transition to the new digital realities—further expedited by the Covid-19 realities. A notable call exists for HEIs to advance their societal impact policies, strategies and capacities through research at the level of competencies, abilities, attitudes—with the creation of respective support structures to sustain a broad range of research impacts.

To the date, the societal impact of research is something that HEIs have been pursuing independently with a varying degree of purposefulness. At the same time, the uniform design of evaluation criteria for research with societal impact along with respective policies and strategies is still work-in-progress on a wider institutional level. There is extensive work still to be done to design formal societal impact evaluation criteria at national level for reporting research results and to encourage formal societal research impact reporting at the national and/or institutional level.

Certainly, the discussion of the impact of research carried out by HEIs in the spheres of business and management has a significant connotation for industry, economy and society at large. Yeo (2018) found that university innovation enabled by RDI is a significant predictor of regional economic performance, among other innovation drivers from the private sector. As a result, innovation management policies and initiatives pertaining to university deserve special attention and should be tailored to university's specific social contexts. There is also a necessity to explore the societal value of the research produced by HEIs to the community and voluntary sector as the contemporary higher education landscape places a significant emphasis on brokering linkages with it in order to promote applied research with positive societal impacts.

The present work has taken steps towards flashing out the key aspects of what is considered societal impact of research in HEI context and in business and management sphere in particular. The proposed framework for managing societal impact of research is to serve as a point of reference to generate the practical discussion and review within a HEI.

The proposed framework for fostering research with societal impact holds the fields of business and management within the primary focus, but may benefit also other disciplines. Advancing research with societal impact is advocated across disciplines and may be in part viewed as a cross-disciplinary challenge. With the business, management and entrepreneurship settings, future investigation may advance the discussion to the exploration of social enterprises, social entrepreneurship and social impact measuring. Furthermore, each HEI's operating environment is different, and the elements of the framework are adaptable to reflect that. The chapter provides a broader conceptualization of societal impact of research that allows HEIs to prioritize areas where they can create research impact, either academia, policy or practice.

As HEIs are operating in the environment of increasing expectations for practical implications of their RDI activities, the resources need to be adjusted accordingly. We see the trend for multi-stream financing of RDI work implying the strong applied research results for the engaged stakeholders. The human resource considerations include the intrinsically built demand for the RDI projects and their results to be integrated within HEI's teaching and student engagement. In addition to resource considerations, the quest for greater societal impact of research reflects the need for the larger HEI cultural change, cross-scientific approach, development of research infrastructure and its operation by the open innovation principle. Facilitating and enabling research with societal impact is a powerful tool for HEI reinvention.

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