“Real impact”

Challenges and opportunities in bridging the gap between research and practice – Making a difference in industry, policy, and society

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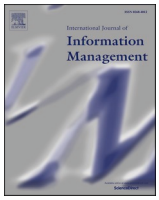

Editorial

"Real impact": Challenges and opportunities in bridging the gap between research and practice – Making a difference in industry, policy, and society

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ABSTRACT

Achieving impact from academic research is a challenging, complex, multifaceted, and interconnected topic with a number of competing priorities and key performance indicators driving the extent and reach of meaningful and measurable benefits from research. Academic researchers are incentivised to publish their research in high-ranking journals and academic conferences but also to demonstrate the impact of their outputs through metrics such as citation counts, altmetrics, policy and practice impacts, and demonstrable institutional decision-making influence. However, academic research has been criticized for: its theoretical emphasis, high degree of complexity, jargon-heavy language, disconnect from industry and societal needs, overly complex and lengthy publishing timeframe, and misalignment between academic and industry objectives. Initiatives such as collaborative research projects and technology transfer offices have attempted to deliver meaningful impact, but significant barriers remain in the identification and evaluation of tangible impact from academic research. This editorial focusses on these aspects to deliver a multi-expert perspective on impact by developing an agenda to deliver more meaningful and demonstrable change to how "impact" can be conceptualized and measured to better align with the aims of academia, industry, and wider society. We present the 4D model - Design, Deliver, Disseminate, and Demonstrate - to provide a structured approach for academia to better align research endeavors with practice and deliver meaningful, tangible benefits to stakeholders.

1. Introduction

The term "impact" is regarded as a broader influence or alteration in the realms of the economy, society, culture, public policy, services, health, the environment, or overall quality of life, extending beyond the confines of academia (REF, 2019b). In the context of academic research, impact describes the demonstrable benefits of research outputs and activities on stakeholders, generally measured in terms of reach (how widespread the impact is) and significance (importance of the impact) (Bornmann, 2013; Reed et al., 2023). Stakeholders could be policy makers (national, international, and local), industry, academia, the economy, wider community, and relevant sectors of society. The type and extent of impact could be a change in understanding or decision making within government or industry, influencing healthcare policy decisions, and informing ongoing debates on critical topics such as the environment and education (UKRI, 2023a). Although no single prescribed method exists, the impact of academic research can be measured using quantitative methods such as citation counts, journal impact criteria, and policy change references. However, the measurement of impact can be complex and subjective where impact can lead to defined positive benefits to stakeholders but may also engender unintended consequences that could lead to negative outcomes for other stakeholders (Reed et al., 2021).

In the United Kingdom (UK), the impact of published academic research is assessed via the Research Excellence Framework that uses an expert panel to assess and rank research outputs and impact case studies from 150 Higher Education institutions (REF, 2019b). However, the REF process has been criticized for its excessive cost, lack of relevance, cumbersome and divisive processes, and inability to accommodate innovative research (The Guardian, 2014; Times Higher Education, 2023a). Most European countries use performance-based research funding systems (PRFS) for their universities but have not implemented a REF style evaluation (European Commission, 2017). In the United States (US), academic research is assessed through indicators such as the number of industry collaborations, technology transfer activities, developed patents, and creation of new spin-off companies from the research project (Porter & Rafols, 2009; Siegel et al., 2003). In Australia, the Engagement and Impact Assessment (EIA) is used as an element of the national research evaluation exercise to assess the engagement and impact of research on the economy, society, and communities as well as the contribution to social and economic well-being (Australian Research Council, 2023). Despite the differences, the common thread amongst the various mechanisms of measuring impact within different countries is the assessment of how academic research can reach and positively effect change and make a difference to stakeholders external to academia. However, academic research has been criticized for being heavily focused on citation counts, h-indexes, and stylistic writing that befits academic stakeholders, somewhat limiting further dissemination to

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industry and policy makers. These issues have only received limited discussions amongst academic decision makers, where change is poorly incentivized due to the adherence to current initiatives and performance indicators that do not encourage renewed approaches to delivering impact.

A number of studies have highlighted the detachment between academic publication, its form and function, and the tangible evidence-led contribution to real change and informed policy making within industry, government, and across many sectors of society (Kenny et al., 2017; Rajaeian et al., 2001). Academic research outputs often struggle to effectively translate into practical applications or influence decision-making in the real world, highlighting the complexity and non-linear relationship between academic research and practice (Reed et al., 2021). This disparity between academia and practice is due to several factors namely: poor alignment of incentives where authors publish for an academic audience, form and style of writing with an over emphasis on technical academic jargon, lack of collaboration between academia and industry, elongated academic publishing timescales, lack of channels for dissemination of research outputs, and questionable independence of funded research (Bornmann, 2013; Green, 2023; Times Higher Education, 2023b). There exists a disconnect between the aims and key performance indicators within academic publishing (that authors must adhere to) and the requirements of industry sectors and wider society that could potentially benefit from the impact of scholarly research. This misalignment is widely acknowledged within the academic community, and although various initiatives have attempted to develop more relevant and impactful academic research, there exists a significant gap between the aims and motivations of academic researchers and the needs of wider stakeholders. In areas where industry support for academic research is available, studies have shown that research projects have directly benefited from the interaction with organisations and these relationships have engendered further stimulus for long-term funded research and further innovative activities via genuine academic and industry engagement (Bikard et al., 2019; Grossman et al., 2001). However, studies have argued that a close alignment between academia and the business world could perhaps be less than ideal where we may see universities becoming too tightly coupled with specific industry agendas to the potential detriment of leading research and wider societal needs (Grossman et al., 2001; Sannö et al., 2019).

The report by Kenny et al. (2017) analysed the use of academic research in the context of the Parliamentary Office of Science and Technology (POST) within the UK government. The findings highlighted the poor communication structures between academia and parliament stakeholders and the fact that academic research is failing to make a measurable impact on policy. The study highlighted the fact that the voluntary sector outperformed the HE sector for written and oral evidence submissions to parliamentary committees, with respondents criticizing academic research for: late submissions, lack of interpretability, poor presentation, and overuse of complicated technical jargon (Kenny et al., 2017). This highlights the issues relating to the intended audience for academic publishing, where the main emphasis seems to be acceptance within a journal rather than a more balanced impact-led perspective. This lack of an impact-oriented mindset, is somewhat influenced by a culture and existence of performance indicators within academia that emphasize research publications for promotional opportunities or university tenure (Rajaeian et al., 2001). Researchers have called for new metrics that encompass economic and social impacts as well as alternative approaches and communication channels to encourage decision makers to review current practices and deliver greater stakeholder relevance (McKenna & McKenna, 2021). However, these initiatives have as yet, failed to gain any traction.

Within some sectors of academia and related research institutions, impact related initiatives such as technology transfer offices, industry partnerships, collaborative research and innovation programs are making efforts to improve the alignment between academic research and industrial application (Donne et al., 2021; Maritz et al., 2021). University-industry partnerships and initiatives have demonstrated the value of research quality and impact and also the substantive meaningful industry engagement resulting from previous experience with industry collaboration (Perkmann et al., 2013; Scandura & Iammarino, 2022). Researchers are increasingly aware of the need to communicate their findings in a way that is accessible and relevant to academia and industry professionals alike (Harzing, 2023). Scholarly researchers are perhaps influenced by journal editors who are focussing on theoretical contributions whilst not being sufficiently mindful of the relevance to practice. However, some of these efforts to drive impact have been criticized for effectively functioning as an "add-on" to existing research initiatives to demonstrate potential impact at the back end, rather than an impact-led strategic research initiative, where these aspects form an integral aspect of research design (Kenny et al., 2017). Demonstrating and evaluating impact is complex and also problematic with studies criticizing aspects of the literature for conflating the terms engagement and impact and for the inability to assess research outcomes in the context of unintended consequences for stakeholders (Reed et al., 2021). The alignment of impact with tangible measurable benefits to stakeholders is key to demonstrating how research outputs can effect change and influence decision making (McKenna & McKenna, 2021). These aspects are likely to be subjected to increased focus, scrutiny and debate as funders seek to disseminate key research outputs to deliver value in the form of societal impact, whilst academic institutions attempt to retain elements of research independence unconstrained by the demands of industry and wider society.

Although some aspects of the literature have discussed academic impact related topics, calling for a realignment of the needs of all stakeholders, generally the existing research lacks a timely and multi-faceted perspective, failing to develop a meaningful research agenda and detailed insight to this issue. This lack of an open and honest debate amongst academic researchers and wider stakeholders has led to a situation where academics seem forced to attempt to demonstrate some element of impact at the end of their research rather than seeing this as a fundamental and integral aspect, designed at the onset of the research project. There seems to be little discussion within the literature on ideas and research agendas to change this position, effectively assuming that most research is read by other academics and offers minimal contribution for meaningful impact on industry, society, and people's lives. We seek to deliver change and greater debate on impact and foster an open discussion by developing a broad perspective that collates the views of a number of experts from academia, practice, and policy to generate meaningful impact of academic research.

The paper is organized into a further four sections. The next section (section two) details the 'Approach' followed for developing this multi-perspective editorial. This is followed by the individual 'perspectives' on the many and varied complexities surrounding research impact which are set out in section three. The 'Discussion' section is thus developed in section four where further elaboration is given on the key points drawn from the expert perspectives. The paper concludes in the final section, highlighting the main key recommendations to bring about positive change.

2. Approach

This study aligns with previous multi-perspective studies, as originally outlined in Foerster (2003) and subsequently developed by Dwivedi et al., (2023a, 2023b, 2023c, 2022a, 2022b, 2022c, 2021a, 2021b, 2020, 2015), which concentrate on expert perspectives on emerging research topics. Taking this approach, invited experts in both academic and practice were asked to contribute to the key debates surrounding the challenges of manifesting the impact of academic research in practice, policy, and society. Each contributor brings their own perspective and unique insight on research from an academic and/or practice perspective. This multi-contributor approach is appropriate in circumstances where the subject has received limited discussion from existing studies

and needs a renewed focus and discussion to develop further direction, or an emerging topic perhaps too new to receive much in the way of meaningful debate within the extant literature. Each invited contributor has shared their own viewpoint and insight on many of the challenges stemming from academic impact, bringing this debate to the fore and encouraging a more widespread discussion amongst decision makers.

Previous studies that have adopted the multi-expert approach, such as Dwivedi et al. (2021b), have garnered numerous policy citations from organizations including the European Union, Joint Research Centre, European Commission, and The Policy Institute (Science Direct, 2023). This demonstrates the significant contribution and impact of the multi-expert perspective approach, and extensive reach. Previous studies based on this format have been extensively cited within the literature, contributing to the wider debate and development of research agendas on a number of subjects such as: Artificial Intelligence (AI), Smart Cities, The Metaverse and impact from Covid19. Furthermore, the range of invited experts from both academia and practice, serves to widen the audience and increase the reach of many of the core discussion points in such papers.

The multi-expert approach can be criticized for the overlapping narrative within the individual perspectives. However, we assert that retaining the distinct emphasis from the individual contributions retains the richness and uniqueness of the specific views and insights from each perspective. A weakness of this approach is also the length of the paper. This study contains the views of 56 invited contributions, and it could be argued that the sheer magnitude of the paper could be a limitation to widespread dissemination. However, we note that by retaining the views of each expert in its entirety, readers may gain valuable insight from one or more of the contributions. Additionally, subjects such as the challenges surrounding academic impact, due to the limited debates within the literature, perhaps are better served by a collation of views and perspectives within a single publication, where the reader can easily compare and contrast individual viewpoints. We do not advocate readers to digest the paper in its entirety in one sitting, but to focus on key contributions that are relevant to the reader along with appropriate aspects within the remainder of the paper. The full list of experts and their individual contributions are listed in Table 1.

3. Multiple perspectives from invited contributors

3.1. Academic research and societal impact - Manju Ahuja

In a Report to President Truman in 1945, Vannevar Bush, Director of the Office of Scientific Research and Development, wrote: "*New products and new processes do not appear full-grown. They are founded on new principles and new conceptions, which in turn are painstakingly developed by research in the purest realms of science.*" He further wrote, "*there must be a stream of new scientific knowledge to turn the wheels of private and public enterprise.*" This report,[90] "Science, The Endless Frontier" ed to creation of the United States science infrastructure, including agencies such as the National Science Foundation (NSF), The National Institutes of Health (NIH), and the Defense Advanced Research Projects Agency (DARPA).

Although product/service innovations and social impact has long been considered natural and desirable consequences of academic research (Lima & Wood, 2014), high scientific impact too often does not translate into societal benefits[91] (Smith, 2010). Lately, however, universities and funding agencies are increasingly interested in these impacts and include it among their strategic priorities (Fotaki, 2020; Lauronen, 2020). These next two sub-sections will consider impact in its

[90] https://www.nsf.gov/about/history/nsf50/vbush1945_content.jsp#sect1

[91] Here, societal impact refers to generating a knowledge output of potential social value, the adoption of knowledge by social actors or the effect of use on some segment of society (Boshoff & de Jong, 2020).

Table 1
List of Contributions, Contributors, and Their Backgrounds.

Contri #	Title	Contributor (s)	Academic/ Practitioner
3.1.	Academic Research and Societal Impact	Manju Ahuja	Academic
3.2.	Translating Research into Practice: The Interwoven Paths of Episteme, Phronesis, and Praxis	Adil S. Al-Busaidi	Academic
3.3.	Why are Industry and Business Practitioners Not Taking Full Advantage of Academic Resources to Enhance Their Practices? – A Cybersecurity Perspective	Shem Amalaya	Practitioner
3.4.	From Genes to Global Impact: A Guide to Amplifying Biological Research Outcomes Outside Academia	Sunil Archak	Academic
3.5.	Scientific Evidence in Public and Private Management: A View from the data Frontlines	María Teresa Ballestar	Academic & Practitioner
3.6.	Impact of Academic Research on Practice and Policy: A Reflective Exploration	Anandhi Bharadwaj	Academic
3.7.	Impact is Achieved when Research Instigates a Lasting Change	Shonil A. Bhagwat	Academic
3.8.	Bridging the Gap between Academic Research and Industry Practices	Amit Bhushan	Practitioner
3.9.	Turning Over a New Leaf? Alternate Ways to Enhance the Impact of Academic Research	Indranil Bose	Academic
3.10.	Impact of Academic Research for Non-Academic Users: The Case of Business and Management	Pawan Budhwar & Nicholas O'Regan	Academic
3.11.	Strategies to Facilitate and Assess Research Impact	Deborah Bunker	Academic & Science Adviser
3.12.	Strategies for Enhancing Decision Makers' Interest to Integrate Researchers' Contributions – the Case of Romania	Alexandru Capatina, Adrian Micu & Angela-Eliza Micu	Academic
3.13.	Making an ImpACT: Translating Academic Research for Practice	Lemuria Carter	Academic
3.14.	A Four- Step Approach to Capture the Impact of Social Science Research on Practice and Policy	Ioanna Constantiou	Academic
3.15.	Bridging the Gap: Maximizing the Impact of Information Systems Research on Society	Crispin Coombs	Academic
3.16.	Reflections on how Academic Research can Impact on Policy and Practice: Thoughts from the UK	Tom Crick	Academic & Chief Scientific Adviser
3.17.	Bridging the Gap Between Academic Research and Business Practice in Data Science and AI	Yves Darnige	Practitioner

(*continued on next page*)

Table 1 (*continued*)

Contri #	Title	Contributor (s)	Academic/ Practitioner
3.18.	Research Impact: Management & Organization Studies	Rick Delbridge	Academic
3.19.	Doing Research with Impact	Rahul De' & Abhipsa Pal	Academic
3.20.	The Impact of Academic Research on Practice and Policy	Robin Gauld	Academic
3.21.	Bridging the gap through co-creation of value: Enhancing the utilization of academic research by industry practitioners	Leeya Hendricks	Practitioner
3.22.	Impact of Academic Research on Practice and Policy	Airo Hino	Academic
3.23.	Impact of Academic Research on Practice and Policy	Cathy H.C. Hsu	Academic
3.24.	The Impact of Academic Research on Practice and Policy – Focusing on Education and Empowerment of the Young Generation	Netta Iivari & Tonja Molin-Juustila	Academic
3.25.	Creating Impact Through Synergies Between a Variety of Research Types	Marijn Janssen	Academic
3.26.	Achieving Impact through Business and Management Research	Paul Jones and Sascha Kraus	Academic
3.27.	What does "Impact of Academic Research on Practice and Policy" mean for a journal like *MIS Quarterly Executive*?	Iris Junglas	Academic
3.28.	Impact of Academic Research in Practice, Policy and Society	Abhishek Kaushik	Academic (Practice Background)
3.29.	Employing a "Translational" Mindset in Information Systems (IS) Research	Deepak Khazanchi	Academic
3.30.	The Impact of Academic Research on Practice and Policy - Developing the Co-creation Model through Collective Phronesis	Mitsuru Kodama	Academic
3.31.	Applicability Checks as a Means for Confirming Practical Relevance: A Call for Discussing Academic Research with Practitioners	Christian Maier, Marco Meier & Jason Bennett Thatcher	Academic
3.32.	Using Social Media to Bridge the Research-Practice Gap	Ian P. McCarthy	Academic
3.33.	Maximizing Research Impact: Planning, Tracking, and Demonstrating Research Outcomes	Bhimaraya Metri, Sujeet Kumar Sharma & Mousa Ahmed Albashrawi	Academic
3.34.	Academia Industry Disconnect	Santosh K Misra	Academic & Practitioner
3.35.	A German VR/AR-Research Perspective	Leif Oppermann	Academic & Practitioner
3.36.	Impact of Academic Research on Practice & Policy	Neeraj Pandey, Manoj Kumar Tiwari & Khalid Ibrahim Al-Sulaiti	Academic
3.37.	Navigating Industry and Academic Research Collaboration	Andrew Parker & Tegwen Malik	Academic & Practitioner
3.38.	Impact of Research on Practice & Policy	Kavita Pathak, Anubhav Mishra & Samuel Ribeiro-Navarrete	Academic
3.39.	Conducting High Impact Information Security and Privacy Research: Five Tenets for Cybersecurity Research Design and Execution	Daniel Pienta & Jason Bennett Thatcher	Academic
3.40.	Impact of Academic Research in Practice, Policy and Society	Ramakrishnan Raman, Vikram Kumar, Ikram Jebabli & Rameshwar Dubey	Academic & Practitioner
3.41.	Making an Impact as an Innovation and Strategy Scholar	Paavo Ritala	Academic
3.42.	Research Impact: Some Reflections and Recommendations	Suprateek Sarker & Michael Rosemann	Academic
3.43.	Impact of Academic Research in Practice, Policy and Society	Pallavi Saxena & Ravi Kumar Gutti	Academic
3.44.	Creating Meaningful Research Programs Instead of "Chasing after Papers"	Daniel Schlagwein	Academic
3.45.	Acknowledge the differences and Appreciate the Complimenting Capabilities for Impactful and Sustainable Industry-Academia Collaborations	Hergen Schultze & Vinay Kumar Singh	Practitioner
3.46.	Opportunities for Improving Alignment of Academia and Practice	Chitra Sharma	Practitioner
3.47.	Translating Academic Research into Practice and Policy: The 'IM-PA-CT' Framework	Antonis C Simintiras & Salah Al-Sharhan	Academic
3.48.	The Impact of Academic Research on Practice and Policy	Hanlie Smuts, Machdel Matthee & Marié Hattingh	Academic
3.49.	The Quest for Impact? Bringing Down the Ivory Towers of Research	Cristina Vanberghen	Academic & Practitioner
3.50.	Building Bridges: Collaborative Research Models for Real-world Impact	Ákos Varga & Csaba Csáki	Academic
3.51.	Sympraxis between Academia and Practice	Polyxeni Vassilakopoulou, Ariana Polyviou, Arve Haug, John Soldatos and Ilias O. Pappas	Academic, Practitioner & Policymaker
3.52.	Look Inward to Create Greater Societal Impact: Six Suggestions	Viswanath Venkatesh	Academic
3.53.	How to Make a Tangible Research Impact	Giampaolo Viglia	Academic
3.54.	Engaged and Impactful Research by Design	Tim Vorley & Levent Altinay	Academic
3.55.	Placing an ACE in the Hole of Academic Research	Michael Wade	Academic
3.56.	A Business Practitioner-Centred Approach to Accessing Academic Research	Paul Walton	Practitioner

discourse.

3.1.1. *Where academic research has had an impact*

To some extent, academic research has in fact driven digital

innovation, digital entrepreneurship, and digital transformation of companies and societies. For instance, in the arena of ***product innovations***, it is not immediately apparent that many significant technological innovations, such as the iPhone,[92] have their origins in academic research supported by the science infrastructure mentioned above (Satell, 2016). In the last few decades, this architecture has supported and driven research on technologies that have transformed society, such as computers, the internet, Internet of Things (IoT), social media, mobile currencies like M-Pesa, data analytic tools, crowd sourcing, and more.

While we frequently think of impact on the business community, information technology has considerable potential to make *societal impact* as well. Consider this illustrative story that shows how information technologies are keeping people safe:

> Safetrack (now called Noonlight.com): National Intimate Partner and Sexual Violence Survey says that one in three women will experience intimate partner violence in their lifetime. SafeTrek is a mobile personal safety app with a simple idea but high impact. If you feel unsafe, open the app and hold your thumb down on the large 'safe' button. When you are safe, release your thumb and type in your 4-digit pin within 10 s. If the situation escalates and you need help, release your thumb and do not type your pin – your location, name and pre-set identifiers will be relayed by SafeTrek to local police. Even in its early years, the Safetrack app was downloaded 800,000 times and on average protected more than 30,000 people experiencing an unsafe situation each month, 95% of whom are women, and half of whom are 18–24 years old.

Other potent examples include micro-finance such as M-Pesa (mobile money in Kenya) that has helped bring up the underprivileged. Many healthcare innovations have transformed this industry, including Cancer ***diagnosis by smartphone***, eye examination via a mobile phone (PEEK), *donor search,*[93] and a ***3D-printing prosthetic lab*** that has helped victims of conflict in a remote community in South Sudan gain access to limbs at a fraction of the regular cost.

Leong, Tan, and Ahuja (2020) suggest that in recent years, the Association for Information Systems has demonstrated commitment to social development through special interest groups focusing on green IT, social inclusion, and global development. The increasing number of special issues on themes addressing societal challenges, demonstrates an increased interest in creating societal impact.

3.1.2. *A promising approach: Co-Production of Knowledge Impact*

One promising approach in mindfully fostering this relationship is co-production of knowledge (Boswell and Smith, 2017). The notion of co-production of knowledge (between scholars and companies or policy makers) views research and policy to be mutually reinforcing (Jasanoff, 2004) and considers scientific and expert knowledge as contributing to policies.

What does co-production look like and how could it help create more societal impact? This can be done through more collaborative research through universities and thinktanks. While there are many such research centers and think tanks in current existence, it is hardly the norm. A much more frequent use co-production model where university units, hospitals, corporations, non-profits, and NGOs engage in targeted research with solution-focused investigations (Gholami et al., 2016) would greatly enhance the societal impact of research. Academic thinktanks can serve as a source of research direction that forms the basis for innovation aimed at social change. They offer academic research and best practices, ongoing guidance and impact measurement aimed at creating solutions to social environmental problems as well as understanding best practices that work and can be implemented.

Of course, for this approach to work, the reward structure of academic research would need to be re-examined. Impactful research involves longitudinal, in-situ, and complex research designs, which can be costly and do not always lend multiple scholarly publications needed for promotion and tenure. To this end, some have called for more focus on rewarding research impacts in addition to the traditional knowledge exchange processes (Upton et al., 2014). It also entails focusing more on non-academic audiences than is currently the case.

3.2. *Translating research into practice: The interwoven paths of episteme, phronesis, and praxis - Adil S. Al-Busaidi*

In a debate about newly suggested content in the American science curriculum and whether the recommended practices violated the U.S. Constitution, Judge John Jones III based his decision in 2005 on published research and mainly on the definition of science relying on Karl's Popper idea of '*falsifiability*' (Gorham, 2009). While Popperian's idea (Popper & Popper, 2008) [original work published in 1934] has widely influenced science, education, research, and practice, it also found its way into practice in a federal court after 71 years. The question worth asking is: How long should practitioners wait to see/use/apply scholarly work?

In a similar perspective, 81 of 100 world's top companies (e.g., Samsung, Amazon, Alphabet, Microsoft, Visa, Pfizer.etc) use blockchain technology (Lim, 2021). While recently, blockchain found its way into practice, it is an example of the published work on distributed computing that goes back to the 1970 s (Sherman et al., 2019). Despite being popularized by a white paper associated with an author named Satoshi Nakamoto (Nakamoto, 2008), it took nearly 40 years to be applied by the industry at a large scale. These examples demonstrate that academic publications can be timeless and not necessarily constrained by geographical or temporal limitations.

The industrial application (practice) of academic work comes in different forms: organizational practices, innovative prototypes, minimum viable products, final products and services, policy papers, clinical protocols, parliamentary guidelines, reports, etc. On the other hand, academic work transcends published articles to include other activities such as consultancy work with industry, intellectual property (IP), spin-off companies, teaching, community service, and knowledge dissemination through public lectures, workshops, and invitations to professional meetings. These activities directly and indirectly impact practice (Salter & Martin, 2001).

Szomszor and Adie (2022) examined research impact by reviewing policy citations and outcomes. The author found an average lag of 10 years from the publication date of the scholarly work and policy citations (Szomszor & Adie, 2022). Results showed that funded research was positively associated with policy influence with a medium correlation of ($r = 0.42$) for all examined funded agencies. For example, Szomszor and Adie (2022) found a positive association between the reported policy citations and policy influence outcomes in, to name few, management and business studies ($r = 0.84$), economics ($r = 0.6$), political science ($r = 0.58$), and engineering ($r = 0.93$ to $r = 0.98$).

It can be concluded from the above review that some published scholarly works are practically promising, but it takes time for such an impact to materialize, and this is another reason why practitioners might not see a direct or immediate research effect. Another reason practitioners might not see the use of research in practice is that some academics protect their novel ideas by filing IP applications through the Patent Cooperation Treaty (PCT) or patent offices. The PCT can take up to 30 months (WIPO, 2022). Waiting years to be granted a patent and finding an investor to adopt the invention either by selling, licensing the patent, or simply having the know-how are all forms of time lags that practitioners might not readily see.

The question of whether academic research finds its way into practice is complex. The expectations from both the industry and academia trigger its complexity. The corporate world expects universities to

[92] https://digitaltonto.com/2013/where-did-the-iphone-really-come-from/
[93] http://socialtech.org.uk/projects/donorsearch/

execute innovation-centered research ready to address the market needs. Universities and researchers, on the other hand, put efforts into shaping and developing innovation methods and not just delivering readily innovative products to the industry. Developing new methods requires time, financial resources, and high-caliber researchers. The above-stated blockchain technology indicates how many years it took scientists from different fields (e.g., math, computer science, business) to shape and reshape what is now known as a distributed-ledger method. The federal court example also shows that the idea of industrial practice originating from research is need-driven, and some industrial needs are contextual and unforeseen.

Finally, the indirect impact of research on practice is evident in corporate practice. For example, industrial R&D labs tend to hire academic researchers to run or work in these centers (e.g., OpenAI, Google DeepMind, MetaResearch, and The International Financial Reporting Standards (IFRS)). Several factors inhibiting research and practice from materializing include motivational, methodological, and procedural elements, such as the reproducibility of academic and industrial results (Levin & Behar-Cohen, 2017). The challenges that face industrial practices also face educational institutions (e.g., innovation valley of death, discontinued new products that failed to address market needs, the emergence of disruptive technologies that negatively impact entire business models of existing businesses, 90% of startups fail (Genome, 2023)). These consequences and the gaps between researchers and practitioners could be better understood and addressed when both parties join forces and activate university-industry linkages and meaningful collaborations.

3.3. Why are industry and business practitioners not taking full advantage of academic resources to enhance their practices? – A cybersecurity perspective - Shem Amalaya

3.3.1. Introduction

Modern businesses are largely technology-enabled entities. Irrespective of the sector (e.g., fashion, food and beverage, pharmaceuticals, etc.), businesses have various ways that information technology and the internet have catalysed innovation. For example, ride-hailing platforms like Uber and Lyft leverage GPS technology and mobile apps to efficiently connect drivers with individual riders. In the same vein, online ordering and delivery services like Deliveroo and JustEat have revolutionized the restaurant industry, allowing customers to explore diverse dining options and enjoy meals at their convenience.

These innovations in the business space have deployed information systems in optimising service delivery and customer engagement. Against this backdrop, cybersecurity has become critical in protecting these information systems from data theft, unintended service disruptions, and privacy disclosures. Furthermore, cybersecurity is now a constant challenge for every facet of civilized society. Society has become completely dependent on various information systems and, as a result, are highly vulnerable to various cyber threats (Benzel, 2021). Academic research within cybersecurity could greatly benefit cybersecurity practice if there is more collaboration between these *seemingly* divergent domains.

3.3.2. The gap between cybersecurity research and practice

From personal experience attending academic conferences and reading research publications, cybersecurity research tends to study old problems or far too futuristic problems thus overlooking pertinent current issues. In contrast, cybersecurity practitioners focus on present security threats and sources for a combination of people, processes, and technologies that offer the quickest solutions to these threats.

The main reason for this divide between academic research and practice within cybersecurity seems to stem from divergent goals in both domains. While researchers typically focus on turning out peer-reviewed publications and acquiring academic success and honours (Maughan, Balenson et al., 2013), practitioners are focused on moving products and services to the marketplace as quickly as possible.

3.3.3. Suggestions for bridging the gap between research and practice in cybersecurity

To bridge the divide between research and practice in cybersecurity, this contribution offers the following propositions (P);.

P1:. Journals devoted to academic research in cybersecurity should consider launching sister publications that specialize in translating academically rigorous content into formats that emphasize practical application, catering to the needs of industry practitioners. These adjunct publications would render complex, scholarly materials into accessible, application-oriented insights that industry professionals could readily comprehend and deploy.

P2:. These proposed sister publications should incorporate industry practitioners into their editorial boards to ensure the generation of application-oriented insights and palatability for industry professionals.

P3:. Most universities have capstone projects for undergraduate students where they collaborate with companies in the industry to solve specific problems. These capstone projects can be extended to early-career cybersecurity PhD students, in order to nurture collaboration between academia and the industry. For instance, institutions of higher learning could set up a web portal where they invite companies for research collaboration. This exposure of the PhD students to real-world problems will bring about academic research publications that are relevant to the industry, thereby creating a symbiotic relationship between academia and the industry.

If implemented, these propositions could allow academic research findings to be more widely read and utilised by industry practitioners, policymakers, and government officials.

3.3.4. Conclusion

A scenario where cybersecurity research begins to inform cyber practice at a greater frequency would be beneficial to society as research insights would be turned into real-world solutions to enhance security mechanisms within information systems.

3.4. From Genes to Global Impact: a guide to amplifying biological research outcomes outside academia - Sunil Archak

3.4.1. The definition of (non-academic) research impact

Simply put, non-academic research impact is the extent of changes a research outcome can bring about (i) in terms of awareness, opinions and compliance in society or, (ii) in the form of creation, course-correction or analyses of economic, environment, and health policies of the government.

3.4.2. Steps to take during the research planning/design stage to ensure impactful research outcomes

In addition to carrying out a review of past research to identify gaps, researchers may check policy documents published by a relevant country or various bodies of the United Nations to identify the corresponding research focus area. Research programmes that address either long-standing challenges or relate to current problems and immediate industrial applications attract greater attention. Researchers will be better-off identifying non-bibliometric indicators to measure impact beforehand.

3.4.3. Sections of articles that should provide a discussion to make research impact visible and what you look for in a research article to evaluate its impact

To illustrate how researchers could improve their research visibility, a millet research paper example is used below.

Firstly, the title of any research article should be direct and easy to understand and ideally contains an action suggestion. Thus, instead of

having a title - "Identification of millet genotypes with high micronutrients content" consider - "Biofortified millet lines with high zinc-iron for immediate adoption".

Secondly, the abstract should open with suggested impact of the research. For instance, instead of "we report here development of a millet line having 71 mg/kg iron and 40 mg/kg zinc based on a collaborative study spanning two continents" one could use "we have identified a millet line that can potentially address zinc-iron malnutrition among two billion across Africa and Asia".

Thirdly, the use of key words are crucial for impact metrics. Therefore, in addition to specific terms, one may include related key words from SDG goals, national policy and action plans or pervasive terms like climate mitigation. For instance, in the millet article "Zero Hunger" and "malnutrition" must be included as keywords. One must also remember to include these terminologies in the introduction or conclusion of the article.

Finally, the conclusion and future perspectives section (if this is not a separate section in the paper then it can be incorporated into the last paragraph of the discussion section) should explicitly mention non-academic impacts and possible indicators. Care should be taken to remain factual while creating attention-drawing content of a scientific article.

3.4.4. Strategies authors can employ to ensure their articles reach the intended audience, such as practitioners, policymakers, third sector organizations, and international entities like the UN

We simply cannot always replace serious scientific research articles with semi-technical notes to make them easily understandable to the general public with a hope to evoke greater non-academic impact. Authors may consider writing commentaries and blogs on their own articles to simplify the content and target policy makers. For instance, an article on the analysis of five fully sequenced insect genomes published in a specialized journal (Archak et al., 2007), was popularized among the target audience of insect researchers by a commentary published in another journal called Fly. Participating in general meetings and townhalls can attract attention of policy makers and practitioners alike. I strongly believe that editorials of journals must play a major role in taking the research message and findings to intended readership.

3.4.5. Methods to track and monitor research impact

In case of articles in science and technology, number of citations in patent databases is an important measure of impact. Whereas being part of college syllabus, mentions in the school text-books, state policy documents and industry documents provide the depth of impact, social media views, mentions and other altmetrics provide the width of impact. These also demonstrate that an article has made a tangible impact.

3.5. Scientific evidence in public and private management: a view from the data frontlines- María Teresa Ballestar

As a practitioner turned academic, who still enjoys participation in both arenas, I will never forget the words "*Politics is politics and science is science, and there is a bit of tension between them sometimes*" by Imperial College professor David Nutt after being "invited to resign" as a policymaker in the British Government after using a research paper that held evidence against the position of Downing Street on cannabis (Hodgkinson, 2012). This example shows the difficult dialectic between science-based evidence created by researchers in academia and its applications by practitioners (and policy makers) in public or private institutions. Taking action, or interventions, as we scientists formally call them, needs a research design with implementations that should be effective, sustainable, and have a positive return. Moreover, it must allow for traceability and monitoring of the quantification of the impact of different alternatives to these interventions. These factors, which seem logical from a scientific perspective, sometimes are not so easy to apply in the "real world".

3.5.1. What do scientific assessments need to be useful?

Building on Watson (2005), the framework for a robust scientific assessment requires an approach that is not only demand-driven but also profoundly inclusive and comprehensive. This demands the active engagement of experts representing diverse stakeholder groups at every critical juncture of the assessment process, spanning scoping, preparation, peer review, and communication. The overarching principle guiding this process is one of openness, transparency, and legitimacy, where the input and insights from both institutional and popular knowledge sources are seamlessly integrated. To ensure the efficacy of such an evaluation, it is imperative that it maintain unwavering technical accuracy. The conclusions drawn must be firmly rooted in evidence-based analysis, steering clear of any potential biases or value-laden elements. The emphasis on policy relevance stands as a paramount feature, ensuring that the assessment's findings are directly applicable and influential within real-world decision-making contexts.

Navigating the intricacies of a complex assessment requires a nuanced approach. Therefore, the assessment should extend beyond a singular perspective, acknowledging and accommodating a spectrum of ideological concepts and value systems. These variables, while inherently present within the realm of risk assessment, management, and communication, should be acknowledged and addressed. Consequently, the assessment should encompass a range of scenarios for action, each aligned with distinct ideological underpinnings that may or may not have a social impact.

To illustrate this point, I draw upon my experience in this arena. I have spent considerable time and effort evaluating educational interventions at different levels through Artificial Intelligence (AI). In all cases, the evaluation consists of a set of different analytical methods that yield similar results on the social return and causality of the educational programmes, following Watson's (2005) recommendations. The social impact of these studies was markedly divergent. One of them, the less academically cited, had a significant social impact, and it was featured in several major newspapers and digital media, while the others did not gain notable social recognition.

What made the difference between them? It is crucial to note that the integration of differing viewpoints represents a central tenet of the assessment framework. Diverse perspectives must be recognised to make the research as inclusive as possible, but they should also be quantified and synthesized. This approach guarantees that the research provides a comprehensive understanding of the multifaceted dimensions under scrutiny. By quantifying these variations, the assessment becomes a repository of knowledge that acknowledges the complexity of the subject matter.

3.5.2. Where are the problems?

The primary challenge associated with utilizing scientific evidence by practitioners is their scarcity of time and scientific knowledge. There is too much evidence but, at the same time, not enough results that are relevant and accessible to practitioners. Most of the evidence is the academic outcome of university departments ruled by the "publish or perish" aphorism. Consequently, researchers may not focus on innovating, being creative, or addressing useful social issues to produce valuable insights for private or public institutions, but on publishing papers. The outcome is sound research that is constructed based on strong assumptions, limiting its relevance and effectiveness to certain "laboratory" conditions, making it difficult to generalize, or even apply, the results (Aronson et al., 2019).

Another issue is the increasing complexity of research. As science progresses, it increasingly transcends not only the grasp of the general public, but even of the researchers themselves beyond their chosen specialties, which may mislead both uninformed practitioners and society. As it is increasingly difficult to distinguish good advice from bad, managers are constantly enticed to believe in and implement flawed practices. A significant aspect of the issue pertains to consultants, who could help translate science into practical material. But their incentives

make them focus on securing projects and, to a lesser extent, delivering commendable outcomes and assessing the genuine extent of their enhancements. When a client's issues are merely partially resolved, this generates further tasks for the consulting company.

3.5.3. Conclusions

Synergies between universities and practitioners not only boost the company's performance but also have a positive impact on the national economies. This makes it imperative for us to identify the hindrances and find the catalysts to nurture its sustainable growth. To achieve this objective, there are two relevant aspects to address.

Firstly, there is a need to develop a robust framework for scientific assessments that is as inclusive as possible to guarantee applicable outcomes in society. The results have to be traceable and measurable over time in order to show the return on the investment. Secondly, finding actors that can serve as a bridge between academia and industry in an increasingly complex context is one of the key factors in putting scientific knowledge and insights into practice. Neither academic pressure for publishing nor urgency for short-term results in the industry are beneficial to strengthening this collaboration.

3.6. Impact of academic research on practice and policy: a reflective exploration - Anandhi Bharadwaj

3.6.1. Introduction

Writing in an opinion piece for the New York Times, Nicholas Kristof lamented that although some of the smartest thinkers on problems are university professors, much of their work does not influence the most important debates of the day. Kristof is by no means alone in this thinking. The perspective of academic research as a closed system of scholars writing for other scholars to cite and build upon is widely shared. Despite significant efforts by various stakeholders, including authors, journal editorial boards, funding agencies and university administrators to disseminate the impact of scholarly research to the general public there continue to be significant challenges. In this reflection, I reflect on some of these challenges and offer a few practical suggestions to overcome them.

3.6.2. Closing the gap between scholarly research and impactful outcomes

Before any attempts to close the gap are made, it is important to recognize that there is no universal agreement on what constitutes impactful research. For academic scholars, the impact may be realized with the very act of creating their knowledge product, such as a journal article or a book chapter. Creating a knowledge product that can be accessed and developed further by other scholars can be the endpoint of impactful outcome for the researcher and this is the stage where scholars invest most of their time and expertise. Further diffusion of the knowledge product to other outlets outside academia may not be the researcher's primary goal as they are often anxious to quickly turn their attention to the next research project. Thus, for academic researchers the research cycle often ends with the publication of the research. There are also little or no additional incentives to disseminate the new knowledge generated by the research to external audiences. However, universities - both public and private, are facing mounting pressure to justify the hefty investments in research and to ensure that the knowledge created in academia is being leveraged in the service of humanity. The tough questions of how to achieve these desirable outcomes persist.

If we extend the value chain of research impact beyond the impact of knowledge creation, the next impactful outcome that we should care about is awareness impact (Ozanne et al., 2017). Awareness impact occurs when knowledge about the research –the research questions and the key findings are shared with the broader public. When academic articles are picked up by media outlets or when findings are announced through press releases, awareness impact increases. Awareness metrics are now being tracked by universities and reported to other stakeholders including accreditation and funding agencies, as evidence of the impactful research conducted by their faculty. Social media metrics are also tracked to measure the diffusion of knowledge amongst the broader public.

Extending the awareness impact further, researchers may also be interested in achieving use impact – which is the impact that is realized when the knowledge is embedded in artifacts such as medical devices, decision algorithms, consulting templates, or other technical artifacts that decision makers and policy specialists can use. Universities with significant research capacity, especially in medical and engineering sciences, have established centers that focus on downstream research commercialization, seeking opportunities to further diffuse and monetize the applied value of the research. Impactful research outcomes therefore can be seen along the entire research value chain, from creation, to awareness, use and the realization of tangible societal benefits (Deng et al., 2014; Ozanne et al., 2017). These additional steps in the research value chain are not automatically achieved - in fact, often they remain unrealized. So, it is important that when we talk about impactful research outcomes, we are clear about which stage of the research (creation, awareness, use, and societal benefits) we are focusing on as there are different goals, outputs, stakeholders and metrics at each of these stages.

An important question that arises is, what is the responsibility of the academic scholar in ensuring downstream impacts (awareness, use, and societal benefits) of their research? This is a larger debate with important considerations and a variety of perspectives about the roles and responsibilities of academic scholarship. Although this is a worthy debate to have, it is not the focus of this reflection. Regardless of where the primary responsibility for impact at each stage of the research value chain lies, it is nevertheless important for academic scholars to design and execute research projects such that the opportunities for impact at each of the downstream stages are maximized. I believe this is the true hallmark of engaged scholarship, and I outline some steps below to achieve those goals.

3.6.3. Increasing impact in the creation of knowledge

The conventional metrics focus primarily on bibliometric measures such as citation counts and their various derivates. However, engaged scholars can take additional steps to increase awareness, use, and societal benefits of their research:

Step 1: Consult Stakeholders: Speaking with the people who will be directly impacted by the research, such as policymakers, industry experts, or business leaders is an important first step. Such productive interactions among researchers and key stakeholders, whether these are through formal or informal partnerships, have been shown to be critical for maximizing societal impact.

Step 2: Societal Relevance: Aligning the research question with current societal or professional challenges or engaging in what has come to be known as problem-focused research provides greater opportunities to engage in research that produces workable solutions to relevant problems.

Step 3: Interdisciplinary Approaches: Incorporating perspectives from other disciplines and outside stakeholders can help enrich the analysis and outcomes. Despite emanating from different positions and contexts, when people with different perspectives work together, research shows that the outcomes are much more innovative and novel.

3.6.4. Increasing the awareness impact of research

Conventional approaches to increasing awareness of the research is to present at academic conferences and workshops which remain effective venues to spread awareness within the academic community. To reach broader audiences, engaged scholars are taking several additional steps:

Step 1. Leveraging social media: Using platforms like Twitter and LinkedIn to share research findings with a broader audience is helpful to increase awareness. Institutions such as universities and journals are also using social media channels to disseminate research outputs.

Step 2. Publishing in practitioner and trade publications: Publishing summaries or articles in industry-specific journals, websites, or popular media can be very effective in increasing awareness and engagement with the research.

Step 3. Opting for open access: Opting for open-access publications and uploading working papers to research networks such as the SSRN allows interested others to easily access the work and can be crucial in increasing impact awareness.

3.6.5. Increasing the use impact of research

Extending research impact further requires an examination of the direct tangible benefits enabled by the research output. Strategies for increasing the direct use potential of research include:

Strategy 1. Publishing case studies: Case studies that show how the research has been applied in a real-world setting such as using the knowledge in the citation of a new product, or service, or even teaching cases that can be used to train students in the discipline are all examples of productive research use.

Strategy 2. Seeking testimonials: Testimonials from stakeholders who have benefited from the research can be an important measure of the applied value of the research output. The responsibility for collecting and documenting such testimonials may be a collaborative exercise where research institutions (journals, academies, universities) can work with the scholars t collect and document such testimonials.

Strategy 3. Tracking policy changes: Tracking instances where the research led to changes in public or organizational policy is critical but is often difficult to do because of the time lags from research to policy changes. Here the institutions that support research dissemination should take on a more active investment in processes that support such translation.

Strategy 4. Seeking economic benefits: Patents, licenses, entrepreneurship ventures, product revenues, and industry partnerships provide additional means for realizing the economic and societal benefits of new research. Here again, institutional support to academic researchers is key in ensuring that these benefits are realized.

3.6.6. Conclusion

Reflecting on the impact of academic research on practice and policy reveals a multifaceted relationship. The challenges presented call for enhanced integration across multiple stakeholders – both individuals and institutions - with different goals, outcomes, and metrics. Achieving synergy across these elements can be challenging but important to ensure that practice and policy evolve with the rigor and ethical responsibility that academic research instills.

3.7. Impact is achieved when research instigates a lasting change - Shonil A. Bhagwat

REF- (2021) subpanels assessed the 'reach and significance' of "*impacts of research on economy, society and/or culture*". Here, 'reach' is understood as the "*extent and/or diversity of the beneficiaries of the impact, as relevant to the nature of the impact*". 'Significance' is understood as the "*degree to which the impact has enabled, enriched, informed or changed the performance, policies, practices, products, services, understanding, awareness or wellbeing of the beneficiaries*." (REF, 2021, 2019 p. 52).

These definitions of reach and significance formed the main barometer of the assessment of non-academic impact in REF- (2021). It is important to unpack these definitions, however. A particular research output may have non-academic impact on economy, society and/or culture. Depending on the scale of the underpinning research its beneficiaries may be a particular stakeholder group (at one locality over a short time period) or a variety of different stakeholder groups (across multiple localities and over many generations). This acknowledges that 'reach' can have depth and/or breadth. It does not always have to have both depth and breadth at the same time. In other words, the research could have an impact on a very specific stakeholder group during a very specific time period and yet it can achieve impact on their lives. Alternatively, the research could change lives of millions of people over several generations all around the world. The depth and breadth are therefore treated equal when assessing the reach of research.

The definition of significance is quite wide-ranging and leaves the possibility open that the underpinning research may have significant impact on bringing about change. This could mean directly enabling change, enriching an existing intervention that aims to bring about change, or informing a new intervention to bring about change. The change itself could be in quite a diverse range of domains. It could be in performance of an action, awareness or understanding of an issue, shaping a policy, influencing a practice, a product or a service, or making a different to people's wellbeing. In other words, the marker of significance of impact is changes that makes substantial difference to the lives of the beneficiaries, by changing a wide range of things that ultimately deliver beneficial outcomes to them. Similar to reach, significance could also be deep and/or broad making a difference to a select group of beneficiaries over a specific time period or making a difference to millions of people over several generations all around the world. This means that either depth or breadth can be a marker of significance of the impact.

3.7.1. Steps to take during the research planning/design stage to ensure impactful research outcomes

When planning or designing a research project, it is important to first decide whether the project's impact is intended to be deep (particular stakeholder group at a small number of localities over a short time period) or broad (different stakeholder groups across multiple localities and over many generations and in many places in the world). This will not only inform the methods but will also help decide who the appropriate project partners are. For example, partnering with a local NGO might deliver deep impacts on a community while partnering with a UN agency might deliver broad impacts around the world. In either case, engaging with the partners and stakeholders early on in the project design can ensure impactful research outcomes (e.g., Heiden and Saia, 2020).

3.7.2. Sections of articles that should provide a discussion to make research impact visible and what you look for in a research article to evaluate its impact

When writing up research it is important to be explicit about the impact and weave the statement of impact (i.e., what changed as a result of the research presented) throughout the paper. In particular, abstract, introduction, conclusions are the sections of the paper that can be strategically used to narrate impact. The abstract is a useful place to summarise the impacts achieved. The introduction is where the impacts need to be contextualised (i.e., what needed to change and how the research was designed to change that). The conclusions, on the other hand, is where the impacts need to be made more explicit (i.e., what changed as a direct result of the research reported in the paper). Ultimately, writing up research is akin to telling a story of before and after, i.e., what changed as a result of research, and putting emphasis on that change can make the impact of research more visible (Pollock, 2021).

3.7.3. Strategies authors can employ to ensure their articles reach the intended audience, such as practitioners, policymakers, third sector organizations, and international entities like the UN

The key to making a research paper accessible is to write it without disciplinary jargon as far as possible. Disciplinary jargon makes research papers full of coded language which readers from other disciplines often find impenetrable. Avoiding academic jargon can not only increase the clarity of the research paper (see Rosen-Carroll, 2021), but it can also make the paper more readable to non-specialist practitioners, policymakers, third sector organisations and international organisations such as the UN agencies.

3.7.4. Methods to track and monitor research impact

Altmetrics are increasingly used by online repositories of research papers to "*track meaningful engagement with research as it is shared, mentioned, reviewed, and read online.*" (Altmetric, 2023). These are helpful to find out over time how the publics engage with the research paper by, for example, downloading it, mentioning it on the social media, or reporting about it in the news media. Altmetrics also track the mentions of or citations to the paper in non-academic outputs such as white papers or policy documents.

3.7.5. Ways to demonstrate that an article has made a tangible impact

One important barometer of whether or not the paper has made a tangible impact is its role in shifting public or policy discourse about a particular issue over time. Often, it needs a body of academic work as opposed to a single research paper to shift public or policy discourse, but it is possible to trace the pioneering research paper on which this body has been built subsequently. If a research paper is mentioned or talked about in the news or on the social media, and if this engagement is sustained over time, it can potentially shift public or policy discourse making a tangible impact.

3.8. Bridging the gap between academic research and industry practices - Amit Bhushan

Academic research has time and again proven its potential for real-life applications, that transcend geographical boundaries, and have immense commercial advantages. Researchers' academic pursuits, for example, in the field of technological advancements like germanium crystals[94] (Purdue University) on the first transistor that led to a revolution in the field of computing or John MacCarthy's (Dartmouth University) contributions in developing Artificial Intelligence (AI), that is transforming industries globally and is one of the key pillars of Industrial Revolution 4.0. Financial services industry,[95] in particular, has seen rapid adoption of AI (and Machine Learning) by FinTech's, that are disrupting the industry across its business verticals. Large commercial financial institutions are redefining their customer experience by offering wide range of services through digital platforms that are integrated with AI at the backend. Given that academic research has a strong track record of driving socio-economic advancement (including critical areas like climate change), and possibly resulting in trillions of dollars of revenue, why is it still that majority of research articles remain unutilized by practitioners?

Large segment of industry practitioners is not aware of research being undertaken in areas that might be relevant for their business interests. While the journals and research publications, have familiarity and wide accessibility for researchers, corporate sector employees seldom turn to the publications for their real-life business issues. This is with the exception of sectors that are heavily reliant on research and development, for example, health and pharma industry or relatively small units within organizations that are responsible for policy making, for example, within development financial institutions.

A plausible reason for this lack of awareness is the absence or limited nature of quality engagement between researchers and industry members. This leads to the perception that research is being undertaken in isolation. Also, majority of academic articles are published by academia who may not possess corporate experience[96] and hence arguably may find it challenging to convince the industry to adopt their research into practice. With regards to evaluating strategic initiatives, in a business context, we often ask that what problem are we solving? And what is the impact that could be derived out of a solution. Such insights are critical, in not only defining a viable research question, but also understanding the nuances of a particular industry and what hypothesis, and findings, could lead to workable solutions.

Academic articles, as result of the research process and outcomes, typically take a defined period of time that may well go over a few years. Whereas, in majority of the cases, industry and organizations are focussed on solving urgent issues. An immediate solution to a burning problem could lead to a transformation of an entity from startup to unicorn or add significant incremental revenues to established corporates. Reliance on current and upcoming research to convert from a need to a business idea may lead to loss of time and hence potential revenues. Hence, majority of the new business ideas or risk mitigations (for example, from a financial institutions' perspective) are generated at the business level itself without seeking any external assistance.

To build an overarching bridge that facilitates two-way traffic between industry practitioners that struggle with business challenges and researchers that extensively work on academic articles, it is important to develop an ecosystem of continuous engagement between the two. Through this engagement, research journals, in partnership with academic institutions, can bring the already published research to the doorsteps of industry (based on geographies and industry sectors) in a simplified form that can be understood and adopted with relative ease. Industry bodies and large corporates shall have the responsibility of sharing the findings with their relevant teams at the grassroot level.

The recommended collaboration shall not only encourage a two-way dialogue process but also ensure participation and engagement across various levels of industry. Many of the corporates, prepare their 3–5 years business plans that are based on industry trends, potential opportunities and expected challenges in years to come. A periodic discussion between industry and academia shall provide insights for areas of research to be undertaken that can have industry buy-in for practical usage and are aligned with the corporate sectors' strategic objectives.

Specific attention to be given to cultural and economic aspects across countries. For the developed countries, like US and UK, active participation of the corporate sector by way of sponsorships to the academia to work on business-oriented research projects is well established. Industry sectors, in a large segment of developing markets, struggle with economic issues, and may not have the wherewithal to fund business-oriented research due to lack of resources. Governments, policy making bodies and corporates to be encouraged with incentives to participate in the ecosystem, by sharing their specific issues and partner in the implementation process once solution-oriented research is concluded.

It is recommended that academic journals publish specific segments within their publications that have contributions from the industry practitioners. This will bring out real business issues faced by the authors themselves or within their organizations. Given that corporate employees have full time employment commitments, simplified process of undertaking research and submitting contributions can be considered.

Last but not the least, academic researchers should consider the reputed consulting firms' business model. These firms are well engaged with industry and its participants (both at practice as well as well policy level) cater to the specific needs of the corporate sector and collaborates with them in the findings as well as strategic execution process. Specific attention to be given to the overall time taken for research conclusion. This shall help in the potentially successful and timely implementation of ideas and solutions.

3.9. Turning over a new leaf? Alternate ways to enhance the impact of academic research - Indranil Bose

The debate on the impact of academic research on society has been ongoing for decades (Fecher and Hebing, 2021). It is now

[94] https://www.physics.purdue.edu/about/history/semi_conductor_research.html (Accessed on 30th September 2023)

[95] https://documents1.worldbank.org/curated/en/839801596184068790/pdf/Artificial-Intelligence-Innovation-in-Financial-Services.pdf (Accessed on 30th September 2023)

[96] https://www.forbes.com/sites/benjaminlaker/2021/11/19/how-much-should-finance-industry-leaders-trust-academic-research/?sh= 5f20c0ac6ce8 (Accessed on 29th September 2023)

well-established that there exists a disconnect between the metrics that Information Systems academics value (publications in top-tier journals, number of citations, H-index etc.) and the perception of the practitioners about academic research. Since there are only a handful of theories that have come from the stable of Information Systems researchers that have influenced practice, in general practitioners are skeptical about the value that can be generated from rigorous academic research.

Alternative metrics such as altmetrics have been proposed to measure the impact of academic research on practice but the criticism against such metrics has been rising over the years. While such metrics allow "*tracking different channels and types of dissemination*" and are "*faster than academic citations*", they have been criticized for lacking relevance and being easily amenable to manipulation (Dotti and Walczyk, 2022). Hence, there is a need to think about action-oriented impact of academic research that can significantly affect practice. Academics can reach out to practitioners in multiple ways, but it is understood that sharing copies of research papers or conference proceedings and expecting practitioners to comprehend and utilize them in their activities would not work as practitioners neither have time nor interest to wade through the intricacies of theories and involved statistical analysis. What can be some of the activities that can be pursued by academics to spread the word about their research. Some ideas are presented below.

3.9.1. Executive education

Many academics who belong to management schools take part in executive education. Companies routinely spend a significant amount of funds on learning and development. Either they make their employees go through training with consulting companies or with management schools. The hope is that the executives will return with many new and innovative ideas about the state-of-the-art which they will be able to put to work (Marabelli and Vaast, 2020). For example, executives of oil and gas companies would be interested to know how prescriptive analytics using sensor data could help in preventive maintenance. There is ample room to discuss the latest scholarly research without getting into the code of a machine learning algorithm with such participants and show how the published research findings can be of use for solving a relevant industrial problem. Similarly, executives of a food delivery company could be interested to know how social media analytics could be leveraged to identify targeted customers.

Engaging in executive teaching of practitioners can allow research to be discussed with people on the field for whom this research matters and can even lead to adoption of the research approaches to solve critical problems. Moreover, it could also lead to faculty members getting engaged as research partners and consultants and getting access to industrial data that is otherwise difficult to obtain. Junior faculty members who possess specialized knowledge about a topic can also benefit by taking part in executive education and spreading the word about their research. Word-of-mouth exchanges and networking between practitioners who are participants of executive education can lead to rapid spread of findings of academic research.

3.9.2. Practice-centric publications and teaching cases

Practitioners routinely read articles and reports produced by consulting companies before they take key business decisions. One may ask why it is that academic research is not read in the same way. Rigor almost always has dominated relevance in academic circles and this overemphasis on rigor could have driven away practitioner interest from academic research. Journals such as the Harvard Business Review, MIT Sloan Management Review, Business Horizons fill that gap but publish only a handful of articles. It is imperative that the leading journals in the Information Systems area devote space to publish at least 1–2 practice-centric articles in each issue on matters of importance to practitioners and possibly by practitioners. In addition to such articles, teaching cases could be an important channel for engaging with practitioners (Marabelli and Vaast, 2020). Teaching cases are not only important for conveying key concepts in the classroom for undergraduate and postgraduate students, but they are also routinely read by practitioners to gain knowledge about current practices. Academics should write field-based teaching cases that give them the opportunity to engage with practitioners, learn about the key challenges being faced by their businesses, and think about solutions to solve these problems. Extant research of faculty members could provide solutions to the issues in the case study, which the practitioner community may not be aware of. Practitioners could be invited to the class to listen to student-presented and faculty-discussed solutions that borrow from faculty members' research to assess the practicality of adoption of proposed solutions.

3.9.3. Research events and doctoral programs

A useful way to disseminate research could be to bring industry experts together in an event along with faculty members where each could present their solutions to some grand challenges. This could be on broad topics such as the transformative role of Generative AI for businesses or algorithms for making product recommendations on e-commerce sites using multimodal data, among others. The outcome of such events could be recorded in an article with multiple viewpoints, and this could be published in a journal and widely disseminated through various social media platforms. Junior faculty members often look for data support from industry and such events could be fertile grounds for presenting latest research findings and obtain pledges for data and collaborative research. Practitioners would be more inclined to allow academics to utilize industry-level data once they become aware of the capabilities of academic colleagues for solving industrial problems.

Conferences could be great ways to interact with practitioners if there could be separate practitioners tracks with academics as reviewers or discussants of such practitioner-led submissions. The academic critique could spread the word about a faculty member's research expertise and could be a useful input for the practitioners. It could also lead to consulting projects for faculty members with time spent at the industrial centers as part of a sabbatical. Another way to connect with industry would be to allow practitioners to become part of doctoral thesis advisory committees and oversee doctoral student's research endeavors from an early stage. At the same time, the practitioners should be included as co-authors of research papers that would be published from the thesis of the doctoral student. Some universities have also experimented with doctoral programs specifically designed for interested practitioners. A doctoral program for industry that leverages the strengths that the practitioner candidate brings to the table and mixes that with dedicated scholarly guidance could be impactful for the practitioner's career and the same person could become a brand ambassador for academic research in the industrial community.

3.9.4. Academic entrepreneurship

Universities are increasingly becoming the hotbed of entrepreneurial activities (Walsh et al., 2021). Students are often contemplating a career as an entrepreneur either on graduation or after a few years following it. Several universities have set-up innovation parks and incubation centers to nurture startups led by university students as well as entrepreneurs from outside the campus. This is an immense opportunity for faculty members in Information Systems to engage with and influence practitioners.

Many startups cannot afford to seek advice from consultants that charge a premium for their services. They are keen to learn from the faculty members' scholarly work and its applications for solving problems of startups. Some of them would be keen to recruit faculty members as board members or advisors for their companies. If there is a match between what the startup is trying to achieve and the faculty members' expertise this could be a win-win situation for both parties. The engagement with the startups could give rise to opportunities to conduct experiments using real-life data instead of secondary or simulated data. This can increase the appeal of generated research not only for the concerned startup but also for other firms that may be interested in exploring similar opportunities. Moreover, it could also improve the

rigor and applicability of academic research. In addition to offering courses on ideating and managing startups, academics can organize bootcamps on building startups that are jointly taught by faculty members and founders of startups. The potential of knowledge exchange from such bootcamps is immense.

It is unclear which of the above approaches will yield the greatest impact for academic research. As a result, it is advisable to conduct these activities in parallel even with the limited availability of time of the academics. If academic administrators are serious about influencing practice and policy, they need to reconsider modifying some of the assessment methods for tenure and promotion that are prevalent in research-centric universities. Rajaeian, Cater-Steel and Lane (2018) have highlighted the worrisome aspect of this polarized method of evaluation through the quote of one of their surveyed respondents:

> "… tenure and promotion committee members who would vote 'no' on any candidate with such practitioner publication – the argument was that they weren't placing their energies in the 'correct' places".

Rather than focusing on publications in a handful of very selective journals that may not always be able to attract many citations (leave aside their industrial impact); the focus of evaluation should be on a portfolio approach that gives due importance to engaging with practitioners through one or more of the methods that have been described above along with publishing scholarly research. It is only with such changes can the above practice-focused activities thrive and help to make the bridges between academics and practitioners stronger and more navigable.

3.10. Impact of academic research for non-academic users: the case of business and management - Pawan Budhwar & Nicholas O'Regan

3.10.1. Context & definition

The focus of this perspective is on the key aspects of the 'impact' of academic research in the field of business and management (B&M) on its non-academic users (like the policy makers, government, society, amongst others). For the last couple of decades or so, a number of debates and developments have taken place (e.g., creation of practice-oriented committees by leading learned societies in B&M like the Academy of Management, growing size of the executive doctoral programmes globally like the DBA, emphasis of accreditation bodies like the AACSB on impact) regarding the legitimacy and relevance of B&M research (e.g., Haley et al., 2022). This has resulted in an enhanced emphasis on impact in national assessments (e.g., the UK Research Excellence Framework - REF), creation of impact related positions in academic institutions, a mandatory requirement put in place regarding measuring impact by most funding bodies, and so on. It is now clear that addressing the impact agenda has now become an imperative for researchers in the field of B&M. This is supported by developments such that - 'impact has become a core element of the overall assessment' in the UK REF exercises since 2014. Impact is defined as "*the effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia*" (REF, 2021).

3.10.2. Research approach for impactful outcomes and measurement

An enhanced emphasis on impact via engaged scholarship has been to encourage and support inter-disciplinary research which can address grand challenges and wicked problems faced by the society and organisations (e.g., climate change, poverty, sustainability). B&M researchers have been primarily trained to develop a research problem by analysing the literature and adopting a theory-driven approach. In the era of focusing on impact, there is a need to amend such an approach to develop research problems based on challenges faced by organisations, for example, keeping in mind the key stakeholders who are affected by them or interested in them, addressing which will lead to impactful outcomes. To a great extent this happens with DBA research which generates impact through its 'practice in situ' approach. Further, a 'co-design' approach (e.g., involving policy makers, industry fellows, amongst others) (Sharma et al., 2022) to develop a research problem and process can help build collaboration with the non-academic users of B&M research and generate innovative and practical solutions. Moreover, incorporating 'pathways to impact' (e.g., as proposed by the Research Councils UK) in a research project would offer useful guidance to both include and address the research agenda.

Measuring the impact of B&M research on its non-academic users in most cases is not straightforward (Aguinis et al., 2014). Research England, which organises the REF assessments in the UK offers useful guidelines in this regard. These include developing impact case studies and gathering evidence (e.g., evaluating how findings of a given research project helped to change behaviour, practice, policy, programme, etc) to capture and report impact. Incorporating the above shared approach to impact pathways and pre-planning to monitor impact (when, how, by whom, in what form, etc) has been found helpful to measure impact. Further, the elements of 'significance' and 'reach' are important aspects of research impact, which should be considered while measuring impact.

3.10.3. Making impact visible in articles for non-academic audience

Traditionally, in B&M academic/theory driven research publications, scholars largely presented about the practical implications of their key findings in the later part of their article. Of course, this is not the case for practitioner oriented B&M journals like Harvard Business Review or California Management Review. The majority of B&M scholars tend to publish their work in the former type of journals due to a variety of reasons such as their work fits better with them, publications in these journals are used for recruitment and promotion purposes, and so on.

In order to make impact further visible in such publications a number of things can be considered. Along with presenting a theory driven research problem, its practitioner-oriented aspects can be highlighted in the beginning of the article. In the findings analysis part, in addition to theoretical and empirical analysis, scholars can consider exploring implications for diverse non-academic stakeholders such as practitioners and policy makers. And the article, along with the usual analysis and critique, can incorporate key messages to influence policy/practitioner linked debates by emphasising on the relevance of findings for tracks of influence as well as clear, implementable policy recommendations. Nevertheless, the suitability of such an emphasis on making the research impact in articles for a given outlet will depend on its orientation. It may be worth considering alternate avenues (apart from practitioners-oriented outlets) to make B&M research having impact, accessible to non-academic users. This can include publishing key research highlights linked to clear impact in different social media related forums, newsletters, executive summaries, and other e-outlets.

3.10.4. Demonstrating tangible impact in publications

Scholars orientated to academic/ theory driven B&M research propose that impactful research requires creation of an engaging public discourse, debate, praxis, and reflexivity (e.g., MacIntosh et al., 2017; Hoffman, 2021) aimed at involving non-academic stakeholders of academic research. Key actors such as learned societies (like the AOM, BAM), practitioners' forum and impact/engagement leads of Business Schools can help to create an ecosystem to facilitate such engagement mechanisms. Via their publications, B&M scholars can highlight how they make a positive economic and social contribution to their region/national via their research.

Researchers need training and orientation to effectively communicate their findings to their non-academic stakeholders and the wider public. They need a mixture of avenues to share their key findings, recommendations, and impact, as well as to invite feedback, dialogue, and action.

Scholars can capture a tangible impact in their publications by providing reliable evidence which can be utilised by different audiences. Apart from the traditional reporting of both key results and

contributions, scholars can consider providing case examples, a set of clear takeaways, guidance for implementing key outcomes, and by communicating all this effectively and ethically. This means to present key messages, format, and medium to suit target audience, purpose, and context. Various means like CiteAlert, Usage Alert and Altmetrics can be used to monitor the impact of a given publication.

3.10.5. Conclusion

The benefits of impact of B&M research on non-academic stakeholders are increasingly highlighted. A mixture of stakeholders of B&M research are contributing towards the creation of an ecosystem in which proactively working on research impact is becoming important. It is now clear that and emphasis on 'impact' is here to stay and it is important that B&M scholars understand the nuances involved in addressing the impact agenda. They need to reorientate themselves to how they create research projects, conduct research, disseminate their findings, engage with external stakeholders to make demonstratable impact of their research. This perspective has attempted to highlight such developments and a way forward.

3.11. Strategies to facilitate and assess research impact - Deborah Bunker

3.11.1. Research impact: what is it and why it is important?

As researchers, we generally think of impact and its measurement by highlighting academic focussed and established journal and conference metrics such as the H-index. These types of measures have been at the centre of most reputable university promotion and tenure decisions to date and the research of Anne-Wil Harzing (e.g., Martin-Martin et al., 2017) has highlighted both the benefits and drawbacks of "research output impact" measures as a proxy for research impact since 2007.

More recently, the research sector in general, and government funding bodies in particular, have become more interested in developing relevance-focussed impact evaluation and assessment measures and monitoring processes. Given government funding constraints and competition for funding sources, the evaluation of relevance-focussed impact and the diffusion of innovation into practical applications such as system or knowledge-based policy and process change and improvements, has become a critical focus. For instance, government research reviews such as the Australian Research Council (2019) Evaluation of Research (ERA) process has looked at traditional impact metrics but also more closely at defining and measuring research impact for practice-based end users. Pan & Pee (2020) discuss the attributes of practice-based impact evaluation and monitoring which asks questions such as:

- **Is the research usable?** – is there "an effort to translate research findings for users" i.e., identification of potential beneficiaries; translation for use and in what form; is there any practical guidance for use? - any "attention generated among potential users"; i.e., promotion to potential beneficiaries; communication of practical value; availability of research outputs?
- **Is the research in-use (used)?** - depth of use i.e., how deeply adopted; frequency of use; user feedback for refinement - breadth of use i.e., variety of users, variety of purposes; user feedback for refinement?
- **Is the research useful?** – user efficiency improvement i.e., user specification of efficiency indicators; data access to assess cost reductions and productivity increases – user effectiveness improvement i.e., user involvement in specifying effectiveness indicators; data access to assess effectiveness (quality or performance improvements).

Research funders within Australia and internationally are increasingly focused on assessing whether investment in research produces usable, used and useful outcomes to determine the effectiveness of public and private investments in current research programs and the nature and focus of future research investment trajectories.

3.11.2. Designing and planning for impact: your research, your impact

Researchers have familiarity with developing "push" strategies and plans, which use a variety of research methods and training to identify knowledge gaps, answer pressing questions and develop new theories. We are less familiar, however, with "pull" research strategies which focus on utilisation and translate research findings and new theories into practical solutions. Pan & Pee (2020) provide us with a starting point to address practical utilisation and impact assessment when seeking to include "pull" strategies in our research plans. If we are to develop research relevance through impact it is now becoming critical for researchers to design our strategies, plans and projects with a focus on utilisation pathways which are effectively described with impact assessment processes and measures specified (where practicable) to:

- Continue to argue for and attract funding to develop a relevant body of knowledge that contributes not only to theory development rigour but also to efficient and effective (research user) policy and process improvements i.e., relevance.
- Ensure that project budgets include research utilisation pathways, plans and costs to develop research outcomes to a stage of effective translation (usable, in-use and useful systems and knowledge-based policy and process) so impact can be generated.

Vargo et al. (2020) also highlight that we must consider developing and understanding "*more dynamic, inclusive, and integrative approaches*" to the study, assessment and facilitation of research utilisation and adoption through development of service-eco systems and institutional change management processes. They argue that a research innovator/-producer and a research adopter/consumer should both be considered as *resource integrators*, and that research utilisation, adoption/diffusion is a part of a "recursive innovation process" rather than being linear in nature.

Utilisation "pull" mechanisms that can form part of research strategy include:

- Documenting multiple translation and utilisation pathways i.e., options (including budgets) to highlight the resourcing required to translate and adopt anticipated research outputs to different levels of usability.

- Performing potential stakeholder mapping i.e., anticipate who will need to be involved in research translation and adoption activities.
- Creating an engagement plan i.e., outlining stakeholder communications strategies to support translation, utilisation and impact assessment i.e., efficiency and effectiveness improvements.

3.11.3. Short term impact: evaluation

Researchers can monitor and evaluate short-term research usability and use via "pull" mechanisms that highlight potential measures of efficiency and effectiveness in translation activities. Pathway comparisons (analysis) which highlight the impact, cost, usability and potential research use in each pathway helps to focus users on the potential benefits of research outputs at the pre or initial utilisation stage. Highlighting the extent and coverage of stakeholder maps provides support for the potential range and reach of utilisation options and an engagement plan provides a communications strategy to target potential research users.

3.11.4. Promoting impact: writing and communication strategies

As part of a "pull" communications strategy, immediate research outcomes can be translated into a number of "user friendly" outputs such as policy impact statements, change management plans, practice-oriented fact sheets, process improvement methodologies and user guides to promote, facilitate and structure innovation adoption

pathways.

3.11.5. Long term impact: monitoring and evaluation

As part of long-term monitoring and assessment of research adoption/diffusion we must assess if research was ultimately useful to the target stakeholder group. Did it improve user efficiency/effectiveness and by how much (noting the definition of efficiency and effectiveness improvements in the original engagement strategy) and/or did it improve system/product/process effectiveness (quality or performance improvements)? User co-design of efficiency and effectiveness indicators is important to the meaningful and authoritative measurement of research impact. The ability of research users to accurately assess cost reductions and productivity increases is the key to a robust and believable impact assessment process. Measures of research usefulness could include:

- User surveys.
- Distinctive outputs labelling (Google searches and bibliographic searches of research utilisation examples).
- Integration to the body of knowledge (does the research connect, overlap with or supplement other research translation, adoption and use i.e., programs of work and how does it impact these)?

3.11.6. Demonstrating impact: transformational statements and assessment metrics

It is important to track and document the utilisation of your research from initial adoption to system and knowledge transformation. Impact assessment at initial stages of translation is very different from mature utilisation of research outputs. Developing and maintaining a "line of sight" to your research and documenting research assessment over time is essential to demonstrating impact when it comes to success in grant applications, promotion and tenure processes. This can be achieved through documenting a series of transformational statements and assessment metrics that highlight useability, use and usefulness of specific research and that complements and supplements established journal and conference metrics. Statements could be focussed on the following questions:

- Has the research usability changed over time and how e.g., increased, decreased or integrated knowledge, policy impact or process transformations.
- How has/is the research being used e.g., past, current, future, what is the usage coverage, volumes, depth and breadth.
- Has the research been useful e.g., has it improved organisational efficiency and/or effectiveness and how has this been measured (assessments and descriptions of cost reductions and/or productivity increases, performance or quality over time i.e., rising, falling, static).

Producing rigorous and relevant research impact assessments are essential to the demonstration of research relevance. Impact assessments that incorporate: pull strategies, dynamic, inclusive, and integrative assessment techniques, short-term evaluation approaches, long-term monitoring and evaluation processes, communication plans and impact demonstrations are an increasingly important part of an effective strategy for a successful research career.

3.12. Strategies for enhancing decision makers' interest to integrate researchers' contributions – the case of Romania -Alexandru Capatina, Adrian Micu & Angela-Eliza Micu

3.12.1. Introduction

Enhancing the interest of decision-makers in integrating researchers' contributions is crucial for ensuring that evidence-based practices influence policies and organizational strategies. There are specific strategic insights that serve as a basis for designing a knowledge-transfer strategy from researchers to organizations: the information that should be conveyed to decision makers, by whom should the transfer of scientific knowledge be facilitated, the design of methods for facilitating the transfer of research knowledge, including the procedures involved in knowledge transfer and the necessary communication infrastructure to facilitate this transfer and the impact of transferring research knowledge at the level of organizations (Lavis et al., 2003).

The assessment of evidence-based practices that are transferred from researchers to organizations can be conducted based on five dimensions: methodological fit, contextualization, replicability, transparency, and consensus between researchers and decision-makers. The strength of the evidence increases proportionally with the degree of alignment. The organizations interested in integrating the researchers' outcomes should assess the strength of evidence by examining the extent of convergence among these dimensions (Baba and Hakem Zadeh, 2012).

We will highlight, based on our experience, specific ways of transferring knowledge from researchers to organizations in Romania and propose some strategies for institutionalizing evidence use, such as embedding researchers' outcomes into organizations.

3.12.2. Peculiarities of knowledge-transfer strategy from researchers to organizations in Romania

The peculiarities of knowledge transfer strategies from researchers to organizations in Romania are determined by the country's economic, cultural, and educational context, as well as its scientific and technological infrastructure.

We have been involved in several research projects and we have been coordinating doctoral students for seven years. Based on this experience, we will outline our personal perception on how researchers' results are integrated by private organizations, public institutions and authorities in Romania.

Small and medium-sized enterprises in Romania, which represent a large portion of the business landscape, may not always have the resources to invest in research and development, influencing the approach to knowledge transfer. They are highly interested in collaborating with researchers in different research projects and consequently to integrate their research outcomes. Certain sectors, such as IT, telecom, naval engineering, have seen rapid growth, making companies more receptive and capable of integrating research-based knowledge. Personal relationships are still important in Romanian business culture, meaning knowledge transfer may often occur through informal channels or networks. There might be a reliance on established collaborations, which can facilitate or limit knowledge transfer depending on the existing connections. The private firms from Romania might be hesitant to engage in knowledge transfer without a clear understanding on the ownership and use of intellectual property rights of research findings. From our experience in transferring knowledge to companies, we observed that research outcomes need contextualization to be fully understood and applied by local organizations.

In the Romanian public institutions' context, the existence of hierarchical organizational structures has a negative impact on the openness to innovation from external sources like researchers. From the discussion with our PhD students that focused their research on public institutions, there is still a cultural preference for established ways of doing things, which create resistance to changes proposed based on new evidence-based research. The level of technological infrastructure is also a limitation to the ways of knowledge transfer from researchers to decision-makers in public institutions; for instance, digital platforms are underused in certain areas.

Even if the Romanian government has been implementing various strategies and policies to stimulate research and innovation, including tax incentives and funding programs that stimulate knowledge transfer processes, most policymakers from public authorities still prefer to maintain the status quo rather than experiment with innovative approaches that research might suggest. Researchers and policymakers often speak different "languages," as researchers are focusing on

methodological rigor of findings, while policymakers need clear and actionable recommendations. Furthermore, we observe misalignments in the communication strategies that translate complex research findings into public policies.

3.12.3. Strategic options for enhancing the integration of researchers' outcomes in organizations

First, we consider that researchers should tailor communication of their results to decision-makers' needs, by presenting research findings in a concise and accessible format and highlighting the practical implications of research findings for public policy or organizational decisions. Researchers need to involve decision makers in the research process from the first phases of their work, by asking them to frame research questions or participating in focus-groups. We observed that most researchers in Romania are not aware of the benefits related to this approach. The early engagement of decision-makers ensures that research creates a sense of ownership over their findings.

Second, researchers are entitled to outline case studies or testimonials from other decision-makers who have benefited from integrating research into their work. We consider that this kind of approach creates trust and a sense of partnership, making decision-makers more receptive to researchers' contributions and enhancing the chances of knowledge transfer.

Third, Romanian researchers should learn from their peers from other countries, who organize workshops or webinars to help decision-makers understand and use research findings effectively. In most cases from the Romanian academic context, professors and researchers invite decision-makers to share their practical knowledge to students.

Fourth, the researchers should develop implementation guidelines that can be used by decision-makers in the integration of the research outcomes. Moreover, providing tools facilitating the integration of research insights into the decision-making process is highly valuable.

Fifth, economic arguments are in our opinion particularly persuasive in outlining the value of research contributions and researchers should prove the economic benefits or cost savings associated with integrating research findings in organizational settings.

Finally, the co-creation of knowledge, when research is directly connected to the needs of decision-makers, is the key success factor able to highlight the value of integrating research contributions in organizations.

3.13. Making an impact: translating academic research for practice - Lemuria Carter

3.13.1. Introduction

With years of experience and mounds of esoteric knowledge, academic researchers have a uniquely positioned role in society. The rigor with which academics analyse a phenomenon results in useful insights for research and practice. Frequently, academic results are described with domain specific language and intricate methodological detail. The communication norms in the academy make it challenging for practitioners to utilise academic findings. To bridge this gap between research and practice, I propose the Anticipate-Curate-Translate (ACT) approach to help academics identify impactful insights, provide actionable recommendations and highlight the relevance of their results for practitioners.

3.13.2. The ACT approach

There are diverse definitions and measures of impact (Dotti & Walczyk, 2022; Penfield et al., 2014; Wiener et al., 2018). Pan & Pee (2020) define practice impact as "*the observable benefit of research on relevant stakeholder groups beyond academia, such as individuals, organizations, communities, industries, or economies, generated through interactions with them and measured with observable indicators*" (p. 406). To enhance the usefulness of research findings for diverse stakeholders, I propose the three-step Anticipate-Curate-Translate (ACT) approach: academics should 1) **anticipate** the information needs of practitioners, 2) **curate** a list of actionable recommendations, and 3) **translate** the results into a form that is useful for the intended audience. Table 2 provides a few suggestions for each step.

3.13.3. Conclusion

These recommendations are designed to help academics consider the broader context of their work, distil the results into an actionable form and, finally, communicate the relevance of their findings to managers and decision makers. To implement the ACT approach, academics need

Table 2
The ACT Approach.

ACT Approach	Description
Anticipate the information needs of practitioners	• Monitor industry trends and emerging developments. Stay abreast of spending forecasts, shifts in stakeholder sentiment, and the evolution of societal norms and values. • Identify issues that are important to managers and decision-makers. Read practitioner reports. Attend industry meetings, conferences, webinars, and networking events. Become familiar with the language (definitions, phrases, acronyms) practitioners use to discuss key issues. • Adopt a future-oriented perspective (List, 2006). Utilise futures-thinking methodologies to identify plausible scenarios and the potential implications of diverse counterfactuals.
Curate a list of actionable recommendations	• Provide categorised recommendations for organisations at different levels of maturity (e.g. novice, moderate, advanced). • Recommend useful frameworks, assessment tools and metrics. Take inspiration from diverse disciplines (e.g. actuarial science has tools for catastrophe management, risk assessment and scenario modelling). • Highlight best practices and lessons learned. • Provide clear and measurable recommendations. Begin recommendations with a verb, where possible, to emphasise action. • In addition to publishing the study in a peer-reviewed academic outlet, also publish a short (e.g. 2-3 page) overview of the key findings in a practitioner outlet to increase the reach of the project. • Provide succinct, jargon-free suggestions and visualisations that enable busy decision-makers to quickly identify the key take aways.
Translate the results into a form that is useful for the audience	• Explicitly state why the results and recommendations are important for practitioners. Address the "What's in it for me?" (WIFM) question for the intended audience. • Discuss the broader societal impacts. State the potential benefits for individuals, organisations and society. • Highlight use cases that demonstrate what success looks like (reduced cost, improved efficiency, more reliable results, higher satisfaction, etc.). • Discuss the short-term vs. long-term benefits of implementing the proposed recommendations and the risks associated with action and inaction. • Develop complimentary skills to support the successful translation of research results for practitioners (e.g serve on grant review boards and take media training to learn techniques for reinforcing key messages for a non-technical audience).

to partner with industry and embrace multi-disciplinary collaborations to communicate the broader, societal impact of their work.

3.14. A four- step approach to capture the impact of social science research on practice and policy - Ioanna Constantiou

Current global challenges, such as climate change, or the threat of a new pandemic, put significant pressure on and raise demands from the research community. Researchers are expected to provide feasible options to decision makers to address societal problems or advise the policy makers. These pressures are intensified when public funding is allocated to the research community. In this environment, the research community should be able to show the societal impact of research results and outcomes, by making them visible and tangible to the society, the policy makers and the practitioners.

The task of explicating societal impact becomes even more demanding for researchers in social sciences. Social sciences research projects do not necessarily involve basic research that would lead to, for example, a specific product, or process innovation, or a patent. This creates a major challenge in providing tangible results, or outcomes. In turn, it becomes more difficult to track the path of research results to society and its subsequent impacts. Recently, management researchers have investigated how social sciences research results are adopted in the public sector, through the lens of evidence-based management. This research is inspired by in medicine, where empirical research results are applied in medical practice, and aims at investigating similar examples from public management, or other public domains, for example, education, or law enforcement, where social science research results can inform practices (Pfeffer and Sutton, 2006).

Turing to the IS field, there is a more pronounced need to make the impact of research results as tangible and transparent as possible to the society, especially in an environment that is constantly changing by technological innovations. In this environment, the time between introducing research results in organizations and observing evidence of impact in practice and policy might be considerably large, for example if the intervention involves intangible benefits in the form of employee's satisfaction. A well-known example is the research on the IT impact in productivity, the so-called IT productivity paradox (Brynjolfsson, 1993) which is partially attributed to time lag between introducing a specific technology in the organization and observing the impact of this intervention. In the IS field, research findings on socio-technical aspects of digital technologies have significant impacts on organizations and the society, but those impacts might not be easily captured and classified based on tangible measures.

Following the recent academic discourse on the topic (Lindgreen et al., 2021) I view economic and societal impact as "the demonstrable contribution that excellent social and economic research has on society and the economy, and its benefits to individuals, organisations, or nations" (ESRC, 2023). Despite the clarity of this definition there are a number of issues that are still open to varying interpretations. How do we define demonstratable contribution? What is the academic output that can be the source of such impacts? One may consider a peer reviewed article, a peer reviewed research proposal, the design of an artifact, or teaching practitioners who may then introduce the insights in their organization.

These questions highlight the different dimensions of impact as well as the importance of identifying the stakeholders that could be influenced by the impact of specific research results. Researchers should consider the societal impact of their research results and how to make this impact visible to society. These considerations should be systematically introduced at the time a research project is designed, during its execution, when the project is completed and results are presented in an academic outlet, as well as when they are disseminated to society. A four-step approach is proposed. It is important to note that the four steps are mutually supporting the goal of making societal impact.

First, when designing a research project, the researcher should be aware of the stakeholder groups that are the main beneficiaries of the specific research. Finding a relevant and concrete example from a societal challenge could help at this stage. It is useful for the researcher to reflect on how the research goal might be viewed by different stakeholder groups. The choice of the empirical context and considerations on how the research project might influence it would provide additional information at this stage and support research relevance. The researcher might decide to involve stakeholders through an exploratory initial (pilot study) and obtain "real-world" insights from to better motivate the research. This would also ground the expected research results in practice and allow it to develop more thorough and targeted practical implications, or recommendations when presenting them later in an academic publication.

Second, after completion of the research project and when preparing an academic publication, the researcher should systematically reflect on the messages the research conveys to the relevant stakeholders, the practitioners and the policy makers. After completing the research, as part of the academic discussion, the researcher should elaborate on the practical implications and present them in the research article by focusing on specific aspects, or examples where the research results could have a direct impact on a specific organization, sector or societal challenge. This allows the researcher to better articulate valuable insights and future relevant questions in the contribution to practice as part of the future research directions.

Third, when the research results are presented in an academic outlet, it is important for the researcher to start communicating them to the rest of society as well. Different types of communication, such as public speeches, participation in panel discussions, or interviews, or teaching activities to practitioners could be used. These activities are easy to track and measure by collecting data on the number of presentations, or news releases, or interviews given by the researcher presenting their insights from the specific research. A more laborious, but highly rewarding, activity is to reconsider the article from a practitioners' perspective and write a second, short, version of the academic paper focusing on practitioners' insights and the lessons learned, or recommendations for specific societal groups. The tangible outcomes of this step may capture the short-term impact of informing and exposing specific stakeholders to the research results.

Fourth, when there is societal impact of the research results, one may observe changes in organizational activities, in policy making, or in practices, that can be attributed to the specific research results. For example, there might be an intervention in an organization changing management tasks based on specific research results. The outcomes of such an intervention are captured and measured through performance improvements. This step is a long-term product of the previous three steps. Since there is a significant time lapse between the presentation of the research results and their impact on an organization this step could be very laborious in terms of intermediate activities. To capture the intermediate activities, the researcher could develop a narrative describing how specific research results have societal impact. This narrative could be populated with evidence from the interactions with specific organizations, or stakeholder groups. Recent examples of research results having an impact on organizations could be seen in technology regulations, or patent litigation cases. For example, European Commission regulations on different technology related issues (such as privacy and data protection, digital platforms competition and more recently AI), involved social scientists, with expertise in the respective domains, participating in preparatory committees, drafting key documents, providing direct input (based on research findings) into legal documents being produced and subsequently introduced in European markets.

The proposed four step approach could motivate researchers to invest time and further develop their academic citizenship. Researchers with focus on academic citizenship would become more active in public discourses and contribute to addressing the significant societal challenges.

3.15. Bridging the gap: maximizing the impact of information systems research on society - Crispin Coombs

Many people start their day by checking the latest news headlines on their mobile devices. Unfortunately, these headlines often remind us of the many environmental and societal problems we face. For instance, on August 27, 2023, BBC News reported on the conflict in Ukraine, racist attacks in Florida, and the social repercussions of a World Cup kiss in Spain.

These headlines highlight the urgent need to address societal grand challenges, such as those outlined in the United Nations' Sustainable Development Goals. Information systems (IS) are embedded in our daily lives and offer potential solutions to global issues like climate change, poverty, and social inequality. However, they can also create significant problems, as evidenced by recent concerns over generative artificial intelligence, social media's impact on mental health, and automated algorithmic decision-making.

IS scholars have a unique opportunity to make a difference through their research, which can help society respond to these challenges and maximise the benefits of technology. However, this potential can only be realised if our research has a meaningful impact in the real world. While the IS community is engaging with some of these issues, recent analyses suggest that much work still needs to be done (Wolff et al., 2022). In the following sections, I will define research impact, discuss strategies for designing impact-generating research, and provide suggestions for making impact visible and accessible.

3.15.1. Defining research impact

Research impact has become a significant focus in the United Kingdom (UK) due to the Research Excellence Framework (REF) national research assessment exercises in 2014 and 2021. According to the REF, research impact is defined as *"an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia."* (REF, 2019a).

Research impact can take various forms and impact different areas such as health and wellbeing, creativity, culture, society, commerce, and the economy. For instance, excellent research could lead to better user experience in healthcare services. Collaborating with public arts venues, artists, and programming professionals could create new forms of artistic expression. Adoption or improvement of technology-enabled processes could enhance the delivery of public services. The REF Panel Criteria and Working Methods (REF, 2019b) provide a valuable resource for considering the different types of research impact that could be created and the indicators that may be used to evidence those changes.

The REF assesses research impact based on two criteria: reach and significance. Reach refers to *"the extent and/or diversity of the beneficiaries of the impact, as relevant to the nature of the impact"* (REF, 2019b). Conversely, significance refers to *"the degree to which the impact has enabled, enriched, influenced, informed or changed the performance, policies, practices, products, services, understanding, awareness or wellbeing of the beneficiaries"* (REF, 2019b). These definitions provide a helpful starting point for considering the types of impact that may be delivered from research and prompt scholars to think about two questions:

- Who will be the beneficiaries of the research, and how will they know about it?
- What difference will the research make to these beneficiaries, and how can they enact the changes needed?

The following three sections provide suggestions for how scholars may respond to these questions.

3.15.2. Designing for research impact

Building strong partnerships is a key strategy for identifying potential research beneficiaries and increasing stakeholder engagement. While developing partnerships can be time-consuming, it is valuable for understanding stakeholder needs and priorities. Many academic institutions already have established relationships with industry or government representatives, so scholars can leverage these connections to avoid starting from scratch. Advisory boards, graduate associations, and executive education partners are just a few examples of helpful starting points for building partnerships. Additionally, researching local industry forums and professional networks can provide alternative ways to connect. Recognising that partners may prioritise solving business problems or improving financial performance over meeting scholars' knowledge discovery needs is essential. Therefore, regular conversations between academics and partners are crucial for finding opportunities that align with the requirements of both parties.

When scoping a project, it's important to consider how your research findings can be turned into actionable insights. As scholars, we often spend a lot of time explaining why a particular phenomenon is significant, but we sometimes need to focus more on finding effective solutions to improve the situation. While practitioners are responsible for implementing change, they need guidance on how to apply research insights. This guidance can be provided in various ways, such as industry-specific articles or blogs, toolkits, self-assessment questionnaires, or by incorporating research insights into executive education programs.

Creating these deliverables will require more effort than just writing a research article for publication which academics all know in itself can offer extra advantages to scholars. These activities can enhance the visibility of the research, making it more likely that stakeholders will engage with it and opening up future opportunities for data collection. Funding agencies are more likely to support projects with real-world results that address societal concerns. Collaborating with industry stakeholders and the media can showcase the importance of your research to promotion panels. Instead of being seen as extra work, these activities could be viewed as necessary preparation for your next outstanding research project.

3.15.3. Crafting research articles to make impact visible

When assessing whether research has had an impact, the most critical aspect is the evidence demonstrating the investigation has led to meaningful change in the real world. Having the time to assess such change entirely will be beyond the scope of most articles. However, to demonstrate an article's practical relevance, some initial evidence of uptake (such as a pilot study), documentation of new tools for practitioners resulting from the research, or a worked example of how the analysis could be applied can be helpful. It's also important to show the functional relevance of the research, which can increase the chances of it being reported in the industry and news media, thereby increasing its visibility. Therefore, I urge scholars to embrace the implications for practice in their writing. While this section may not be the most important for passing the review panel assessment before publication, it's crucial for research impact.

Scholars can use various indicators to demonstrate the impact of their research articles. The REF guidance (REF, 2019b Annex A) is a valuable reference resource for this purpose. For instance, scholars may seek evidence of their research being referenced in documents related to regulation, strategy, practice, or other areas to showcase the impact of their research on policy. Demonstrating the impact of research on commerce and the economy could involve providing evidence of improved cost-effectiveness, service changes, or testimonials from practitioners. Evidence of improved sustainability or documented changes to working guidelines could show the impact of research on production. Traceable references by practitioners to research papers that describe their use and the result of the research or new or modified professional standards and codes of practice could demonstrate the impact of research on practitioners and their professional practice. These examples highlight the importance of thinking creatively and broadly when trying to show impact. Using a combination of indicators may help overcome individual indicators' limitations and provide more substantial evidence for impact.

3.15.4. Ensuring articles reach the intended audience

The impact of academic research articles depends on how easily they can be accessed and utilised by stakeholders and practitioners. Therefore, it's essential to ensure the articles are visible and accessible. This can be done by making them open access through a university repository or the publisher, writing practitioner articles for industry press, creating blog posts, and promoting them on social media platforms.

It's important to remember that practitioners and journalists have limited time to find research insights. They often browse the internet for articles with titles that specifically address the issue they are dealing with. To catch their attention, scholars should rethink how they create article titles to generate interest in their research. Writing article titles in an easy-to-understand format highlighting the paper's main contribution and practical relevance can benefit academic and practitioner communities.

Overall, IS scholars should consider the impact of their research, whether it is focused on advancing theory or applied research. Engaging with both academic and non-academic stakeholders can be extremely gratifying. By aligning our research goals with our motivations, we can make our work more fulfilling for ourselves and beneficial to society.

3.16. Reflections on how academic research can impact on policy and practice: thoughts from the UK - Tom Crick

Traditional academic research, in its various forms and outputs, has the potential to transcend the confines of academia and foster and facilitate substantial change across society, culture, heritage, innovation and the economy. Across the breadth of academic disciplines and research areas, there is an increasing focus on the potential for diverse forms of research and evidence to shape and influence policy development and professional practice. In this section, we will synthesis recent thinking in understanding the impact of academic research on practice and policy, contextualised through examples and case studies from the UK to illustrate the complex, interdisciplinary, long-term, and often "messy" and non-linear nature of how impact is realised in various settings and contexts. Furthermore, this section aims to critically frame the broader research impact agenda and strategies to ensure high-quality research translates into strong public policy outcomes, with commentary and recommendations for how researchers can better plan and integrate diverse policy and practice outcomes into their academic research.

The impact agenda has evolved and developed in the UK over the past 20 years (Penfield et al., 2014), particularly with the emergence of impact measures as part of major national research assessment exercises such as the Research Excellence Framework (REF).[97] With the introduction of an impact measure from REF 2014, the development, curation and evaluation of "impact" arising from academic research has continued to evolve into the REF (2021) evaluation exercise (where it was defined as *"…an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia."*), with a total of 6781 impact case studies[98] submitted by UK higher education institutions across 34 units of assessment. While the focus on impact is broadly welcomed and recognised — and will continue to evolve into the next national exercise in 2028 (the specific rules of which are currently under consultation) — there have been concerns expressed regarding the perceived narrowness of how impact is defined and measured under such national research exercises since its inception (Watermeyer, 2016).

But moving beyond the mechanics of such large-scale national research evaluation exercises, which has a longer-term impact on system-level issues such as the allocation of strategic institutional-level research funding, it is vitally important to consider what this means for individual researchers across different disciplines and jurisdictions. In particular, what this means for academics who wish to not only publish excellent research in suitable journals and conferences, but increasingly how to better engage with public policy, professional practice and consider the potential for wider societal impact. Perhaps more so post-COVID-19 pandemic (Watermeyer et al., 2021a), during which there has been increased attention on academic careers, workload, the societal role of research and universities, and the changing nature of scholarly communications and research evaluation (Tennant et al., 2017; Tennant et al., 2019; Watermeyer et al., 2021b). With academics increasingly encouraged and supported to work across the research-policy-practice interface (Hopkins et al., 2021), it is possible to identify and plan for a range of policy and professional practice outcomes by designing research for impact and better understanding the nature of evidence for policy (Breckon & Dodson, 2016; MacKillop & Downe, 2022). Furthermore, there are opportunities across a range of disciplinary areas to better engage with the multiple "publics" (i.e., learners, patients, service users, citizens, etc), creating space for new conversations (Oliver & Boaz, 2019), and ensuring active participation with the design, production, and creation of the outputs of academic research.

But how can we demonstrate the public value of evidence-based policymaking when we have instances of government ministers declare that the people "have had enough of experts"[99]? "Evidence-based" can be a highly misleading description of the use of information in policy; discussions of the use of evidence in policy often begin as a valence issue: who would not want to use good evidence when making policy? Many academics and scientists bemoan the inevitability of "policy-based evidence" rather than "evidence-based policy" or "evidence-based policymaking". However, it is impossible for policymakers to pay attention to all policy-relevant evidence, and it is frequently impossible to control the policy process in which people use evidence.

To better facilitate research that can have impact on practice and policy, there are several crucial steps that should be taken during the research design stage. Firstly, research objectives can often be defined with clear real-world applications in mind, addressing practical issues and challenges. Researchers should aim to have a clear vision of how their work can make a difference. Secondly, meaningful and sustained stakeholder engagement and collaboration with practitioners, policymakers, and other relevant stakeholders is essential. Their input ensures that the research is not conducted in isolation but is co-created by and closely tied to the needs and challenges of the intended audience. Thirdly, many complex problems require interdisciplinary solutions; researchers should be open to drawing from various disciplines to develop comprehensive, practical solutions. Fourthly, robust research relies on high-quality data, often collating various types of data from diverse sources. Ensuring that data sources are reliable, relevant, and accurate — and open to independent scrutiny — is fundamental to impactful research. Finally, it is critical that all research is conducted following the relevant ethical guidelines, with respect for the privacy and rights of all involved. Open and transparent ethical research practices are crucial to maintaining the integrity and potential applicability of the work, especially with the changing nature of scientific discovery (Wang et al., 2023). This imperative for openness and transparency in research is further supported and enabled by embracing open science and open research practices (Tennant et al., 2020) — from publishing open access and releasing open data, to thinking about reproducibility, recomputability, sustainability and openly sharing a full range of research artefacts (Crick et al., 2017; Venters et al., 2023). It is thus worth considering how technology can improve the research/policy pathway; in a trivial way, if your research is hidden behind a paywall, this will naturally hinder its discoverability and potential application and adaptation.

The themes presented above have been distilled from a diverse range

[97] https://www.ref.ac.uk/

[98] https://results2021.ref.ac.uk/impact

[99] https://www.ft.com/content/3be49734–29cb-11e6–83e4-abc22d5d108c

of policy- and practice-facing research completed over the past 10 + years, including: leading major national school-level curriculum and qualifications reforms (Brown et al., 2014; Moller & Crick, 2018); the immediate and longer-term impact of the COVID-19 pandemic across various educational settings and contexts, especially higher education (Watermeyer et al., 2021a; Siegel et al., 2021); analysing large-scale secondary datasets for national-scale public health and public policy outcomes (Knight & Crick, 2021; Lowthian et al., 2023); the changing nature of global research and scholarly publishing (Crick et al., 2017; Tennant et al., 2019); innovation and the digital economy (Tryfonas & Crick, 2015; Whicher & Crick, 2019); and the emerging global research, policy and practice landscape surrounding AI tools and technologies (Dwivedi et al., 2021b; Dwivedi et al., 2023a). All of these research projects — and resulting impact on policy and professional practice, in the UK and internationally — have ultimately been driven by researchers who want to make a difference (Daube, 2023), by doing research that aims to be useful.

Even the best research achieves nothing if it just sits on the shelf, and nobody knows about it; impact is about much more than traditional and increasingly reductive researcher metrics. Relationship building is key: it is critical to take time out to learn about those you are seeking to reach — support, collaborate and try not to compete unnecessarily. It is often possible to choose the approach to media and policy advocacy that suits you. For example, it is worth engaging with national academies, professional bodies and learned societies, who often have the infrastructure and policy connectivity to facilitate and support your activities (e.g. BCS, The Chartered Institute for IT in the UK and their overarching aim of "*making IT good for society*"[100]; or the Association of Computing Machinery's recent setting up of a number of ACM Presidential Task Forces,[101] one of which directly focuses on how ACM members can offer their expertise in the interdisciplinary efforts toward achieving the 17 UN Sustainable Development Goals, as well as the Paris Agreement on Climate Change). Similarly, it is important to take time out to learn about those who may disagree with or oppose your approach and conclusions, especially potentially harmful industries and their allies. It is important to look further into interests, declared or undeclared, and not to be unduly put off by critics or satisfied with soft options; let the research and convincing narratives for policy and practice impact lead the way, synthesising rigorous and robust evidence to capitalise on sometimes serendipitous opportunities. Also, try not to fall into the trap of saying "I can't believe politicians act politically"; yes they do. If you want to be heard, explain why this fits in with what they are trying to do, or at least have an understanding of where they are coming from when you disagree.

Furthermore, it is crucial to understand the mechanics of how government works. Does this need a change in the law? When is the earliest this could roll out? How much roughly would it cost? Would this be something that every school has to do? You will need to have a plausible answer to these questions. The classic mistake by researchers is to think that you make a strong argument by bombarding people with a lot of information without thinking about how they will digest and apply it. An important mistake that policymakers can make is to rely too much on the experts they know and trust, rather than seeking ways to identify diverse and "state of the art" sources of information. In essence: think about your audience and how they demand information: get their attention with a simple story, describe the problem in ways they understand (and think about the world), and show that your solution is technically and politically feasible. With this in mind, it is important to consider that success can take time, with a range of short-, medium- and long-term outcomes possible (e.g., major education system-level reform would likely be implemented and evaluated over a 10 + year time period). Pursue your research in ways that will add to its impact across various time frames and potential settings and contexts. This is where it can be useful to understand and cohere with wider societal "grand challenges" or mission-oriented approaches to solving interdisciplinary "wicked issues", as well aligning to long-term national and international legislation or policy imperatives such as the Wellbeing of Future Generations (Wales) Act[102] or the UN Sustainable Development Goals.[103]

In summary, we have presented a number of key themes and lenses through which to better understand and achieve diverse policy and practice impact from and alongside traditional academic research. We have seen a continuing shift for the recognition of research impact and what this means for researchers and their careers; it is clear we need to maintain a focus on cultural and behavioural change to ensure parity of esteem between more diverse scholarly activities beyond traditional academic publications and citation metrics. Furthermore, whilst important for institutions and research ecosystems, this type of activity should not be unduly led by national research assessment exercises such as the REF in the UK, but should be driven and contextualised by broader impact measures and outcomes, understanding that some types of impact may be realised over decades rather than years. This should not just be economically driven, but recognising multi-capital approaches, with wider social, culture, linguistic, and heritage imperatives. Perhaps most importantly, it must be citizen/human-centred and sustainable, recognising the benefits of both fundamental and applied research on diverse individuals, communities and societies across the world.

3.17. Bridging the gap between academic research and business practice in data science and AI - Yves Darnige

While data science and AI are top priorities in academic research and business practice, there remains a disconnect between these two worlds. As a result, many academic advances fail to be fully leveraged by industry practitioners, who often reinvent existing techniques. Based on my experience teaching how to leverage data & AI in building business to international business & engineering school students, I highlight three approaches to better integrate academic data science research into business strategy and operations.

3.17.1. Educating academics on business applications

First, businesses should partner with universities to educate researchers on how data science and AI are applied at each stage of developing and executing business strategy. For example:

- **Anticipate consumer needs:** Academic text mining and sentiment analysis can identify shifts in customer needs from reviews and discussions. It allows companies to continuously revamp existing offerings or create new ones to meet changing market demand. For instance, Natural Language Processing technologies applied to a corpus of text extracted from consumer comments on a product category enable continuous evaluation of changes in market demand to feed the innovation process. Through partnerships, both entities could share information necessary to develop best practices.
- **New product evaluation:** Statistical models can predict market share for new products pre-launch by synthesizing survey data, advertising exposure, and distribution assumptions necessary to forecast return on investments (ROIs) in innovations. Regarding building new product awareness, a new product launch often goes along with an advertising campaign. The advertising pressure is measured by GRP (Growth Rating Point), i.e., the percentage of the target audience that has seen the ad multiply by the average number of times they have seen it. We can use a statistical distribution of the number of contacts with the ad to obtain the percentage of the

[100] https://impact.bcs.org/
[101] https://cacm.acm.org/magazines/2023/2/268958-to-the-members-of-acm/fulltext
[102] https://www.futuregenerations.wales/about-us/future-generations-act/
[103] https://sdgs.un.org/goals

population that had at least "n" contacts with the ad and, thus, the percentage of the population who knows the new product. Therefore, researchers could work with practitioners to improve this product evaluation technique or develop new ones.

- **Inventory optimization:** Using sales forecasting and inventory models, businesses can balance the costs of managing a high stock level versus the risks of stock-outs for each point of sales. This tailors inventories to local demand. From a weekly (ideally daily) average product sales in each store, we can distribute this average sale according to a Poisson distribution to answer critical questions for logistics managers: For a given stock level, what is the probability of stock-outs? Alternatively, for an assumed risk of shortage, what should be the minimum amount of stock? Academics and practitioners can collaborate to arrive at more robust data science and AI techniques to address this issue.

These are only examples of mapping business strategic elements to data science techniques. Joint industry-academic programs should lead to educating researchers on how to deliver relevant applications that support concrete business strategy-building steps.

To instil this education early in the university training cycle, it would be great to have professional doctorates focusing on practical applications in professional environments. People with such qualifications have the added value of bringing the best of the two worlds into the academic milieu if allowed to be permanent teachers in business schools and universities.

3.17.2. Engaging business experts in academic research

Secondly, market management experts from industry should collaborate with academics to ensure researchers target business needs. Specialists who understand customer pain points and product commercialization can help guide academics toward high-value real-world problems, preventing research from becoming too theoretical and detached from practice.

Embedding business analysts within academic data science labs can align research agendas with industry goals. Business co-advisors can contextualize findings into actionable insights. Getting marketers and product managers engaged early will facilitate technology transfer and adoption.

3.17.3. Consulting firms as facilitators for collaboration

Finally, technology consulting firms skilled in scaling solutions can serve as facilitators between academia and industry. With technical implementation expertise and local business relationships, these firms are perfectly cut off to operationalize academic findings by working jointly with companies and researchers.

Local offices can recruit academic talent into enterprises and provide feedback on enhancing commercial viability and meeting market needs. Smooth integration of PhD-level data scientists into companies will accelerate research absorption and eventually speed up the enterprises' recruitment of highly valuable researchers.

Bridging the academic-business divide requires understanding market needs, engaging end-user experts and leveraging the local ecosystem. With deliberate efforts to smoothly intersect these worlds and allow business professional experts to be permanent teachers early in the education cycle, enterprises can rapidly turn cutting-edge data science into strategic impact.

3.18. Research impact: management & organization studies - Rick Delbridge

In Management & Organization Studies (MOS), there is a long-established literature that addresses questions of research impact. Indeed, this debate on the impact of MOS can be traced back to the emergence of business schools themselves and questions surrounding their purpose and expected contributions to business and society. In short-hand terms, this debate may be referenced as one between 'rigour' and 'relevance' and the view that there is a gap between the necessary rigour for scientific research in MOS and the anticipation that such research should prove relevant, useful and impactful in practice (for an overview see Kieser and Leiner, 2009). It has been argued that this gap emerged following a report sponsored by the Ford Foundation looking into 'Higher Education for Business' in the US in 1959. The report included the conclusion that American business education was characterised by 'trade schools' that lacked a strong scientific foundation. The result of the responses to this report was a far greater emphasis on academically rigorous research in US business schools (and subsequently, elsewhere) leading Kieser and Leiner : 516) (2009) to conclude that 'management education may have done more than correct the deficit. It may have overcompensated'. By this they mean that MOS research became increasingly divorced from practical issues and as a result had increasingly limited influence on practitioners.

Kieser and Leiner (2009) report a variety of critical comments to support this claim, including concerns that management education became overly specialized and that it failed to engage students in real-world business and management problem-solving. As Kieser and Leiner : 516) (2009) proceed to explain, '*the rigour-relevance gap has become a prominent issue for management science as well as for wider audiences'*. They provide evidence in support of this position from the annual statements of the Presidents of the Academy of Management, the largest professional association of MOS academics. Examples cited include Donald Hambrick's advocation that '*it is time for us to break out of our closed loop. It is time for us to matter*' in 1993, Anne Huff's concern '*that management science 'will be increasingly seen as "counting angels dancing on the head of a pin" by the public*' in 1999, and Andrew Van de Ven's reference to '*growing criticism that findings from academic and consulting studies are not useful for practitioners and do not get implemented*' in 2001. During and following this period, there was a very extensive debate centred on the perceived rigour-relevance trade-off and how the circle might be squared. It would be inaccurate to conclude that things have not changed in the intervening years, but it is notable that, in his presidential address to the Academy in 2022, Herman Aquinis identified '*advancing the impact of management and organization science on business and society worldwide*' as one of his two priorities for the business and management research community.

For two key contributions to how social science research, including that conducted in MOS, has been influenced and encouraged to develop to be more impactful we can turn to presidential addresses from two sociologists, Michael Burawoy in his speech to the American Sociological Association in 2004 and John Brewer in speaking to the British Sociological Association in 2012. They both invoke an explicit reference to 'public' in outlining how social science can deliver social impact and benefit to society.

Michael Burawoy articulates four types of sociology on the basis of two dimensions: the nature of the knowledge that is produced and the different audiences for that knowledge. He distinguishes between academic and non-academic audiences and between 'instrumental' and 'reflexive' knowledge. Instrumental knowledge, drawing on Weber's conception of instrumental rationality, is technical and 'neutral', oriented towards pre-determined means to address pre-defined problems. Conversely, reflexive knowledge is produced in ways that acknowledge the politics of knowledge production and the uses to which that knowledge might be put. Mapping these against their prospective audiences, Burawoy identifies four types of sociology, including policy sociology which produces instrumental knowledge and public sociology which produces reflexive knowledge, both for extra-academic audiences. As Burawoy warns, public and policy sociology must guard against faddishness and subservience to their audiences. Burawoy's ideas have been very influential in encouraging reflection on the purposes of social science, particularly with regard to its non-academic audiences and the possibilities for social science to 'make a difference'.

John Brewer's arguments, captured in his 2013 book *The Public Value*

of the Social Sciences, build from those of Burawoy, particularly in developing and extending a normative perspective on the public value of social science research. Brewer is keen to move beyond 'here-and-now use' and 'price value', defining public value in terms of humanitarian futures and societal good. Its normative value comes from, and reproduces, two qualities of the social sciences: they generate knowledge about society, and they are a medium for society's reproduction (Brewer, 2013, p. 29).

Since Brewer is writing from a UK context and is mindful of the Research Excellence Framework's (REF) incorporation of 'research impact' into evaluation of research performance. He is quick to differentiate his position from that of the REF, which he considers a bottomless pit leading nowhere. For Brewer, public value '*is about the intrinsic worth of social science, what good it is in its own right. What I will be advocating… is social science as a public good for its own sake*' (Brewer, 2013, pp. 145–46). While Brewer is clear that the production of public value will require engaging with society's powerful, it is crucial that this research agenda is not captured by the state and dominant elites. Brewer advances the need to engage with civil society actors and government in shaping the research agenda, thereby allowing society's problems to determine the research approach and objectives, and the disciplinary perspectives required.

The idea that societal need should inform the research agenda has become more influential across the disciplinary spectrum over the last decade, including in MOS. For example, in MOS there has been an increasing interest in research which addresses so-called 'grand societal challenges.' An early and influential contribution to this agenda was provided by Ferraro, Etzion and Gehman (2015) who sought to bring together a variety of ideas, including those from the margins of MOS, in a more integrated fashion. While this contributed to a major increase in MOS research in this space, one would be forced to question the *impact* of this research to date. As the authors themselves acknowledge in a subsequent piece (Gehman, Etzion and Ferraro, 2022: 259), 'Although management scholars have embraced grand challenges research, in many cases, grand challenges have been treated as merely a context for exploring extant theoretical perspectives.'.

So, in practical terms, what are the ways in which MOS research might develop such that it delivers on its potential in terms of public value and positive societal impact?

Drawing from the work of Brewer and others (as I have done in detail elsewhere, Delbridge (2014), I would advocate a number of steps that provide a promising basis for research impact (Delbridge, 2023). First, societal problems are inherently complex and multi-faceted, and this creates a need for the involvement of multiple disciplines. MOS is itself multi-disciplinary, drawing on a variety of foundational disciplines including economics, history, psychology and sociology, but there is a stack of evidence and experience that suggests *inter-disciplinary* working is challenging to deliver in practice. A meaningful response to societal problems also needs to be conceived at a certain scale and, therefore, while individual academics are crucial to such processes, my own experience leads me to conclude that the development of institutional structures can be significant both in convening multiple disciplines and acting at scale. We have undertaken exactly this approach in my own institution with the development of a social science research park (sbarc|spark) that is home to multiple research centres and institutes, all are social science led but inter-disciplinary in constitution. The physical space we have created with sbarc|spark addresses a second key issue: the nurturing of collaboration and partnerships with societal actors from the public, private and third sectors. This is a crucial element in delivering on Brewer's normative public value agenda for social science research and can be aided by co-location. The early involvement of research partners – at the problem formulation stage – provides the basis for both practically useful research outcomes and their adoption. Third, a problem and/or policy focus for research can be extremely helpful in developing a research agenda where societal impact is built into the research design from the outset. The debates over rigour and relevance have included concerns that business school researchers inhabit both a 'theory cave' distanced from empirical realities and an institutional publication imperative 'iron cage' which results in the limited impact on practice (Johnson and Starkey, 2022). If more academics are to engage in research which has a social problem and/or policy focus, they will need both to extricate themselves from the theory cave and escape this iron cage.

3.19. Doing research with impact - Rahul De' and Abhipsa Pal

3.19.1. Introduction

Research in business schools and departments has been driven by a demand for 'applied' as opposed to 'pure' research. In the Information Systems (IS) discipline, this has led to numerous debates (Benbasat and Zmud, 1999; Lyytinen, 1999) and, later, calls for significant and responsible research (Burton-Jones etal, 2023). This demand for impactful research recognizes both the positive and negative consequences of the dramatic rise in IT adoption and acknowledges how it is affecting the business world, governments across the globe, human lives, and our planet.

Research impact is invariably measured through counting citations, where the number and variety of citations indicate the readership of the research article. Citations are a strong indication of the role the article has played in shaping the views of other scholars and practitioners in the domain, who have cited it in research papers, reports prepared by governments, articles in the popular press or social media, or briefings prepared by business groups. With online citation engines, like Google Scholar or Scopus, that are able to source and count them, the citations become an easy metric for measuring the impact of the article. These metrics influence the career and promotion prospects of the authors, as they are able to demonstrate the readership of the work, and thus, its impact on the peer community.

There is now an increasing demand from various stakeholders to go beyond impact measures that are purely based on citations. This demand originates from governing boards of business schools, accreditation bodies, rating agencies, industry groups, and also governments. They want the inclusion of critical dimensions like financial, educational, business development, intellectual, regional ecosystem, societal, and image impact (these are the seven dimensions suggested by the accreditation agency EFMD, which awards the EQUIS accreditation to business departments and programmes[104]). Each of these dimensions can be measured on specified qualitative and quantitative parameters to show how they impact policies in the concerned domain. Thus, these parameters account for the practical impact of research output beyond the academic domain and can be addressed by incorporating mindful strategies in the research process.

In this paper, we present a brief overview of a model that shifts the focus from output of research to the process and activities of research. The model identifies key concerns that researchers have to be mindful of while doing research, which will lead to impactful outcomes. When each of the research stages is carefully crafted for impactful research, the focus of measuring impact can shift from output measures to process measures. This model is outlined in the next section, followed by some concluding remarks on measuring the impact.

3.19.2. Choices made in the research process

Though research is conducted in as many ways as there are researchers, there are some choices all researchers make to focus and limit their activities. These choices determine the path the research follows and its outcome. These choices must be made at various stages (see Fig. 1) during the research process, whenever each stage is reached.

[104] https://www.efmdglobal.org/assessments/business-schools/bsis/. Accessed on 20-September-2023.

3.19.3. Problem context

Problem context refers to the domain or setting in which the research question is located. The problem context limits or scopes the research and defines its boundaries in terms of what can be included in the ambit of the study, and what should be left out. For example, in a study of mobile phone use for rural development, the context could be financial inclusion through digital payments or better healthcare through app-based monitoring. In either case, the context would specify the users, their location, and their situation - for instance, women mobile phone users, in a rural setting, belonging to farming communities. This context would then assist the problematization and the research questions raised, the manner of the study, the analysis, and the conclusions that are drawn for theory and practice.

Problem context shapes the impact of the research as it maps out the possible areas in which the output of the research will be directly applicable, and where generalizations from the findings would be relevant. A problem context that includes societal or environmental issues is likely to lead to research outcomes that influence policies regarding those aspects.

3.19.4. Problematization

At the problematization stage, a researcher may examine and challenge the assumptions underlying existing theories about the subject matter and the domain (Alvesson and Sandberg, 2011). This process enables generating research questions that stretch the status quo in the research domain, thus facilitating questions about impact, whether societal, economic, environmental, or others. There are thus "*systematic attempts to solicit problems*" (Lyytinen, 1999), which will lead to outcomes that have impact.

Different types of assumptions are questioned - such as assumptions that are shared and accepted in a domain of study, assumptions about metaphors associated with a subject, or ideology assumptions that include political or moral bases of understanding a phenomenon (Alvesson and Sandberg, 2011). For example, technology adoption research assumes some aspects of convenience provided by use, which may be questioned from the perspective of the user. An urban user may view privacy and e-waste generation differently from a rural user, with varying degrees of empathy for these concerns. Questioning these assumptions may lead to impactful research, grounded in the reality of user experiences.

3.19.5. Method

Whether a hypothetico-deductive or an inductive approach is used in research, the method eventually determines the outcomes and conclusions. The method invokes the priorities of the researcher and draws attention to what is important and relevant. When methods are deployed mindfully, they seed the data collection process, analysis, and the drawing of conclusions. Textbooks on research methods often advocate that methods should be based on the research question being asked and driven by the overall goals of the research project. Methods create the bent for practicability, relevance, and significance. To this extent, methods can be assessed for their contribution to relevance and impact. For instance, an interpretive-qualitative method involves understanding the viewpoints of the respondents, as opposed to validating pre-developed models and is likely to identify critical social issues discussed by interview respondents in an unstructured manner.

3.19.6. Data

Data used for research is the raw information that provides the evidence, forming the basis for drawing conclusions about the phenomenon being studied. Data in IS research is either primary or secondary, based on sources. There are many variations in data obtained from these two methods - such as primary data obtained from field experiments or digital platforms, or secondary data obtained from digital databases publicly available on the internet, or other sources like business or government databases.

Data sources and their origins determine the outcome of the research and its eventual impact. Data drawn from contexts and sources that are of concern determine the relevance and applicability of the findings, and its generalization. For instance, primary data about mobile phone use would require surveys of users or carefully curated experiments with users that can capture issues like privacy concerns or gender biases. These are unlikely to be available if the data were obtained from secondary sources, like logs of telecommunication providers. Thus, depending on the focus of impact, the researcher must choose the appropriate data collection method.

3.19.7. Analysis

It is at the analysis stage that the researcher draws together the research question, the data, the theoretical basis, and the method, to address the goals of the research. The analysis stage is closely tied to the problematization stage since the researcher now seeks to draw conclusions about the identified problems. Though analysis is often carried forward by tools, the core reasoning carried out by the researcher involves a detailed examination of multiple ideas, concepts, interim conclusions, and reasoning chains. At this stage researchers, so to speak, emerge from the trees to see the forest.

It is as this stage, when the author provides the complete picture based on evidence collected from the data, that a conscious effort by authors to highlight and describe the significance of their work (Burton-Jones et al., 2023) can shape the eventual impact of the paper. Readers are directly, possibly subtly, informed of the implications of the

Fig. 1. Stages of research.

research, while also pointing to indirect impacts or second-order impacts. Readers will certainly draw their own conclusions, though the act of 'telling' what the impacts are, rather than 'showing' and asking them to draw their own conclusions, is a preferable approach. These attempts to directly tell and reveal implications can be measured qualitatively. For example, the finding that risks of cybertheft deter mobile payment users can impact policy decisions regarding security regulations for digital transactions.

3.19.8. Dissemination strategy

Researchers publish their work mainly in academic journals or as books and monographs. Many include their research findings in classroom teaching, which is the primary method of disseminating their work, besides publishing. Some write their work for larger audiences in summary or journalistic form and publish it in newspapers, magazines, and blogs. Some share their findings as reports with private and government agencies who are interested in the same domain. Many are now uploading Youtube videos and podcasts to describe their work and findings, while others are sharing through social media like LinkedIn, ResearchGate, and others.

Besides writing and publications, many academics serve on government committees or panels, and include their own research findings in reports. Some academics are appointed to Boards of organisations where their views, informed by research, impact policies, and decisions. Academics are also invited to public speaking events, keynotes, panels, seminars, or as judges of competitions, where their views influence public opinion.

Researchers are encouraged to participate in one or more of such dissemination strategies, since such participation and activities lead to research impact. These activities are measurable, and this data is often demanded by accreditation agencies, and promoted by institutions and communities.

3.19.9. Conclusion

We are now shifting focus from traditional citation-based research impact to multi-dimensional impact for society, the environment, and other stakeholders. Each stage and activity of research contributes to its eventual relevance and impact in these dimensions. When research is conducted in a mindful manner (Dernbecher and Beck, 2017), with alertness and dynamic awareness of its possible impact and significance, and each stage of the research process, from defining the problem context to dissemination, is crafted with this objective, the focus of measuring impact can shift from output measures to process measures. As highlighted above, activities in each stage can be designed and rendered for the required impact and significance.

Some caveats are due. First, measuring activities of the research process cannot be done in the way physical phenomena are measured, they would have to be qualitatively perceived, and the scale noted. For instance, astute and careful problematization can be gauged by the reader, or author, on a scale of high to low (on a three-point or five-point reading), where no absolute value can be ascribed. Here, prior research can guide how the levels of high or low can be docked. Second, research is a highly fluid process, where activities overlap, mingle, and are driven more by circumstance and serendipity than methodical design. The measures of process impact can only be done retrospectively, though as individual researchers become mindful of the process, the measures will become ingrained and reflect in the a priori design, as well.

3.20. The impact of academic research on practice and policy – Robin Gauld

The worlds of policy and practice are often seen to coexist in relative separation from the world of research. This has been the subject of many books, journal articles, entire journals dedicated to the topic, and meetings. All have the aim of better understanding how the two worlds can be brought together, looking at ways of better navigating them and ensuring that the significant investments are effective and adding value. Policymakers and practitioners routinely state that the help of researchers would be welcomed; researchers have a goal of getting their work used, ultimately making a difference. Yet the challenges to achieving this are significant and sometimes seen as unresolvable. This is because policy and practise often move at pace and are surrounded by a set of complex factors meaning opportunity for researchers to directly impact on the process often does not occur in a planned and staged manner. Researchers for their part function in a different way, focused on rigorous methods, building solid evidence and providing proof. To many, there are fundamental differences between the world of judgement and negotiation that surrounds policy and practise, and the world of science that embodies research (Lin & Gibson, 2003; Newman, Cherney, & Head, 2017).

3.20.1. Defining non-academic research impact

Researchers need a solid understanding how policymakers and practitioners, who by nature sit outside of the academic arena, think about impact. For them, research impact would be about being available with ready-made solutions by Friday. Study findings are not enough. Also needed are robust plans for implementation including what it would mean for a recipient organisation, or a practise. Researchers spend limited time thinking about implementation yet in policy circles this is fundamental and where academic attempts to make impact often falter: 'the researchers had some great information but no idea how this would work in practice; they seemed to live on another planet', is a common policymaker and practitioner retort.

3.20.2. Ensuring research has impact

To address the aforementioned problem, researchers can take various steps. At the outset they should think about the end user. In the world where questions about the future of people and planet are increasing, with challenges such as climate change, geopolitical uncertainty, rapid technological change, and inequality, it is critical that researchers take a problem-solving approach in direct partnership with those they want to impact. Thus, they need to think carefully and strategically about who they want to impact with their research. Having identified this, it is important to work in partnership with end users, policymakers and practitioners, through the processes of research development, design and conduct. This will undoubtedly bring a practical focus to the research, with an emphasis on implementation and impact. For many researchers this is deeply challenging. It requires an outward focus, actively seeking to engage externally, to understand the needs of policymakers and practitioners, and developing methods for building partnerships and shared agendas. There can be significant benefits also through the co-design process including involving policymakers and practitioners as co-authors on any papers and other academic outputs that result. This is a very powerful model, demonstrating that work can be done in an effective partnership.

3.20.3. Structuring research articles for impact

While many journals, certainly in the business and economics fields, are not designed for authors to submit work focused on impact or to describe this, others, particularly in the sciences and health, are active in this regard including IJIM. In general, authors should focus on describing the impact in the abstract and then in the discussion. They should also note in the literature review where previous studies have failed to have an impact. Including a box describing impact can be important as well as lessons for researchers, policymakers and practitioners. Focusing on the practical in this regard is very important, again as the external community looks for practical advice and plans. More description of impacts can be in an appendix which can include substantial detail. Arguably, journals themselves need to make fundamental changes to orient towards work focused on impact for policy and practise (Akmal, Gauld, & Podgorodnichenko, 2022). Some simple shifts would help, such as: shorter expected word counts and limits (around

3000 words or so),; writing for a general audience (so that a scholar or practitioner in one field can easily read and understand work from another); shorter literature reviews, theory and methods sections; expectations that submissions are focused on practical problems and solutions; and that full details of methods and other matters are placed in appendices. As noted, and very importantly, practitioners should be able to easily digest journal articles both in terms of content and from any discipline.

3.20.4. Broader strategies to build impact

Part of the process of building a reputation for impact and therefore of relevance to policymakers and practitioners is deploying a range of strategies aimed at this. Researchers today need to be increasingly focused on different dissemination channels. This can involve everything from shorter summaries of research and analyses intended for a lay audience, published in places such as *The Conversation*, through to pieces produced for professional magazines. One-page summaries including information for policy and practice can also be useful, released through university or research group communication channels. Active engagement in social media is also valuable and where many researchers today gain considerable recognition for their work with a practitioner audience.

3.20.5. Demonstrating tangible impact

The ultimate impact is knowing that work has been used in policy and practise. While various metrics, including broader alt-metrics that pick up on social media sharing and mentions, are the ways in which we traditionally think about measuring impact, we really want to ensure that research gets into the hands of policymakers and practitioners and makes a difference. As noted, one of the best methods for this is to embed research within external organisations and communities in the first place. I have personally been involved in a range of projects designed this way from the outset and we have co-published papers along the way (Doolan-Noble et al., 2019; Sligo, Roberts, Gauld, Villa, & Thirlwall, 2019). These papers and the work involved have continued to have an impact within the partner organisations, in part because they have built a genuine sense of pride in what they have achieved in partnering with academics. It has also demonstrated that research can have practical value. It is a powerful way of working and the world of practise values it. I would encourage all researchers to work in this way is it also brings a level of satisfaction that publishing in the top journal and being routinely cited will only partially deliver on. It means that ultimately your work is making a positive difference and contribution. This is really our mission as researchers: working with those around us to better understand and solve problems related to people, systems and our planet.

3.21. Bridging the gap through co-creation of value: enhancing the utilization of academic research by industry practitioners - Leeya Hendricks

The gap between academic research and its practical application in the business world has long been a challenge, with a substantial portion of valuable research articles remaining underutilized by industry and business practitioners. The divide between academic research and its practical application in the business world remains a persistent challenge. Despite the wealth of knowledge contained within academic journals, a substantial portion of these resources goes underutilized by industry and business practitioners (Shapiro et al., 2007).

This disconnect not only limits the potential benefits of research but also impedes progress in various sectors (Banks et al., 2016). In this perspective, delving into the reasons behind this gap and propose measures academia can adopt to ensure that academics research findings are more widely read and applied by practitioners, government officials, and policy makers. With the setting of academia, we find ingrained institutionalized cultures and traditions, where aspects of cognitive-cultural, normative and regulatory factors restrain change, also present within business financial services setting for example, asset management (Hendricks & Matthyssens, 2023). Collaborative relationships between actors from both sides could be an enabler for value co-creation in each business and academic setting. The emphasis of the importance of co-creating value and impact through collaborative efforts between academics and practitioners. The key is to build permanent bonds, moving away from just temporary links, between science and practice (Banks et al., 2016).

3.21.1. Challenges in utilizing academic resources

There are a number of challenges practitioners face when it comes to scholarly research. These are outlined in this sub-section:

***Complexity and Jargon*:**

Academic research often employs highly specialized language and complex methodologies that can be intimidating to non-academic readers. Business practitioners may find it challenging to decipher research articles laden with technical jargon and statistical analyses.

***Time Constraints*:**

Industry professionals have demanding schedules, leaving them with limited time for reading and digesting lengthy research papers. The time required to sift through academic journals may deter practitioners from exploring valuable insights.

***Relevance and Applicability*:**

Research articles may not always address the immediate concerns of business practitioners. The gap between academic research topics and real-world business challenges can discourage practitioners from seeking relevant information, at times the timeframe of research commencing to when it is published, can mean the research is stale or becomes irrelevant.

***Access Barriers*:**

Access to academic journals is often restricted by paywalls and expensive subscriptions, limiting the reach of research to those affiliated with academic institutions.

3.21.2. Co-creating value and impact - measures to enhance research utilization

Simplify Language and Presentation: Academics should strive to communicate their findings in a clear, concise, and jargon-free manner. Research articles should include executive summaries that distil key takeaways for practitioners.

***Collaboration and Engagement*:**

Encouraging collaboration between academia and industry can bridge the gap. Academics can work with industry professionals on research projects, ensuring that the research addresses practical issues, in a timely manner.

***Open Access Initiatives*:**

Universities and research institutions can promote open access to research articles, making them freely available to the public. This can significantly increase the reach and impact of academic research.

***Practical Recommendations*:**

Academic articles should not only report findings but also provide actionable recommendations that can be readily implemented by practitioners.

***Knowledge Dissemination*:**

Utilize various platforms such as webinars, podcasts, social media, event talks or a business book to disseminate research findings in a more accessible format.

***Professional Development*:**

Incorporate research-based insights into professional development programs for industry practitioners, making it easier for them to apply the latest research in their work.

***Government and Policy Support*:**

Encourage government bodies and policy makers to consider academic research when formulating policies and regulations, reinforcing the importance of research in decision-making processes.

***Practitioner-Driven Research*:**

Involve practitioners in the research process from the outset, ensuring that research questions and methodologies are aligned with real-world needs.

The potential for co-creating value and impact through collaboration between academics and practitioners is immense. The untapped potential of academic research in enhancing business practices is a challenge that requires active collaboration and innovation. Not only do norms come to the fore to create a specific institutional context but also specific conditions that limit joint co-creation between actors, such as degree of lack of information exchange, understanding, mistrust, transparency and captive ties (Hendricks & Matthyssens, 2023). It is imperative that academia takes proactive steps to make research more accessible, relevant, and applicable to industry practitioners, government officials, and policy makers and enable increased value co-creation management scholars only share a limited amount of research with practitioners.

The information asymmetries between scholars and practitioners, which those who engage in science and practice have not bridged sufficiently (Banks et al., 2016).

By addressing the challenges and adopting collaborative measures, we can bridge the gap between academic knowledge and practical application, resulting in more informed decisions, innovative solutions, and positive impacts across various sectors. The path to realizing this potential lies in the mutual commitment to creating value through the synergy of theory and practice.

3.22. Impact of academic research on practice and policy - Airo Hino

3.22.1. The definition of (non-academic) research impact

The definition of research impact ranges from the extent to which a study is academically relevant conventionally measured in the number of citations, impact factor, and h-index to the extent to which it matters for society at large and changes the ways in which people live through engaged and enhanced actions of people and policy implementation.

3.22.2. Steps to take during the research planning/design stage to ensure impactful research outcomes

Steps may vary across types of research but in the field of experiments in social sciences, it has become common to pre-register a study plan in various online platforms such as Open Science Forum in advance. Registering one's plan of experiments helps to contribute to discussions of its merit regardless of any result that it may obtain as its plan is publicly open for evaluation. This practice may proliferate to other types of research and disciplines beyond experimental studies, as registering one's hypothesis and data analysis plans can enhance the value of research through discussions and interactions with audiences interested in the study and gain salience in online and offline communications.

3.22.3. Sections of articles that should provide a discussion to make research impact visible and what you look for in a research article to evaluate its impact

Introduction and conclusion should be the right place to be engaged in discussions that enhance one's research impact. We may also think about introducing a section of "targeted audience" on top of keywords at the beginning of articles. One may more proactively mention types of the audience and specific media, organizations, and groups that a study wishes to address to and that could be potentially interested in the issue discussed.

3.22.4. Strategies authors can employ to ensure their articles reach the intended audience, such as practitioners, policymakers, third sector organizations, and international entities like the UN

Besides mentioning the specific names of practitioners, policymakers, and organizations as discussed above, authors may also mention their names and accounts in social media as far as it is appropriate. This may be an action to be taken with some reservations, but those targeted audiences often do not pay attention to academic journals and/or do not have access to them and such mentioning and signalling can help the process of outreach. The study shows that there is a correlation between mentions and likes in social media between citations of the original study (Haustein et al., 2014).

3.22.5. Methods to track and monitor research impact

There are among others three ways to track and monitor research impact in a different manner from the current methods.

One is to measure the number of references and mentions in the media and practitioners' documents such as governmental reports and commercial adverts. Altmetrics is motivated in a similar fashion and measures the extent to which a study is mentioned in various sources (Priem et al., 2011). If one can distinguish the number of references/citations and mentions in the media and those in practitioners' documents, it will be a useful bibliometric that enriches our ways of evaluating studies beyond conventional academic relevance but also what may be called social impacts and relevance.

Another way to measure one's study is to assess the language used in research articles/monographs in comparing with other studies before and after the publication. One could for example rely on similarity measures such as Cosine Similarity of a particular article with other articles in the field in the past years. The same exercise can be performed after a certain number of years and compare with the metrics obtained from the past. This will allow us to evaluate to what extent the language used in the article was influential to other studies that followed. The drawback of this metric is that it requires text analyses and therefore processing of text data but will be based on the actual change of the language used in the field. One may need to be careful in interpreting such metrics as a study can foresee a topic that will be discussed extensively in coming years and deliberately chooses a topic that will appear to have an impact after publication.

The last suggestion is to refine the conventional citation by weighting based on its contexts. At the moment, the number of citations does not distinguish if they are cited in a positive context or a negative context with certain criticisms. Such weighting scores can be produced automatically by supervised machine learning. It takes time and effort to create a train set to evaluate the context in which a study is cited but once such a train set is available, it can be applied to a test set to produce weighting scores. The idea resonates with the initiatives taken by the Citation Typing Ontology project (Shotton, 2010), and it can better reflect actual contributions that a study is making and helps to prevent from inflating the value of a work that is cited only for the sake of negative presentations. Norris (2021: 40) discusses the examples of retracted papers and how they continue to be cited. The typical example used is a well-known paper in political science retraced from '*Science'* due to falsified data used for the analysis of attitudes toward gay marriage.

3.22.6. Ways to demonstrate that an article has made a tangible impact

One thing that journals may consider, besides the above suggestions of new measurements of academic impact, is to allow authors to evaluate its own publications afterwards and discuss how the study contributed to social progress and wealth and health of people. Compared to various quantitative metrics discussed above, this is rather qualitative information but can serve as concrete evidence of how a study can enrich social innovations beyond academic relevance which is available from conventional metrics.

3.23. Impact of academic research on practice and policy - Cathy H.C. Hsu

Tourism Management is dedicated to publishing scholarly articles that encompass management, planning, and policy aspects of travel and tourism. For over four decades, an interdisciplinary, multiple stakeholder approach in examining international, national, and regional tourism as well as specific management issues has been maintained.

Since early 2020, a mandatory inclusion of a 150-word "impact statement" reflects the journal's original mission to make practical impacts beyond academia. Authors are required to articulate how their research or paper contributes to or provides beneficial impacts on the broader society, economy (including tourism industry), culture, public policy or services, health, quality of life or the environment. Authors are particularly reminded that their stated impacts should not revolve around academic contributions, but rather circumscribe impacts beyond the academic boundaries.

In order to devise impactful tourism research, scholars are urged to remain attuned to the unmet needs of various stakeholders. These include tourists, residents, tourism employees, destination management organizations, relevant government entities, and other associated public and private sectors. Such information can be gleaned from sources such as media coverage, industry publications, government policies, industry events, and personal experiences. Incorporating consultations with these diverse stakeholders during the research planning phase not only underpins the relevance of the study, but also encourages buy-in for possible collaboration in data collection, and eventual endorsement of research findings.

Within the manuscript, reviewers anticipate a dedicated section articulating the practical implications derived from the study's results. Recommendations targeted at practitioners should be specific and actionable, underpinned by the findings of the study and extending beyond commonly implemented best practices. To accomplish this, the study itself needs to be rigorously conducted to ensure that recommendations are confidently formulated based on the genuine challenges confronting the industry, instead of treating practical implications in a cursory manner or as an afterthought.

Upon publishing, authors are urged to disseminate their findings through platforms such as social media or within their email signatures. Additionally, authors could craft a condensed, layperson-friendly summary emphasizing findings and their practical applications for broader distribution. Public seminars, press releases, infographics, and short videos are other effective ways to increase exposure and, potentially, the impact of the research. Individual researchers or their respective institutions could dedicate a segment of their website to serve as a repository for these research results. This curated "toolbox" would allow potential users to easily seek and access pertinent information as needed.

To effectively demonstrate impacts, the collection of qualitative and quantitative evidence should be a continuous component of the research process. Possible evidence of impact may encompass presentations made at industry events, involvement in consultative groups (for instance, advising government or international agencies, such as the United Nations World Tourism Organization), news and social media coverage, website traffic analytics for research project or institutional sites, online dialogue and inquiries generated, utilization rates of tools developed, policy reforms influenced, and testimonials confirming study results' impact on operations.

Publishing research in academic journals plays only a minor role in effectuating real-life impacts. Scholars are encouraged to adopt a holistic perspective and have a long-term outlook, recognizing that actions taken at each phase of the research process are interconnected and integral for impact creation. It's crucial to devote efforts toward a focused stream of research agenda, thereby allowing sufficient time for the development of impact and accumulation of supporting evidence.

3.24. The impact of academic research on practice and policy – focusing on education and empowerment of the young generation - Netta Iivari & Tonja Molin-Juustila

3.24.1. Alternative discourses on impact in information systems research

Information Systems (IS) research has acknowledged the importance of having an impact on practice and policy for a long time. The discussion has been on-going for more than 20 years, for example, under the concept of relevance of our research – with varying perspectives presented. In IS research, relevance has often been seen to equal relevance for managers (see e.g., Benbasat & Zmud, 1999). Additionally, relevance has been associated with addressing enduring or current organizational problems, with research being implementable, i.e., possible to put in practice, and with research enhancing the mental models of managers (e.g., Benbasat and Zmud, 1999). However, such a view on relevance has also been questioned and extended. For example, Lyytinen (1999) asked to consider also other forms of relevance than the one that produces immediate solutions for managers; according to him, relevance can be achieved by reshaping practitioners thinking and actions in a longer perspective. Lee (1999), inspired by critical research tradition, in which false conscience, oppressive status quo and liberation of the oppressed are central notions, argued that relevance can be achieved also by researchers acting as a conscience for society.

A similar variety of views can be found from our research methodological discussions. In connection with design science research, action research or engaged scholarship research, advocacy for relevant research is evident. Design science research aims to address important and relevant business problems, managers being seen as an important stakeholder group who is to benefit from the outcomes of the research (e.g., Hevner et al., 2010). Action research also emphasizes the practical problem of the client to be solved (e.g., Davison et al., 2004). Engaged scholarship research equally advocates relevance for practitioners and relies on extensive collaboration with practitioners thorough the research process (e.g., Van de Ven, 2018). Naturally, the practitioners do not always equal managers and the problems to be solved are not necessarily organizational or business problems, but quite often in IS research they are. Then again, alternative views can be found within critical research tradition in IS research, in which it has been emphasized that the goal of such research should be to reveal and challenge oppressive beliefs and practices as well as to strive towards emancipation of individuals and societies as well as towards transformative redefinition of the existing social arrangements and power dynamics (see e.g., Cecez-Kecmanovic, 2011, Myers & Klein, 2011, Stahl et al., 2011).

The latter type of discourse is prevalent in some recent studies calling for impactful research, or for research that matters. Walsham (2012) argues for turning attention away from helping organizations to use digital tools effectively to use of such tools for making the world a better place. Our attention should be turned away from organizations and managers to various kinds of contexts and communities, potentially vulnerable ones. He also calls for an ethical and critical approach in our endeavors. Similar kind of concerns are put forward by Bødker and Kyng (2018), in the case of participatory design. They underscore, first of all, that such participatory design should be addressing and influencing big issues: significant societal issues and problems, which matter to people. They advocate long-term visions for digital technology, but also for skills and redistribution of power and resources. They call for high technological ambitions and shaping our technological futures, but also for working prototypes that users can appropriate and shape and remind of the importance of the existing infrastructures into which the solutions should be embedded. However, they also point out criticality towards digital technology and the importance of offering alternatives. They call for projects that would challenge the power of digital technology and advocate democratic control of digital technology. Additionally, they emphasize creating long lasting impacts in the world which requires forming alliances and partnerships, also with societal partners at different levels (local, national), with whom design needs always to be seen as a political endeavor with conflicts and tensions.

3.24.2. Variety of impacts expected by funding bodies

The discussion on the impact of research is not only vibrant in the research community, but also in society. Science policy and funding bodies, among other factors, are shaping the research we do. At least in Finland and Europe, different kind of funding bodies have been

requiring increasing emphasis to the put on the impacts of research already in the funding applications and they have the impact of research among their evaluation criteria. Hence, IS researchers cannot ignore the impact of their research if they apply funding for their research. As an example, the Horizon Europe funding programme is shaped by the overall priorities of the EU: the Green Deal, a digital future, an economy that works for people and promoting and strengthening European democracy, which underlie the expected impacts of the research they fund.[105] The funding applications must include an extensive impact section that contains two parts: 1) Project's pathways towards impact and 2) Measures to maximize impact - Dissemination, exploitation and communication.[106] The Research Council of Finland expects societal impacts to be addressed in the funding applications as well. For both funding bodies, quite varied impacts can be considered. The Research Council of Finland sees impacts as diverse ways by which research influences different kinds of phenomena and trends in society, also pointing out that often a longer time span is required for them to appear. It is recommended to analyze the impacts and opportunities for impact comprehensively and from different perspectives: "public services and the functioning of society; culture and human understanding; economy and business life; health and wellbeing; environment and natural resources".[107] The impacts may vary: research results may "boost prosperity by providing solutions for streamlining business operation; aid and support policy-making by providing reliable background information; create and develop skills needed in working life; support individuals in spiritual growth and education".[108] The impacts can also be achieved in different ways: through disseminating research results, through interaction with stakeholders or through education of people.[109]

Equipped with these varying views and discourses on research impact, we will next discuss our own approach to impact.

3.24.3. *Our approach to impact: doing information systems research that matters*

We introduce our Make-a-Difference project,[110] funded by the Research Council of Finland, that aimed at exploring critical design and critical making with children. The project lasted for four years, during which the project collaborated with representatives from the Educational and Cultural services of the City of Oulu and three comprehensive schools in Oulu, altogether with six different classes of children and their teachers. The representatives from the city suggested exploring the potential of critical design and critical making with children to tackle the wicked societal problem of bullying. A steering group was formed for our collaboration with the city, containing expertise in educational administration, children's computing education and antibullying strategies.

With each class of pupils, around semester long critical design and critical making projects were carried out, in which children were sensitizing with the problem of bullying as well as with digital technology, design and making, envisioning a better world without bullying, ideating and designing digital tools to move towards that world, critically reflecting on their designs, building prototypes of their ideas, showcasing the prototypes as part of drama performances or activism campaigns aimed at mobilizing the broader school community to tackle bullying and reflecting on and evaluating the outcomes and the process (see e.g., Hartikainen et al., 2023, Iivari & Kinnula, 2023, Iivari et al., 2023, Sharma et al., 2022, Ventä-Olkkonen et al., 2021, Ventä-Olkkonen et al., 2022).

After the individual projects, we have been developing the children's ideas further, either in collaboration with adult actors or with new or the same groups of children involved previously. An important group of adult actors has been our master's students in the degree programs of information systems and software engineering or computer science and engineering. We have managed to attract these students to work on our projects and thus educated them as important enablers, change agents and attitude influencers. In addition, we have created real-life collaborative contexts in which all our adult actors (master's students, teachers and representatives from the city) have been able to build their design agency for envisioning novel work practices and digital technologies in collaboration with other relevant actors (see Kinnula et al., 2023).

As for impacts, in our project, we have particularly concentrated on children's basic education and children's empowerment in and through design of digital technology. We have been educating and empowering children in relation to digital technology. We have offered them skills to shape our digital future: skills to ideate, design, develop and evaluate digital technology. We have also invited children to approach design and digital technology critically: we have pointed out that those can be used both for good and bad and encouraged critical reflection on their underlying values and assumptions as well as on their consequences. Additionally, we have invited children to try to make the world a better place and to address significant societal challenges, particularly the wicked societal problem of bullying, through design and digital technology. We have asked children to envision digital means and tools to empower other children – those suffering from bullying. Hence, we have underscored social responsibility and ethical and critical aspects in the context of children's computing education. We claim we have also invited children to act as a conscience for society, to question the oppressive status quo, to strive towards empowerment of individuals and collectives.

For longer terms and broader impacts, we have also quite extensively collaborated with adult actors. We have been forming partnerships with the city representatives in addition to the specific schools, teachers and children. We have been developing educational material for teachers to utilize as well as prototypes that aim at ensuring that the participating children have a real-world impact in the realm of digital technology. We have plenty of educational material openly available on our website.[111] Based on the children's contributions, we have developed in collaboration with master's students a mobile application prototype for tackling of bullying for which we now seek opportunities for further development and integration into the existing infrastructures. In addition, we have, in collaboration with the representatives of the city, been developing a model for further collaboration, entailing support for empowerment and agency building in relation design and digital technology, concerning children as well as citizens more generally. The actors have each worked in their own organizations and participated in this cross-organizational cooperation because they believe this cooperation and expertise being developed is in itself beneficial for them.

As for monitoring impacts, we have so far analyzed the children's views on their learning and empowerment (e.g., Hartikainen et al., 2023, Iivari et al., 2023, Ventä-Olkkonen et al., 2021, Ventä-Olkkonen et al., 2022). We have shown the children, variably, considered learning a lot regarding digital technology and its development or regarding bullying and its prevention. Some children considered being empowered, some considered having succeeded in empowering others. All children managed to create designs that advocated empowerment in one sense or the other. We are happy to report that some children have been empowered in relation to digital technology and its design, while some

[105] https://www.oulu.fi/en/blogs/overheads/impact-horizon-europe-whats-new

[106] https://www.oulu.fi/en/blogs/overheads/impact-horizon-europe-whats-new

[107] https://www.aka.fi/en/about-us/what-we-do/societal-impact/societal-impact-and-opportunities/)

[108] https://www.aka.fi/en/research-funding/apply-for-funding/how-to-apply-for-funding/az-index-of-application-guidelines2/research-impact/

[109] https://www.aka.fi/en/about-us/what-we-do/societal-impact/the-paths-of-societal-impact/

[110] http://interact.oulu.fi/site/mad

[111] http://interact.oulu.fi/site/mad-materials

as powerful civic actors fighting against bullying and oppression in the world.

However, we wish to point out that it is very challenging to determine the impacts. Some impacts that we aim at require a longer time span, particularly those relating to reshaping children's and other actors' thinking and actions (cf. Lyytinen, 1999). We think we have contributed to the development of design skills of all actors involved – the design skills being such that are needed in the future digitalized society and everyday life. However, it still remains an open question what the long-term impacts of our project are – if any. It has also proven to be very challenging to impact children's education as well as the realm of digital technology development: we have offered our educational materials and the prototypes for use and further development and disseminated information about them for different audiences. Yet, it remains to be seen how much these concrete outcomes will receive attention and become used.

3.24.4. Conclusions

Through our research, we have particularly aimed at empowerment and education of the young generation – impacts that should be considered valuable in IS research as well as elsewhere. We argue for IS research to acknowledge impacts of research that go beyond managers, organizations and business problems. We see it important for IS research to act as a conscience for society (Lee, 1999). We argue we need to be engaged in revealing and challenging the oppressive status quo as well as in striving towards empowerment of individuals and societies (Cecez-Kecmanovic, 2011; Myers & Klein, 2011; Stahl et al., 2011). We underscore that we should be addressing significant societal problems (Bødker & Kyng, 2018) and aim at making the world a better place, relying on an ethical and critical stance (Walsham, 2012). We underscore criticality; digital technology and its power are to be approached critically as well as the distribution of power and resources in society (Bødker & Kyng, 2018). We also think we should be inviting our research participants, such as children and adult actors involved in their basic education in our case, to engage in this critical endeavor: to critically scrutinize as well as to tackle big societal problems, relating to oppression and marginalization in the world, with an aim of making the world a better place for us all. For long lasting impacts, we also emphasize the need to form alliances and partnerships, also with societal partners at different levels (Bødker & Kyng, 2018). We also acknowledge that often impacts require a longer time span – we do not expect only immediate impacts as we aim at reshaping people's thinking and actions in a longer perspective (Lyytinen, 1999).

We do not think the impacts appear through our academic articles, but through a careful planning and execution of our research with its impacts in mind. We are hesitant to recommend our academic articles to be read by our research partners for impact. The genre used in our academic articles likely seems uninviting for them. Then again, we agree with Lyytinen (1999): academic writing style should be preserved, as many phenomena can't "be coughed in the common language". Hence, we need alternative forums for ensuring the impact of our research.

Here, we have not touched upon the impact of our research on policy. Some attempts were made during our project, but with no impact so far. Regarding future work, attention is required on this topic; impacting educational, digitalization and antibullying policies should be on our agenda. We already have research insights from other policy contexts that will be utilized as a basis (see e.g., Väyrynen et al., 2022).

3.25. Creating impact through synergies between a variety of research types - Marijn Janssen

Any impactful research needs to generate new types of knowledge which can be either fundamental or applied. But having a research impact is more than only generating new knowledge, it is also about bringing knowledge to practice, ensuring its adoption and use. Translating fundamental knowledge to practice might be as hard as creating the initial knowledge. Both need different competencies and persistence. Both mono and interdisciplinary research can create an impact, but the types of impact might be different.

3.25.1. Types of impact

Research impact is hard to measure and define in advance. Breakthroughs might be only recognized in time, and each contribution that results in the breakthrough might not be easy, or even not at all, recognizable. Researchers do not operate on their own but play a role in a network of researchers and practitioners. Every researcher plays a certain role, but not all get the same recognition.

Impact is often measured using bibliometric analyses, e.g., the quantitative analysis of scientific publications. As fields are different, measures are often normalized to enable comparison among fields. Yet this is too simplistic as different fields might adhere to different standards and different performance measures are of important. Measuring might result in a too-narrow view on improving the performance metrics (D. Janssen, Rotthier, & Snijkers, 2004), or can even result in conflicts (De Bruijn, 2002). For example, a narrow view on the number of publications can easily result in a rise in the number of publications, which can be at the expense of its quality. Such a measure can even result in adverse effects like paper-slicing to increase the number of publications. Another challenge if the contribution of each of the authors, as often authors work in teams or are involved in research communities and the ideas might originate from that community. Individualism or the own institution might be favored over team science, whereas the latter might be crucial to advance science.

For other areas, interdisciplinary is needed in which researchers from different disciplines need to work together. Yet the institutional system favour working together within a discipline, group or university, and often there are negative incentives for going outside the scope. Also, the simplified thought that interdisciplinary research cannot be fundamental research is embraced. Accomplishing team science is not easy, and despite its importance, interdisciplinarity's reach remains modest. (Ledford, 2015). Often, researchers are educated in one discipline and find it difficult to go outside their own discipline or even are discouraged by their professional societies. Institutional measures and incentives should be geared toward team science, whereas many traditional impact indicators are discipline-based. This is further complicated, as there might be no outlet for project proposals to submit interdisciplinary research, as projects are evaluated per discipline. Also, people might think they understand other disciplines and can perform interdisciplinary research on their own, which is a common misconception.

Apart from publications, the citation of publications and the appreciation by funding institutes are often viewed as measures. However, breakthrough research has little chance of being funded through normal channels.

Nowadays, non-traditional usage metrics, called Altmetrics, are more and more advocated for measuring the impact. Altmetricx calculates scholar impact based on diverse online research output, such as social media, online news media, and online reference managers (Priem, Taraborelli, Groth, & Neylon, 2011). But Altmetrics are not a solution, as much is dependent on the broader range of audience and their interest. The question remains what is scientific impact?

3.25.2. How is scientific impact created?

Before being able to look at scientific impact, it is good to understand how scientific impact is created. Measuring impact requires finding surrogates for measuring, which should be aimed at stimulating the process of creating scientific impact. Research can be fundamental or applied; both are important but need to be evaluated differently. In empirical research, there might be hardly any noticeable gap between rigor and relevance; they go together (Janssen & Janowski, 2015). Furthermore, many research problems can only be addressed when researchers collaborate with each other and also beyond their own department or even their own discipline. Having a person on the moon is

a vast scientific project whose success can be measured by looking at the goals, a person walking on the moon, and other innovations that are achieved and can be used in other areas. Working with other disciplines can be inspiring and results in creativity (Janssen, 2023). Openness to new ideas and approaches and willingness to give them an audience and space is required by university managers and editors.

Furthermore, impactful research demands a certain degree of risk-taking (high-risk, high-gain research). For this, a high level of mutual trust is needed among researchers and a culture of facilitating collaborations. The latter results in discussions and challenging each other work without feeling offended or attacked. This is in contrast to a competitive environment in which researchers often are focused on individual gain, which can result in slower innovation and missing opportunities to the isolated nature.

Park, Leahey, and Funk (2023) showed, by using bibliometric analysis, that research progress is slowing in several major fields due to a narrower use of previous knowledge and to an endogenous process of research wherein previously accumulated knowledge enables future progress. One cause is mentioned by Bannister (2023), who argued that relentless pressure to publish on those seeking tenure or promotion tends to result in a low risk, sticking with the mainstream approach to get published in the journal in their field, resulting in less original and creative research.

3.25.3. Need for different views on scientific impact

Scientific impact can be viewed in many ways by looking at the research quality. This should go beyond the ivory tower view in which researchers only publish for creating impact. Research quality is hard to measure, and various kinds of measures can be used. A conference paper with a novel idea can have a bigger impact that a paper in a top-tier journal. Society might view the rankings of outlets differently than researchers might do. A paper that is hardly cited might be more groundbreaking than a paper that fits within a research stream with many followers. Another way is measuring by how often others cite their work. The risk of this measurement is that the focus is not on breakthrough research but that others merely follows, instead of creating original research impact. Agenda-setting papers can have a huge impact as new directions might be advocated. Also, the number of finished PhD and Master students who embrace the knowledge and use this as part of their job can be a measure of impact.

The need for having a scientific impact is undisputable, and there are many measures available, however the impact should not only be on the academic work by the researchers active in the field and their students, but also on decisions, policies and processes adopted by formal institutions in the economic, social, government and non-government sectors.

Also, quality cannot be defined in a uniform way, as disciplines can have different standards. (Ledford, 2015) argues that the rise of interdisciplinary journals has helped in his field, but other disciplines might have concerns about the standard of some of the papers they publish. Unknown makes unloved, and this requires a deep understanding of each other research objectives and traditions.

Knowledge dissemination and gaming is also part of the scientific impact. Presenting for the parliament given inhouse courses for businesses and games are all examples of how knowledge can be shared. Presentation on the news on television or radio, short papers in newspapers or magazines can all have an impact on decision-makers. Simulation games can be another means of transferring knowledge to practice. Companies and governments can play games to understand the implications of their choices and the knowledge gained can be used to arrive at better decisions.

The involvement in making policy recommendations, development of (open source) software, the set-up of new businesses and experiments in practice are all examples of the creation of societal impact. Researchers can be involved in policy-making teams and provide the latest scientific knowledge by simply contributing by being critical and discussing. Software can have a huge impact, as many users might, even without knowing, use the latest software. For example, the Best Worse Method (BWM) is supported by various software packages (Rezaei, 2015). Also, creating software and opening models can create an impact.

Societal problems that cross disciplines, an interdisciplinary programme could foster more collaborations with businesses and government. Hence, collaboration with governments and companies can be viewed as a measure of impact. These initiatives can be complemented by researchers who provide their latest knowledge and insights. Another way in which it delivers societal impact is by means of entrepreneurship. New companies can be started by students and researchers in which the knowledge is brought to the market.

Scientific impacts and journals and conferences are needed in bridging the research and policy world. Policy-makers should be willing to consider the recommendations produced by the journal to inform decisions and working of their organizations (Janssen & Janowski, 2015). This requires that scholars who want to publish in the field should combine rigorous and practically relevant research by taking this into account in their research approach.

3.25.4. What's next?

A broader view of research impact should be taken into which interdisciplinary and novel research are appreciated. A variety of research types ranging from fundamental to practice can complement each other to create impact. Furthermore, disciplines are different, and this should be acknowledged when evaluating the research impact. There are no uniform measures for evaluating the impact and measuring might have undesired consequences into a focus that is not wanted, but the use of the knowledge should be taken into account without discoursing fundamental research. Appreciation of each other research is important to create a safe environment and a culture of high scientific research.

3.26. Achieving impact through business and management research - Paul Jones and Sascha Kraus

Nowadays, we can quantify whether what we research and publish has *academic impact* comparatively easily and in real time – by looking at the citations our works receive on Google Scholar (or in Scopus or the Web of Science) from other members of our academic community. However, there is also a second layer to the meaning of the word "impact" – the question of whether what we do has any meaning in the "real world". This type of impact has been defined by the European Commission as "*A change or a benefit to the economy, society, culture, public policy or services, health, the environment or quality of life*" (Horizon, 2020), or, put in more simple terms, how research brings benefits to both society and the economy. It measures how research outcomes, such as innovations, discoveries, or solutions, create positive changes or address real-world challenges.

The term "impact" is usually closely related in content to the terms "outreach" and "third mission". In short, "impact" relates to the real-world effects of academic research, "outreach" involves connecting with communities and the public through educational and knowledge-sharing activities, whereas the "third mission" encompasses a broader set of activities that universities and academics undertake to contribute to societal progress and development. These terms emphasize the importance of universities and scholars actively participating in and making a positive difference in the world outside of academia.

Accordingly, for example in the UK, higher education system, achieving "impact" from one's research has never been more important due to the Research Excellence Framework (REF). The REF requires all UK universities to return a review of their research based on outputs, impact and environment (REF, 2021). For the next REF occurrence in 2028, the engagement and impact element has been allocation a 25% weighting comprising of "impact case studies" and a supporting statement (UKRI, 2023b). The REF has encouraged a culture of imbedding

impact in UK Universities (Khazragui and Hudson, 2015). Starting in the UK, the topic is also becoming increasingly important on the continent.

There has been a long-standing criticism of academic publications that they widely lacks relevance and value outside academia (Basken, 2023). For many academic journals, academic rigor (in terms of theories or statistical analyses) has long been more important than the applicability of results to everyday life. This sometimes leads to the abstruse phenomenon that many articles in absolute top-ranked journals are so small-scale and detail-oriented that they find only a handful of readers over the years, which can often be seen from the almost complete lack of citations from the community. However, if a studied topic seems to be relevant only for the absolute exception rather than for the rule (in the field of business and management research of the studied companies or groups of people within these companies), how high is its general (practical) relevance? This phenomenon is referred to as the "rigor vs. relevance gap" (Wolf and Rosenberg, 2012) and raises the question of who actually reads scholarly journals and what value they have to general society. Clearly this is a very generic criticism and there are countless examples of how academic research has enhanced society. However, it is an important message to all researchers that achieving impact from one's research should be a central tenant of when we develop our research ideas.

What's the point of our research at all if it does not interest anyone outside our own bubble, and worse, does not even reach those for whom it might be relevant? This article therefore reflects on some best practice recommendations for achieving impact from a research career as a business and management scholar. The typical business and management research process is to undertake a process of data collection and to report it through presentation in academic conferences and thereafter seek to publish it ideally in the form of articles in a peer reviewed journal of high academic standing. Whilst most business and management journals include an "implications for policy and/or practice" section within which researchers can note the impact of their work (Aguinis et al., 2022). However, this is a relatively limited process with no guarantee that a journal article will be read by any stakeholders from industry of policy-making that might benefit from its insights. Therefore, the research community needs to undertake far great engagement with impact to achieve maximum return (Aguinis et al., 2023). The following activities offer a variety of methods to enhance both engagement for awareness raising and impact from research activities:

3.26.1. Engagement with social media

Report your research findings through a range of social media platforms (Linkedin, Twitter, Facebook, Instagram etc) to raise awareness (Bogers, 2021). Engaging on social media can help academics reach a wider audience beyond the academic community. This is especially important for researchers looking to communicate their work to policy-makers, journalists, and the general public. This dissemination activity must be conveyed in non-academic language to increase understanding for societal benefit.

3.26.2. Undertake funded projects, develop case studies with business and practitioners

This is an impact activity that seeks to undertake external funded projects with businesses and businesspeople (e.g. knowledge transfer partnerships). Attaining external income is a key performance indicator of an academic career. Such projects offer the potential for case studies highlighting a positive change in organisational and individual operational practices (Penfield et al., 2014). The critical success factor in such activities is to accurately capture and measure the process of change that is undertaken and to reflect and report these changes with the organisation itself. Thereafter, report the case study with the wider industry through a range of awareness raising activities such as social media, stakeholder events and engagement with practitioner outputs such as trade magazines and societies. Ideally, such case studies can also be published academically, either as teaching cases (in the respective databases) or as research cases (in books or even academic journals).

3.26.3. Report research in non-academic outlet

It is good awareness raising practice for an academic to routinely report their research findings in non-academic outlets such as trade publications (e.g. websites, magazines and letters) and to engage with business support entities such as the Chartered Management Institute, Federation of Small Business, Chambers of Commerce etc). In addition, disseminating your research results through classical media channels like newspapers, magazines, TV, and radio can be an important complement to help raise awareness of important research findings and their potential impact on society. Report your research in a range of outputs to ensure stakeholder awareness. Such outputs must be disseminated in business rather than academic language to ensure understanding.

3.26.4. Report research in specific dissemination media

such as "The Conversation" (see https://theconversation.com/uk). This media is a bespoke network of not-for-profit media outlets publishing news stories and research online with expert opinion and analysis specifically provided by academics to enable academic dissemination.

3.26.5. Undertake stakeholder engagement activities

Universities must ensure effective civic engagement with businesses and society. Thus all academics should seek to engage with a range of businesses through business clubs, knowledge exchange activities etc. Moreover, engagement with policy makers and enterprise support agencies is an important activity in effective dissemination. Such engagement activities offer the potential for developing further research opportunities for research and projects with businesses.

3.26.6. Availability of research through "Open Access"

It is important that research outputs are made available for stakeholders through free open access sources such as ResearchGate and Academic.edu. These sources allow the free sharing of academic outputs (sometimes only via direct request from the authors) without the challenge of publisher firewalls and potential cost implications (Antelman, 2004).

In conclusion, all business and management scholars have the opportunity to demonstrate the impact of their research through effective awareness raising and engagement with business activities. Such activities offer significant value in allowing the researcher to develop their networks and understanding of the business community and effectively disseminate their work to a diverse range of stakeholders. This activity will offer great benefit to both researcher and the stakeholders in the research and potentially enhance awareness, change attitudes, lead to a positive effect on the economy or the environment and even enable a cultural change.

3.27. What does "impact of academic research on practice and policy" mean for a journal like MIS Quarterly Executive? - Iris Junglas

3.27.1. What is the definition of (non-academic) research impact at MIS Quarterly Exectuive?

MIS Quarterly Executive is unique among Information Systems (IS) journals. It is the only AIS (Association for Information Systems) journal oriented towards IT practice. This sets our perception of research impact apart from the conventions of more traditional IS journals. Its primary audience includes both current and future digital leaders and those aspiring to such roles.

At *MIS Quarterly Executive*, we define impact as the degree to which we can equip digital leaders with credible, evidence-based solutions to address evolving challenges, all rooted in the principles of rigorous academic research. Key drivers of research impact are: timeliness, rigor, applicability, and clarity (Piccoli, 2019; Junglas, 2023b). Our aim is to offer *MIS Quarterly Executive* as a platform where research shapes and is

shaped by practice.

3.27.2. What are the steps scholars can take during the research planning/design stage to ensure impactful research outcomes?

Speaking as an IS scholar, I believe that every newly crafted research program should include a practice-oriented article as one of its deliverables. Not doing so is a disservice to the discipline, to industry, and to oneself as a scholar; it draws into question the practical value of our work.

As Editor-in-Chief, I have seen two approaches authors take to ensure an impactful contribution (Junglas, 2023b). One is to write an *MIS Quarterly Executive* article right after finishing an academic-oriented article. Authors are in a position where they have reflected on existing literature and method in detail and can identify and present those nuggets of potential value to our target audience. Another, rather opposite, approach entails writing an *MIS Quarterly Executive* article as an overture for an academic article. Often grounded in qualitative research approaches, authors use their observations to explore an emerging theme in detail before delving into new theories.

3.27.3. What do you look for in a research article to evaluate its impact?

At *MIS Quarterly Executive*, we spend a considerable amount of time screening and vetting submissions to ensure that the target audience is identified, and that audience and research impact is visible from the abstract to the conclusions. Each submission requires an addendum that helps the authors and reviewers to evaluate the fit of the article with the journal's mission. This addendum, which will not be published, consists of a set of questions and ensures that authors can clearly articulate the research impact they are trying to achieve (Junglas, 2023b).

With the addendum, we first try to gauge if the paper tackles a novel problem that has not been addressed, or only been insufficiently addressed, before. This is the anchor. Anchoring a paper is about motivating the paper and making a case for why it is an important problem to practitioners. Second, we look for recommendations that go beyond the anticipated. While there is a fine line between being too generic and too specific, a well-thought-out set of recommendations that digital leaders can relate to is the backbone of any *MIS Quarterly Executive* contribution. Third, we examine the empirical evidence. *MIS Quarterly Executive* articles do not foreground existing literature the way academic papers do, nor does it foreground methodology (an abstracted version of which is often relegated to the appendix). Instead, in an *MIS Quarterly Executive* article, literature and method shine through and often manifest in a model, framework or overall structure. Finally, we look at the write-up. Writing for *MIS Quarterly Executive* requires a different writing style and a different approach to present arguments. Many academicians are hard pressed to write for *MIS Quarterly Executive* and often experience a steep, but valuable, learning curve.

3.27.4. What are strategies that authors can employ to ensure their articles reach the intended audience, such as practitioners, policymakers, third sector organizations, and international entities like the UN?

Reaching the right audience is indeed a challenge we continue to wrestle with. *MIS Quarterly Executive* sits behind a paywall which makes it easy for scholars to access, but extremely difficult for practitioners to peruse. As a result, we have branched out to promote our journal on LinkedIn, leaving the academic publisher platform mostly behind. We have also moved towards promoting individual articles (i.e., songs, not albums), in lieu of the entire issue as was the case for printed journals, and we rely on our authors and senior editors to do the same. We suggest to our authors that—subsequent to publication—they establish their own strategy for marketing their work. In a world of social media and customizable preferences, this is the only way to go. We also are always pursuing ways we can get in front of the paywall, either for article summaries or the entire work.

3.27.5. What are methods to track and monitor research impact?

As a practitioner-facing journal, downloads may be a better indicator of impact than citations as practitioners rarely cite the source of their innovations. The publisher site provides us with those download numbers and tracks download locations as well as citations counts. But since we predominantly use LinkedIn to promote individual articles, we actively track followers, visitors, activities, page views, reposts, and likes, along with the demographics of visitors (e.g., education, IT, consulting, or research). Apart from those quantitative measures, we actively monitor feedback that is provided on LinkedIn or via email. Our ambition also seeks to foster relationships with industry associations, such as the Society for Information Management.

3.27.6. What are ways to demonstrate that an article has made a tangible impact?

Impact means to influence something in a fundamental way that creates new pathways for the future. At *MIS Quarterly Executive* we try to do exactly that: we offer pathways or similar stories that digital leaders can share and learn from (Junglas, 2023a). While "demonstrating tangible impact" is a long held and likely unresolvable conundrum in the IS field, a good starting point is to write for a practice-oriented audience. Such writing cannot be an afterthought—it must be an integral part of any scholar's research program. This also means that the next generation of scholars must be trained differently. New scholars must simultaneously learn about the possibilities of how value for practice can be generated while also gaining theoretical insights as a scholar. They must also learn how to establish and, more importantly, maintain a long-term research relationship with practice.

Fortunately, our discipline is gradually recognizing this need. I see this in the emergence of phrases such as "*engaged scholarship*" (Rai, 2019) or "*clinical IS research*" (Baskerville et al., 2023). It also requires that the contribution of sharing credible, value-adding research with practitioners must be valued similarly to academic paper publications. That is a big reach, but I am hopeful, if not optimistic, that editorials like this can help push us in that direction.

3.28. Impact of academic research in practice, policy and society - Abhishek Kaushik

It is well recognised that there is a mismatch between what industry demands and academic research. Understanding the numerous factors that contribute to the gap is essential for closing it. This article concentrated on several aspects that contribute to the gaps; addressing those elements can help close the gap and improve interactions between policymakers and academia, which will raise productivity and solve real life problems.

The investigation focuses on the difficulties in planning academic research that cannot transform its findings into practical applications. This leads to a lack of trust between academic and business partners, which causes a loss of time, money, and intellectual talent that could be used to benefit society. The following are contributing reasons to the aforementioned issue:

***Expectations*:**

The industrial applications that have a real-world influence on individuals and have the potential to significantly alter society outside of the academic sector are referred to as non-academic research. These applications have completely different goals in mind, goals that are more centred on generating revenue for the firms. In addition, policymakers and practitioners are focusing on dealing with problems and concerns that may need quick solutions in the actual world (Jones and Phillips, 2003). The quest of knowledge by academic researchers, in contrast, may result in unique theoretical frameworks that are not well suited to the urgent needs of society.

***Communications Gap*:**

The essential component is the communication gap, which is what causes the significant disconnect between practitioners and academic

scholars (McCartney and Kwok, 2023). For the dissemination of their results, academic researchers frequently use technical language that might be difficult for policymakers and practitioners to understand. Additionally, there are problems with accessibility or outreach because academic research is typically restricted to journals and conferences, which is beyond the reach of policymakers. Moreover, it is exceedingly challenging for policymakers or practitioners to adopt and become familiar with the most recent state of the art. Additionally, publications and citations are used to evaluate academic research, which has no direct connection with solving real problems in society. There are also few or no additional incentives for academics to interact with policymakers and business audiences. Additionally, there are very few forums where academic researchers and industry professionals can communicate, which can result in feedback regarding real-world applications around the globe. Additionally, collaborating with industrial research can financially assist academia research but may also present a conflict of influence that could affect the results.

Resources:

The availability of resources is another important element that contributes to the growing divide between academic researchers and policymakers. The resources available to both parties—such as IT resources, financial aid for travel, etc.—are vastly different. Lack of funding and resources may limit the researcher's ability to develop and put into use applications that can address real-world problems (Colusso et al., 2017). The researcher cannot work freely on research ideas since funding applications and research grants are very competitive and constrained in scope. Furthermore, rather than taking into account practical applications, research goals and objectives are formed in accordance with funding priorities or scholarly trends. Inadequate ecosystems or technology present additional practical difficulties that can make it difficult for researchers to address pressing needs. Foresight reports, which are long-term plans and are unable to motivate academic researchers to act immediately, are typically the focus of public financing organisations. Additionally, the connection between academics and policymakers may be impacted by the complexity of academic researchers working on intellectual property and technology transfer with legislators. Academic autonomy is another crucial resource element. Academic researchers appreciate academic freedom, but when collaborating with practitioners or policymakers, this can hinder their research due to researcher-centred research.

3.28.1. Strategies for impactful research outcomes

Academics and decision-makers should work on the discussed strategies in light of the gap. "IDEA" is the anonym for these strategies. Following are the strategies:

***Interacting** Audience with Interdisciplinary Research Work*:

To guarantee that the research process is in line with practical demands, practitioners, policymakers, and other stakeholders should be actively involved from the start. Promoting research that integrates ideas from other disciplines to solve complicated issues.

***Data** to Knowledge*:

Transformation of difficult research findings into knowledge that is simple for the general public, practitioners, and decision-makers to understand, such as policy briefs, presentations, summaries, and infographics.

***Engaging** with Policy*:

Researchers engaging actively with practitioners or policymakers through public meeting, meetups, open conference, alliances, and consultations on policy issues. This will enable the researcher to understand the real-life problems and motivate them to plan their research in that directions.

***Advocating** Incentive*:

Advocating academic incentive structures research that would compensate researchers for their interactions with non-academic audiences and the real-world applications of their research.

These strategies, which bring academics and practitioners together for a better world, can close the gap and improve the whole research ecosystem.

3.29. Employing a "Translational" mindset in information systems (IS) research - Deepak Khazanchi

Automation is becoming ubiquitous in all its forms and having a transformative effect in the workplace, home, and society. In this context, the academic information systems (IS) discipline is at a crossroads.[112] In IS our traditional focus has been on theory-driven or theory-informed basic and applied research. In our journals and conferences, we have had ongoing conversations about the rhetoric and relevance of IS research paradigms and in many cases, editors have implemented a requirement for discussing relevance of our research in peer-reviewed articles (Khazanchi and Munkvold, &, 2001, 2006). Some authors have argued for applicability checks with practitioners to assess the relevance of IS research (Rosemann & Vessey, 2008). However, much of our knowledge claims and research products have failed to find their way to the practice of IS. In fact, after nearly 35 years of existence as an academic discipline, it is still hard to point out which core IS research outcome has substantively influenced the practice of IS in organizations and society.[113]

To address these concerns, the IS discipline needs to adopt the notion of "*translational information systems (TIS)*" as an important objective for the future of IS research. Translational Research has already matured in medicine and is becoming an important part of the computer science discipline. The TIS effort will also follow the successful pattern of the now well accepted paradigm of Translational Medicine (TM) and the recently developed notions of Translational Computer Science (Rubio et al., 2010; Abramson and Parashar, 2019). According to Abramson and Parashar (2019), "translational Computer Science (TCS) refers to research that bridges foundational, use-inspired, and applied research with the delivery and deployment of its outcomes to a target community. It supports essential bi-direction interplays where delivery and deployment processes inform the research." Translational Research aims to translate scientific knowledge obtained from basic or applied research into results that directly benefit humans in the form of best practices, frameworks, and policies. As illustrated Table 3, Translational Research is conceived as being much broader than the traditional notions of "applied research" particularly since it does not necessarily have to be adopted into practice.

Like with TCS, Translational Information Systems (TIS) research can build on the paradigm of Translational Medicine (TM) by using the three pillars of TM, namely the Bench (Basic or Applied Research), the Bedside (e.g., Evaluation research using clinical research/trials), and the Community (e.g., New Practices in Patient Care) (Rubio et al., 2010; Abramson and Parashar, 2019).

In TCS, the proposed analogues for these pillars are Laboratory, Locale and Community (Abramson and Parashar, 2019). Modeling TIS using these pillars for TM and TCS, in TIS we can use the following analogues: **Laboratory, Situatedness,** and **Communities of Practice**. The term *laboratory* attempts to capture the fact that IS research is conducted using a variety of methodological options and settings including basic/applied research in the laboratory or field within organizations and teams. The term *situatedness* attempts to capture the fact that IS researchers are seeking to explain, evaluate, interpret, and/or understand the interplay of people, process, and technology based on our past experiences, social and cultural contexts. The term *Communities*

[112] The author concedes that the issues of enrollment trends due to changing demography and funding of higher education are critical factors, but, to a considerable extent are not in the control of IS researchers.

[113] Some IS researchers argue that the Unified Theory of Acceptance and Use of Technology (UTAUT) has influenced the practice of Information Systems Management, however, there is limited evidence to support this contention.

of Practice intends to capture the practices, frameworks, and policies that are directly informed from IS research and can impact the different stakeholders in our community including practitioners, scholars, educators, users, politicians, economists, citizens, society, nation, and globally (Khazanchi & Munkvold, &, 2001, 2006).

With TIS the goal is to is to translate research findings into evidence-based practice, and to foster ongoing engagement and conversation between IS researchers and practitioners. There is also some evidence to believe that translational research can happen at any stage of the research continuum from basic to applied research (Han et al., 2018).

3.29.1. Developing a "translational" mindset

Just merely doing "practical" and/or "applied" IS research is not enough. IS researchers should intentionally include translational IS research attributes as an important component of their research portfolio and publication strategy. There is a need for a cultural shift in the way we conduct our PhD training programs and how we encourage translational research through our incentive systems to support this mindset – this also means accepting research outputs that are published in practitioner journals and magazines and in journals from other disciplines. Some of this already happens but there is a lack of intentionality that can be addressed with TIS. Here are some ways TIS researchers can help advance practice.

3.29.1.1. Identifying Research Questions that have Relevance to Practice. Identifying and rigorously investigating questions of immediate significance to our communities of practice. There is ample support for the argument that rigor and relevance are not mutually exclusive. Researchers with a translational mindset can create well-designed studies that can accelerate the process of translating research into action within organizations or society at large.

3.29.1.2. Developing Actionable Best Practices and Interventions (People, Process, Technology). that impact all communities of practice. This will mean going beyond having an implication ("for practice and theory") section in our research and going a step further to identify specific ways in which organizations and individuals can be efficacious in their design, development, and use of Information Systems.

3.29.1.3. Credibly Communicating findings to Communities of Practice. Every research project needs to consider how to evaluate their findings in a practical context, but, at a minimum, communicating findings in the form of practices, policies, and frameworks to practitioners is critical for the future of academic IS research. There are multiple forums that include some academic journals and practitioner magazines or journals such as The ISACA Journal, CACM, and IEEE IT Professional. Many of these journals publish research that is accessible and appropriate for a broader readership.

3.29.1.4. Evaluating and Testing the Efficacy of Best Practices, Systems, Theories/Frameworks, and Policies. Academic IS research conducted in the laboratory can be evaluated in situ in organizations or other societal settings to make it immediately useful in practice. Evaluating our discoveries and findings from research to assess efficacy in a practical context is challenging. However, using better research designs and potentially co-creating validated findings with industry or agency partners could be an essential ingredient for success. In fact, we can learn from consulting companies who appear to have honed the ability to transfer knowledge from research to practice and build on the results of those implementations.

3.29.1.5. Accepting and Enhancing IS research through multidisciplinary collaborations. Translational research requires a multidisciplinary and collaborative approach through the integration of different fields, methods, and stakeholders. This area of effort in TIS is natural for the IS discipline over traditional computer science and other social sciences since it is inherently multidisciplinary and has great transdisciplinary potential. Information Systems (IS) as a discipline primarily focuses on the effective design, delivery, and use of information and communications technologies to solve problems for individuals, teams, companies, governments, and society. As a predominantly frontier discipline, IS derives its sustainability from advances in management science, computer science, psychology, sociology, and operational research. Thus, IS researchers are already working in transdisciplinary collaborations in emerging areas at the interstices of IS and other disciplines (e.g eHealth, Crisis Informatics, and Public Sector Informatics).

Ultimately, IS researchers can benefit from being trained in translational research approaches allowing them to intentionally connect research efforts to the very real needs that exist in society today. This will result in a transfer of our innovative ideas, concepts, findings, observations, data, discoveries, practices, and/or inventions to our communities. It will also provide bi-directional opportunities to interact, learn and improve our theories/frameworks, models, policies.

Table 3
Comparison of Basic Research, Applied Research, and Translational Research (Source: Adapted from Greer, 2005; Rubio et al., 2010; Han et al., 2018; Abramson and Parashar, 2019).

Type of IS Research	Description
Basic Research	Systematic study directed toward the increase of knowledge; Involves questions and research methods that are focused on discovering or formulating fundamental principles, and is generally inspired by the scientist's curiosity rather than an attempt to solve a particular problem
Applied Research	Systematic research is directed toward finding practical solutions to an existing problem using existing knowledge or theory, methods, and analytical tools. These can include challenges in organizations, education, and society. This type of research is outcome-focused rather than theory-focused.
Translational Research (in IS)	Research that converts discoveries and findings generated in the laboratory or other setting into practical applications that can be deployed at scale and/or to humans and organizations. The foundational notion here is to accelerate the adoption of best practices into community settings.

3.30. The impact of academic research on practice and policy - developing the co-creation model through collective phronesis - Mitsuru Kodama

In recent years, the need for academic researchers to provide interdisciplinary research impact beyond the narrow scope of their own expertise has increased in many developed countries. At the same time, there is an urgent need for policy makers and managers to develop and implement innovative solutions to difficult social and management problems by utilizing a wide range of evidence, including academic research. Thus, for academic researchers and policy makers (including practitioners in industry), transcending "*two distinct communities*" (e.g., Caplan, 1979) with different contexts, including different values, different timescales, incentives, remuneration systems, and professional languages within themselves, the output and impacts of academic research (i.e., useful and best) that rightly contributes to the reform of human societies, the realization of new policies and various managerial practices (especially innovation) becomes a crucial issue.

While there are contextual differences between academic research and the needs of policy and practice, for academic research to properly contribute to policy and practice, efforts to build mutual trust through ongoing and long-term collaborative research efforts among different stakeholders is essential for all involved. This requires more profound dialogue and intense collaboration that bridges the gap between the two different worlds. Collaborative research efforts that seek to engage both

policy makers and practitioners, and academic researchers will require the realization of ongoing dialogue and substantive engagement process between the two. At the start of the policy-making process, continued deep collaboration involving diverse stakeholders, including academic researchers, is an important pathway to achieving the effects of high-impact, high-value academic research. However, the pace of change in national and local policy environments and the business environments in industry is rapid, so achieving deep collaboration among stakeholders is not always easy.

To overcome the various barriers between stakeholders and for academic research to contribute to policy and practice, the ongoing involvement of stakeholders (academic researchers, policy makers, practitioners, knowledge brokers, etc.) and deep collaboration among these stakeholders must be achieved to drive the transfer and exchange of knowledge between these two communities, as well as the transformation of existing knowledge. In other words, the traditional linear transfer model, in which new knowledge is generated mainly by academic researchers and transferred to society, needs to be replaced by the "co-creation model" that achieves collaboration through two-way, dynamic knowledge exchange (e.g., Jacobson, 2007) and deep interaction that better and more deeply links academic research, policy and practice. Deep collaboration among stakeholders increases the potential to transform knowledge of existing practices and mechanisms, such as challenges facing nations, regions, and even industries and create new research outputs that have policy and practical impact. Each stakeholder should engage in the construction of this co-creation model in the stages of research planning and design.

The co-creation model for knowledge transformation enables in-depth consideration, discussion, and visualization of the impact of academic research and various evaluations based on discussions on such research among the stakeholders who are substantively and deeply involved in research projects. Stakeholders such as policymakers (e.g., policymakers, third sector organizations, and international entities) and practitioners such as managers can also use the outputs of the co-creation model, such as research papers, monographs, and even practical reports, to implement new policies and management.

Previous studies have proposed many new ideas, such as intermediaries (e.g., knowledge intermediaries, boundary organizations) and knowledge co-production to develop knowledge networks between academic researchers as knowledge producers and policy makers and managers as users (e.g., Zhang et al., 2022). However, the gap between theory and practice remains, and despite improved understanding of theoretical concepts of knowledge exchange, there is still little practical guidance for designing and implementing research projects that actively enable knowledge exchange. In addition, research on theoretical and practical frameworks for the co-creation model, which aims to transform existing frameworks and systems to address various difficult-to-solve issues, is also a future challenge.

Deep collaboration through profound, regular, and ongoing dialog with policy, industry, and academia increases the probability that academia will have an impact on policy and industry. For example, many research funding agencies, including industry, now require academic researchers to promote the co-creation model whenever possible, in which knowledge is co-produced through engagement with policy implementers and professional practitioners. As a result, in recent years, many academic researchers have sought closer ties with the broader community of professionals, policy makers and third sector organizations. To this end, it is important to build lasting relationships of trust rooted in shared values, empathy and resonance among stakeholders.

In Europe, exchanges between the academic side, such as universities and academic societies, and the policy sector are promoted. In Finland, for example, there are strong links between academic researchers and policy makers, and partnerships between state institutions and universities are formalized through initiatives such as funding administered by the Strategic Research Council (SRC), which funds research that impacts society (Academy of Finland, 2019). This suggests the importance of cooperation between universities and external partners such as national and local governments. The co-creation model between academic researchers who create new knowledge (or transform existing knowledge) and the policy makers and practitioners who use it is an important approach.

In Japan, the Japan Society for Research Policy and Innovation Management (https://jsrpim.jp/english-information) has been established to provide a new interdisciplinary Ba (Nonaka and Takeuchi, 2019) to academic experts in industry, government, and academia who promote research and development from a planning entity standpoint, including forecasting, planning, coordination, and evaluation of science, technology, and innovation (e.g., promoters of science and technology-related policies, university research leaders, persons in charge of managing research organizations, heads, staff and managers of research institutes at national and public research institutions, executives and researchers at think tanks, management and technical consultants, executives and promoters of research and development promotion organizations) and practitioners (e.g., corporate technology executives and technology planning and management staff, R&D managers, science and technology journalists) so that they can widely interact and enlighten each other. The establishment and ongoing maintenance of communities of councils and forums, which form the basis of the co-creation model, serves as a mechanism and tool to track and monitor the impact of research results at all times and verify among stakeholders whether results have a tangible impact on research content.

However, in many cases, personnel changes and shifting work priorities in various organizations can fracture the relationships built among diverse stakeholders and disrupt the valuable communities that accompany such relationships, requiring constant renewal and rebuilding to forge and maintain such community relationships. In real socioeconomic environments of increasing uncertainty, complexity, instability and ambiguity, stakeholders of various institutions need to be wise actors who, to realize a better society, develop good judgment through various decisions and act based on actual situations while following values and moral principles by maximizing the results of academic research through the co-creation model.

For this purpose, the concept of "*phronesis*" (e.g., Sharpe and Schwartz, 2010), or practical knowledge or practical wisdom, advocated by Aristotle, is required of modern-day academic researchers, policy makers, practitioners and others. Phronesis can be described as the ability to deliver the best performance, to make decisions and act for the good of the whole in individual, concrete situations. In other words, phronesis is the practical knowledge or practical wisdom (high quality tacit knowledge) that enables the best judgments and actions in each context and situation while discerning values and ethics (Nonaka and Takeuchi, 2019). The importance of phronesis remains the same today as it did in ancient Greece.

To build a sustainable co-creation model, the most important issue is to mobilize the "*collective phronesis*" (Kodama, 2021) of the best human resources in the communities formed by the diverse stakeholders who influence policy formulation and practical activities. Collective phronesis is the aggregation of the superior autonomous and decentralized phronesis that people possess, as well as the integrated phronesis that brings together the collective knowledge of individuals across organizations and even between different organizations. Collective phronesis, the gathering of high-quality wisdom and practical skills of diverse stakeholders, creates sustainable co-creation models that organically and dynamically links academic research with policy and practice.

3.31. Applicability checks as a means for confirming practical relevance: a call for discussing academic research with practitioners - Christian Maier, Marco Meier & Jason Bennett Thatcher

3.31.1. Introduction

Chefs develop innovative cooking techniques and pair unusual ingredients to create exciting dishes. Before serving a dish, chefs test its

taste with diverse audiences, from restaurant patrons to other chefs. They do so to ensure that the restaurant's daily menu is tasty or that the dish is accessible to home and hobby cooks. Such quality tests are regularly conducted in the cooking context to check for (1) *importance*, i.e., are restaurant diners and home cooks interested in the new dish, (2) *accessibility*, i.e., are the ingredients and equipment needed for the dish available for purchase, and (3) *suitability*, i.e., does the dish meet the needs of customers and are there specific instructions for home cooks on how to prepare the dish. By assessing these dimensions, chefs gain valuable insights into customers' interest in the dish, how to optimize or adjust the recipe, and simply generate ideas for future recipes.

Like chefs, information systems (IS) researchers develop new models and theories and apply them in new contexts; yet we often fail to secure feedback on their importance, accessibility, and suitability for application in the non-academic world by our stakeholders in practice. To do so requires conducting post-hoc analysis and interviews to assess our theories and findings' relevance to applied audiences. Despite calls for post-hoc "applicability checks" (Rosemann & Vessey, 2008), we have yet to see their application across the Information Systems discipline.

To ensure the relevance of IS research to practice, we encourage IS researchers to take a page from chef's cookbooks and use applicability checks to, among other things, confirm the importance of models and theories, strengthen implications and contributions, and develop coherent future research directions. By doing so, we believe IS research will be better positioned to inform our audiences in practice.

3.31.2. A brief background and process for using applicability checks

As an applied discipline, IS research has long focused on providing timely, relevant insights to managers seeking to guide organizations and individuals on maximizing the value derived from using IT. IS research has offered organizations insight into how to deploy chatbots, benefit from using AI, and achieve compliance with cybersecurity policies. Similarly, IS research offers knowledge for users on how to use IT to increase their well-being and reduce privacy concerns. Despite the focus of many IS studies on applied topics, an ongoing discourse within and outside of the IS discipline reminds researchers to evaluate the practical applicability of their work to practice and avoid deepening the divide between science and practice. To do so, we urge researchers to partner with practitioners to complete applicability checks and assess the relevance of their work to practice.

Conducting applicability checks requires that researchers systematically conduct interviews, employ surveys, or both. All that gives researchers insight into the practical relevance of their work in three dimensions. First, **importance** reflects if the research focuses on a real-world challenge and whether the results are beneficial to address this challenge. For example, importance is given if the results are timely, and organizations can implement them. Second, **accessibility** reflects if the research or a summary is comprehensive and whether practitioners understand it. For example, accessibility is given if researchers rely on complex theoretical and methodological terminology but report their findings in an easily understandable language. Third, **suitability** reflects if the research aligns with the needs of practice. For example, suitability is given if practitioners can apply findings from research to their real-world challenges. While IS research sometimes integrates one, two, or all three dimensions, seeing them become a best practice will benefit the IS discipline.

Applicability checks are particularly relevant to the information systems (IS) discipline because many scholars openly question whether it suffers from a science-practice divide. They argue that there is a disconnect between IS research and its practical application in real-world settings. Because of this science-practice divide, they argue that the IS discipline has yet to realize its potential to formulate actionable advice for practice. While applicability checks are used in the IS discipline to assess the practical application of findings, they differ in whether they discuss one, two, or all three aspects of importance, accessibility, and suitability. Some papers use the applicability check to validate or enrich theoretical findings. In contrast, others use it to demonstrate the findings' usability for practice. Still, others pursue multiple objectives with applicability checks, such as using them to illustrate the topic's importance and usability for practice.

Given such inconsistent use of applicability checks in existing IS literature, we see opportunities for revisiting recommendations for using applicability checks and hope that by demonstrating their value, we can motivate IS researchers to use them with greater frequency.

3.31.3. Recommendations on how to integrate insights from applicability checks

Only a single-digit percentage value of published papers conducts an applicability check. In other words, most published IS papers in IS journals miss opportunities to validate their results, inform practice, and craft better-informed implications for practice. We suggest that contact with practitioners offers opportunities to strengthen the theoretical implications of rigorous IS research. We offer five recommendations to help scholars realize the potential of applicability checks to strengthen IS research.

First, **re-emphasize the relevance of the topic** under consideration. Even though the need for research should be used to motivate the study, we recommend drawing insights from the applicability check to highlight the relevance further. Researchers can integrate statements or data from the applicability check into the introduction or the discussion to underscore critical points or highlight essential ideas. For example, papers might add further explanations and insights from managers through an applicability check to provide readers and reviewers with touchpoints for understanding why the research is essential.

Second, **confirm theoretical findings**. An applicability check is a valuable complement to exploratory or confirmatory research methods, as it can provide insights into the relationships between variables. We recommend using an applicability check in such cases in one of two ways. First, researchers can use interviews to confirm that the identified relationships occur in practice. Second, researchers can use them to gain further insights into established relationships by adding insights on *why* and *how* the relationship happens. For example, when a paper shows *that* specific perceptions cause intention and behavior, additional data might be collected through an applicability check to elaborate on *why* and *how* the specific perceptions cause intention and behavior. For example, are these indirect effects? Or do perceptions occur in configurations? Or will these perceptions have effects over time that cross-sectional research designs do not reveal (Maier et al., 2023)?

Third, **point to explanations for surprising or insignificant theoretical findings**. Confirmatory research sometimes provides unanticipated results (e.g., more significant effects than prior work, evidence of moderating or mediating effects, or insignificant effects despite theoretical arguments). Such results often attract readers and reviewers, so researchers give plenty of space to those topics in the discussion section. We recommend discussing such results with practitioners and then using these qualitative data to triangulate the findings. While we acknowledge this could be a step toward a multi/mixed-method paper (Venkatesh et al., 2016), we suggest it need not be overly rigorous, as its purpose is to seek explanations for unexpected results based on additional qualitative insights, not craft an entirely new story. For example, when a paper uses two samples from different countries, and one specific relationship is only significant in one sample, such findings might be discussed in a subsequent applicability check to better understand contextualized relationships and boundary conditions.

Fourth, **develop specific practical implications**. While authors typically describe the practical need for a research paper, they are often challenged by developing specific and actionable implications for practice. So, what would be more reasonable than talking to practitioners? We recommend interviewing practitioners and letting them rate specific suggestions for transferring their results into practice or collaboratively developing actionable implications. This helps develop a

practical implication section in an easily understandable language with compelling implications. In this context, applicability checks are an opportunity to contribute to the dissemination of IS research into practice. Through soliciting feedback from industry experts, we can learn to frame findings in ways that are meaningful to managers and make it more likely that they will apply them in their businesses.

Fifth, **illustrate future research directions**. Future research sections are often fragmented and consist of several loosely connected ideas. We recommend discussing research with practitioners to get hints on future research needs. For instance, when a paper points to the causes of user resistance, discussions with practitioners might point to studying the topic from various viewpoints (i.e., *individual* consequences, *group*-level effects, *organizational* processes, *political* interventions). Researchers can develop a consistent and coherent agenda for future research based on such insights.

3.31.4. Concluding remarks

We spotlight the value derived from using applicability checks to evaluate IS research and to inform developing richer implications for practice. We offer five recommendations for using applicability checks to advance IS research: (1) use applicability checks to re-emphasize the relevance of the topic, (2) confirm theoretical findings, (3) point to explanations for surprising or insignificant theoretical findings, (4) develop specific practical implications, and (5) illustrate future research directions. Overall, applicability checks help strengthen IS research. We believe that IS researchers can create well-composed implications by interviewing our audiences in practice, like cooks circling back to diners.

3.32. Using social media to bridge the research-practice gap - Ian P. McCarthy

McCarthy and Bogers (2023) explain why and how academics can use social media as a boundary-spanning technology to be more 'open' to learning from, working with, and producing knowledge that is more useful to broader audiences, including policymakers and practitioners. In this piece, I focus on the dissemination and impact assessment aspects of their work, and provide five lessons for leveraging social media to traverse the boundaries of the ivory tower. These lessons help generate impact by bridging the research-practice gap, which is the disconnect between those who produce new academic knowledge and those who could be positively impacted by it.

3.32.1. Attention and impact

Dissemination is the process of documenting and communicating research findings, and while it is essential for producing impact, it does not equate to impact. It is just one important step in the impact process. The power of social media is its capacity to connect scholars and their work to different audiences outside the academy. This targeted connection results in 'attention', a crucial boundary-spanning step toward impact. Attention is the extent to which what we have published and discussed online is seen, read, liked, re-shared, and discussed online. As many social media platforms have business models and algorithms based on online popularity, they are technologies that can drive attention to research, especially interesting, controversial, or useful research. Without attention, there is unlikely to be an impact, which is the extent to which the research is used by other academics and policymakers, leaders, educators, consumers, etc. Impactful research produces dependable knowledge that comes to the attention of individuals and compels them to think, question, and act differently.

3.32.2. Accessibility and readability

For most of society, the knowledge contained in research papers is not easily or cheaply accessible. Journal papers are locked behind publisher paywalls. Social media can make academic research more accessible by providing blog, video, podcast, infographic, and pre-print versions of research. Social media dissemination is a powerful way to liberate academic knowledge from paywalls. However, for research to trigger and guide changes to policy and practice, it must be more than just discoverable and accessible; it must be readable. It must be presented in ways so that different non-academic audiences can understand it and feel compelled to think and act differently. Academic writing in business research often focuses on excessive theorizing and pretentiously complex intellectual explanations. For practitioners, this makes most academic research is impenetrable and unpleasant to read. When sharing research via social media with other audiences, the communications must be written and structured in such a way as to inform, inspire, and guide policymakers and practitioners to improve things. The path between the issue and solution must be clear, systematic, and illustrated with powerful examples. The speed and reach of social media platforms then make these readable communications accessible, increasing the chances of real-world impact.

3.32.3. Timing and sequence

There are two main stages in the research dissemination process and several social media engagement approaches. Understanding these distinctions is vital for knowing when and how to generate attention and impact effectively. The first stage is pre-publication, encompassing everything from working drafts of research to the moment a paper is accepted for publication. During this stage, social media can be used to announce (and get input on) research progress, preliminary results, and pre-print versions of accepted papers. The second stage occurs once the accepted research is assigned a Digital Object Identifier (DOI). This is a unique and enduring digital code. Its primary purpose is identifying and providing access to the publication's landing page. Embedding this permanent identifier in all social media engagement is crucial for ensuring readers are taken to the research and for helping to track the attention and impact that the research achieves.

Timing and sequencing of social media engagement are also essential once a DOI is assigned. Initial engagement may include posts on platforms like X (formerly Twitter) and LinkedIn, generating immediate attention. From these posts journalists may request interviews for various media channels such as blogs, podcasts, radio, newspapers, and more if the research proves interesting and valuable. This media attention, in turn, leads to broader attention beyond our social media network, sparking further communication and potential collaborations to explore, apply, and develop the research. Then, weeks or even months after the initial social media engagement, individuals and organizations ponder how this knowledge could reshape their thinking and behaviour. Furthermore, many months or even years after the DOI is assigned, the research begins to be cited and utilized by other academics and can eventually find its place in reference materials like books, Wikipedia, patents, policies, and legislation.

3.32.4. Monitoring and metrics

As already stated, research dissemination and attention are vital to impact but do not necessarily produce impact. The task of tracking impact on academic fields is relatively straight forward as we can use citations to gauge how influential a piece of research is to a field. Monitoring how research can impact practical, societal, policy, and educational contexts has been challenging, but with the digitization of academic publishing and social media platforms, we now have powerful tools to track impact. For example, Altmetric and PlumX use a paper's DOI to track different flavours of attention and impact that research can have in sources that they track. With Altmetric, these sources include social media platforms (blogs, Facebook, Reddit, Twitter, YouTube) and mainstream media, which are all more of an indicator of attention. But they also include sources that are more impact-oriented, such as F1000 (an open research platform), Mendeley (a reference manager software), Web of Science, Wikipedia, patents, policy documents, Stack Exchange (a network of question-and-answer websites) and the Open Syllabus Project (an open-source platform of syllabi).

3.32.5. Rigour and integrity

The final lesson in this piece is a reminder that academic impact by academics is more than journalism and social media influencing. When using social media for dissemination and impact, we must ensure our engagements are guided by theory, logic, evidence, and research goals. We must not neglect rigour, integrity, and nuance in favour of sensationalism, exaggeration, and hyperbole (McCarthy and Bogers, 2023). As noted by (Wickert et al., 2021: 298), "*For research to be impactful, it must first of all uncover and explain phenomena responsibly – that is, in a rigorous and reliable way*". If our credible knowledge is also helpful in enabling practitioners to understand the nature of an issue and why and how to act, then there will be an impact.

3.33. Maximizing research impact: planning, tracking, and demonstrating research outcomes - Bhimaraya Metri, Sujeet Kumar Sharma & Mousa Ahmed Albashrawi

In today's fast-changing research landscape, it is crucial for researchers and institutions to produce high-quality research that have a lasting impact on organizations and society. To craft an impactful research article, researchers must ensure relevance and rigor throughout the development process. In this section, we will concentrate on various stages of the entire journey of impactful research, encompassing research planning and design, methods to track research impact, and strategies to demonstrate the long-term and tangible impact of research.

3.33.1. Research planning and design

***Define Clear Objectives*:**

Begin by identifying and clarifying a core message or research question (s) that address a significant organizational or societal challenge. Ensure that your research questions are interesting, focused, novel, and relevant, vital and have the potential to make a significant positive impact on organization, society, and planet. For example, let's consider the healthcare sector and explore how the use of AI can aid in the early detection of kidney diseases. This question has the potential to have a significant impact on the healthcare sector. Currently, there are challenges in managing the growing prevalence of kidney diseases worldwide, and developing effective preventative strategies is crucial in addressing this issue and enhancing healthcare outcomes.

***Academic Engagement*:**

Academic engagement defined as "*knowledge-related interactions of academic scientists with external organisation*" (Perkmann et al., 2021). It is recommended that academic scientists should engage with policymakers, senior executives from industry, and also leaders of societal communities at the planning and design stage of the research. These executives may help researchers to align their research to addresses challenges faced at organization and society level and hence increase the probability of the research impact. Additionally, involving industry professionals in shaping the research questions would increase the chances of integrating the research outcomes into their operations and policies.

***Interdisciplinary Collaboration*:**

Researchers from multiple disciplines should come together solve some grand challenges being faced at organizational or societal level. Interdisciplinary teams will bring multiple perspectives and are more likely to come up with an innovative solution with long lasting impacts. In a recently published article by a team of researchers (Dwivedi et al., 2022b) argues that digital technologies have potential to solve grand challenges like climate change. Researchers who work on such grand challenges and provide solutions will have larger research impact. In essence, an interdisciplinary research team can extend the proof-of-concept idea from the discovery phase to the development phase. This allows for a higher and more tangible impact to be realized.

3.33.2. Methods to track research impact

Quantitative Assessment: Researchers may use quantitative measures such as citation counts in various databases such as Scopus, Google Scholar, number of downloads from the website of the journal, and social media platforms such as LinkedIn, YouTube, ResearchGate may be used to track the wider reach of an impactful research article. Quantitative metrics are commonly used to assess the impact of the research various spheres of life such as social, economic and environmental; however, qualitative assessment may provide deeper understanding about the long-lasting impact of the research (Donovan, 2011).

***Qualitative Assessment*:**

Researchers may conduct interviews, focus groups with policymakers, senior executives from industry, and community leaders to collect qualitative data to know more about the impact of your research on organizational decisions, practices and policies in government and non-governmental organizations.

***Media Coverage*:**

In addition to aforementioned methods, researchers should monitor the coverage of research work in the print and digital media. For instance, an article titled "*why rural Indians aren't using govt e-services*[114]" published in the Mint, a prominent newspaper in India. This newspaper article is based on a research article titled "*Challenges common service centers (CSCs) face in delivering e-government services in rural India*" co-authored by the authors of this section published in Government Information Quarterly in 2021. In Saudi Arabia, there is an initiative called "entarabi.com" that aims to promote the dissemination of research findings to a wider audience. This platform encourages academics to publish summaries of their research in a manner that is easily understandable to the general public. By doing so, the initiative seeks to increase accessibility to academic knowledge and ultimately have a greater impact on society. In general, newspaper articles on research paper, interviews of researchers published in print and digital media can help in disseminating research findings to the larger audience.

3.33.3. Demonstrating research impact

***Policy Impact*:**

Researchers should engage with policymakers from the research planning and design stage and should share research findings with the possible inclusion in the government policies and regulations. For instance, a multi-author's article titled "*Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy*" published in the International Journal of Information Management and has received 1250 citations in a span of just 2 years and this article influenced the ethical AI policy[115] of the Tamil Nadu, a southern State of India. Getting reference of a research article in the development of an ethical AI policy of a state government is a powerful way to show research impact.

***Institutional Branding*:**

The high-quality research output plays a critical role in the rankings of academic institutions, both locally and globally. Academic institutions with robust research outputs achieve higher rankings in rankings issued by national and international agencies. There is a high probability of winning research grants if faculty members with strong research profiles from highly ranked institutions apply for grants. The branding of high-ranking academic institutions on a global scale attracts top talent, fosters innovation, and consequently enhances the institutions' worldwide recognition as world-class universities.

***Knowledge Transfer*:**

Collaboration between industry and academia should facilitate the dissemination of research findings to policymakers, senior industry executives, practitioners, community leaders, and the public through

[114] https://www.livemint.com/news/india/why-rural-indians-aren-t-using-govt-eservices-11612836934039.html

[115] https://www.newindianexpress.com/states/tamil-nadu/2020/sep/19/tamil-nadu-becomes-first-state-to-unveil-ethical-ai-blockchain-cybersecurity-policies-incountry-2199187.html

seminars, workshops, webinars, social media and print & digital media. The dissemination of new knowledge generated by research through multiple channels to all stakeholders will have a long-lasting impact on individuals, organizations, and society.

***Disruptions in Business World*:**

The synergy between research outputs and the startup ecosystem is remarkable and poised to generate substantial revenues. Startups leveraging research-driven advancements are positioned to thrive and reshape the business landscape. Technological innovations such as generative AI are impacting organizations and society alike. Additionally, patents in the domain of technological innovations helps in generating revenues for individuals and organizations. Technological innovations, which are the byproducts of the high-quality research ecosystem provides faster, more cost-effective solutions have disrupted many legacy business models around the world.

Research has a significant impact on our communities, society, businesses, governments, policies, and markets. This implies that researchers have greater responsibilities and should reconsider their research approach by collaborating with industry professionals and forming interdisciplinary research teams. This will ensure that they conduct responsible research that adds a higher value and demonstrates a meaningful impact in the aforementioned domains.

3.34. Academia industry disconnect - Santosh K Misra

Research[116] is fundamental to progress of scientific disciplines. Researchers have the onerous task of proposing new hypotheses and testing them objectively using scientific methods. Two of the leading research projects in the world are CERN's Large Hadron Collider (LHC) and Laser Interferometer Gravitational-Wave Observatory (LIGO) experiment. First one aims at understanding the structure and interaction of subatomic particles and postulates existence of "Higgs Boson or the God Particle", and the second one is aiming to directly observe Gravitational waves as predicted by Einstein's general theory of relativity. It is illustrative to examine what motivates researchers to pursue such difficult goals. Researchers get motivated to pursue their work for three primary reasons (Kothari 2004) (i) to face the challenge in solving the unsolved problems (ii) to get intellectual joy of doing some creative work and (iii) to be of service to society.

3.34.1. Research practice disconnect

There have been a few studies on the disconnect between management research and practice (Tse and Esposito, 2014; Panda and Gupta, 2014), but such studies are low in number and are infrequent. Management research, in some places, has even got into a trap of research for researcher's sake (Fig. 2). Those in the profession of management research get promotion and progress in the career based on the number of their research publications. Ranking of management institutions depends on the number of research papers published by their researchers. There are significant cash and other incentives for publishing. This also puts journals at the risk of becoming a doctrine club requiring new researchers to subscription to the 'core-belief' for getting accepted. This 'core-belief' is often hard for practitioners to accept unless it helps them solve a real-life issue. All this put together sometimes creates a closed ecosystem of research publications almost shutting the practitioners out, who ironically, are expected to benefit from the published research.

Hamet in his paper writes that:

> "Using a sample of publications from ASQ and Academy of Management Journal (AOMJ), Pearce and Huang (2012) show that the proportion of actionable publications has dramatically decreased from 1960 to 2010……. Consistently with Astley and Zammuto (1992), and Nicolai and Seidl (2010), they observe that the content of implications for practice are mostly of conceptual or symbolic nature: "Become more aware," "conduct training," and "learning" appear to be the most frequent recommendations." (Hamet and Maurer, 2017).

3.34.2. Contrast between technology research and management science research

Let us look at the cutting-edge technology research topic today – the Large Language Models (LLM). No one working in LLM (large language model) area (practitioner as well as researcher) can afford to not read the "Attention is all you need" paper (Vaswani A, 2017) authored by the practitioners from the industry. Seminal papers like these in science become integral part of the foundation for the next level of research. If one were to critically look for 'contribution to theory' component in this paper, they could be disappointed. Contrast this with management research, which is so focused on theory building that it has become unmanageably fractured and disconnected from the next level of applicable research. As a result, new management research often (as compared to science research) tends to become a self-terminating node. Few academicians would cite the 'new' paper and then it lies in the corpus without ever being used by any practitioner. Whereas in the natural sciences and technology domain some of the most cited research papers are written by practitioners from industry. Companies like Alphabet, NVIDIA, Microsoft, Meta, IBM, Intel, AMD, Amazon, Citrix lead the pack in publishing some of the most cited research work in technology. How many leading management research journals have contributions from the industry?

3.34.3. Puritanism: obsession with theory building

While contribution to theory is the highest aim of any research, for management research this has become an obsession almost detrimental to applicability of the work. While contribution to theory in natural sciences necessarily aids and leads to real life application, this often is not the case for the management science. Unfortunately, the 'contribution to theory' bit is valued only in the ivory towers of research world (Tse and Esposito, 2014) and is often of little help to the business managers and practitioners. A paper howsoever well researched and useful to practitioners is valued lower in the 'pecking order' unless it can demonstrate theory building. This would not be so bad, if the decision as to what contributes to theory building is based on a wider consensus which includes leaders from the industry. The whole concept of bifurcating the journals into "practitioner journal" and "academic journal" is self-defeating. Research without focus on practice is like putting a display on the beach giving exact number of sand grains every day – a new information no doubt, painstakingly gathered no doubt – but completely useless (some may argue that it can still be used for measuring sea erosion, but that's not the point).

3.34.4. Fixing the research focus

New metrics for tenure, promotion, raise and cash incentives, rankings and accreditation need to be designed for management researchers, journals and institutions, which reflect the current need of the industry and lead to a greater application focus. Some suggestions for the various stakeholders are:

Suggestions for Journals .

(i) Abolish artificial distinction between academic and practitioner journals
(ii) How many most cited papers have lead author from the industry should be a key metric in deciding journal's ranking.
(iii) How many published papers have demonstrated influence on the practice (to be measured and reported by an industry body) should be a key metric in deciding journal's ranking.

[116] The views are author's personal views. Author holds the management researchers and institutes in very high regard and the views expressed here are only to help improve the adoption of research in industry.

Fig. 2. Research and practice (
Source: ©Sunil Agrawal (printed with permission)).

Suggestions for Management Educational Institutions.

(i) How many faculty members are from the practice - this should be a key metric in deciding institute's ranking
(ii) How many faculty members have crossed over to the industry for at least 3 years and vice-a-versa – this should be another key metric in deciding institute's ranking
(iii) What percentage of faculty have Industrially funded research project (above a value threshold)

Suggestions for Industry.

(i) Create a rating mechanism for research papers - Does the published research have impact on industry (to be decided by an industry body) industry
(ii) Set up an unbiased 'Practice impact assessment' body in collaboration with academia
(iii) Set up an unbiased 'Theory impact assessment' body in collaboration with academia

3.34.5. Conclusion

There is no better time than now to abolish the artificial distinction between academic and practitioner journals. Industry professionals' participation in academic research should be encouraged and the metrics for ranking of journals and institutions need to be modified so as to move in the direction of narrowing the academia-industry schism.

3.35. A German VR/AR-research perspective - Leif Oppermann

With regards to Information Technology (IT), Germany laid its foundation for computer science research and its application in 1968 under the reign of the minister for scientific research Gerhard Stoltenberg (Reuse & Vollmar, 2008, p. 6). The world discovered the existence of a "*software-crisis*", as described by (Dijkstra, 1972). IT was found to be applicable and useful for industry and government alike and it was decided to support this in theory and practice in two ways. First, universities should be incentivised to install computer science course of studies by example of the US (Reuse & Vollmar, 2008, p. 7). Second, the German government should increase its performance by applying electronic data processing (EDP) for complex administrative tasks with the help of the newly founded Big Science national IT research centre "GMD". Stoltenberg emphasises that "*the way in which EDP is used and the introduction of machines into the public administration must not be left to industry; the administration must make itself expert*" (Bundesarchiv, 1968). Naturally, this course needed many adjustments over the decades. Cornerstones in addition to EDP were intelligence augmentation (Engelbart, 1963), iterative software engineering, human factors research & usability, artificial intelligence (McCarthy & Hayes, 1981), participatory design at work and with other stakeholders (Greenbaum & Kyng, 1991), the introduction of computer supported collaborative work (CSCW) with concepts of long-term studies for the design of groupware for congruency of use in work-like situations (Prinz, Mark, & Pankoke-Babatz, 1998), the notion of ubiquitous computing (Weiser, 1991), and the use of external consultants in public administration (Howlett & Migone, 2013).

Two of the most discussed IT trends of the early 2020 s were a vision called "*Metaverse*" and large language models. We previously argued that there are several "Metaverses" (Buchholz, Oppermann, & Prinz, 2022) and that they should not be limited to Virtual Reality (VR) but also Augmented Reality (AR). A "Metaverse" vision should not only be used for consumer marketing purposes but should also be applied to other areas such as industry. For large language models such as ChatGPT it is expected that they will further increase the already exponentially growing number of publications and change the way results are disseminated and verified (Dwivedi et al., 2023a). With an increasing number of academic publications on topics such as these the questions are twofold: which papers should I read and write, and which ideas are relevant to industry at all? The former is arguably a question of the academic circus setting its own agendas for qualifying its communities (Estill et al., 2022). This latter is a topic of relevance. In his book "*The Design of Design*", (Brooks, 2010) argued that only those ideas should be seen as relevant in which someone invested real (non-subsidised) money. Brooks is an outstanding figure in computer science, application, and design. For example, he decided that one byte should have 8 bits in the IBM System/360 whose hardware and software design he managed most successfully. This decision was made in an industry context and lasted ever since. He is also a pioneer in human computer interaction and VR, and a reflective author of books about design processes. Brooks regards this "money test" as a kind a litmus test.

This brings us to the unsolved "*transfer problem*", as described in (Wiegand, 1994). How could results of alliance projects, which were a new idea of the 1980 s to unite academic and industrial research, be

transferred into practice? Cooperation of academia and industry in such projects alone was not enough. It was also reported that research did not want to be the extended workbench of industry and rather work on methods and models. Wiegand concluded that the system boundaries between research and industry remained stable. I am a researcher at Fraunhofer and our most famous invention is MP3. Its inventors initially had a hard time trying to bring it to the market in Germany. In their marketing book, (Gelbrich, Wünschmann, & Müller, 2008) argued that a cause of this weakness in implementation is the risk aversion that is characteristic of Germany, the so-called "*German* Angst". Following Brooks' "*money test*", this seems to be an example of the relatively low level of venture capital in Germany. According to OECD stats, Germany invested $3.6 billion of venture capital in 2022, while the US invested $190 billion (OECD, 2023) – a factor of 1:50 (without adjustments). The focus of German computer science research in the early 2000 s was on human-computer interaction, virtual and augmented reality, brain computer interfaces, and software engineering (Reuse & Vollmar, 2008, p. 101 ff.). Lead projects like ARVIKA (Encarnação & Stricker, 2008), ARTESAS, or the later AVILUS (plus) with its sibling projects from the German virtual technology innovation alliance cost well over 50 million Euros altogether (Schreiber & Zimmermann, 2011, p. 322). Let me relate three examples to this:

1) The participating spin-out company Metaio subsequently was a leader in AR-technology and was acquired by US-company Apple in 2015. In 2017, Apple introduced ARKit which has been part of its iPhone and iPad line of products since then and will be a core part of the recently announced Vision Pro headset.
2) Fraunhofer IGD was also a leading partner in those projects. It continued to do research projects with its team and only spun out the company Visometry in 2017. They are still based in Germany at the time of writing.
3) Two former colleagues of my group at Fraunhofer FIT moved to TU Ilmenau, spun out the company Fayteq in 2011 and sold it to Facebook in 2017.

It thus seems to be a viable business model for a German – or maybe even European – start-up to be bought by American big tech companies. Overall, we can see a clustering of technology outside of Europe, esp. in the US and Asia – not just Japan, as before. Germany can do deep-tech but is risk-averse. We also have strong labour-rights, like most of Europe, and thus a tradition of human-centred participatory design (Mambrey, Oppermann, & Tepper, 1986). From our design experience in a recent project that became a showcase for German "Industrial Metaverse", we can conclude that iterative, participatory design in combination with occupational sciences lead to inspiring, tangible, state-of-the-art designs that can pave the way for VR/AR remote maintenance with digital twins in actual industry use (Oppermann et al., 2023). Time will tell how long it will take for implementation into actual business processes that are also hindered by the availability of fitting data. We don't mean a lack of data because some of the data that surveillance capitalism would normally collect is no longer available because of the General Data Protection Regulation - we actually see this increased privacy as a particular strength of Europe. We mean the more mundane problem of finding, accessing, and working with data in the right formats.

Maybe we also need new ways of working together with industry partners? We, as researchers, rely on their practical knowledge to get real-world problems to solve. But it is hard for industry partners that are not in the business for the government funding, to find time and patience for the related processes. More published papers certainly do not lead to an uptake of adoption of research-results by industry. To the contrary! And researchers need industry as partners, not customers or readers. Human-centred technology application research is constantly balancing on the waves of "theory and application", and "humans and technology" (Oppermann, Boden, Hofmann, Prinz, & Decker, 2019). Since "*we tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run*" (Amara's law), the question seems to be not *if* industry should invest in the adoption of new technologies and ideas, but rather: *when*.

3.36. Impact of academic research on practice & policy - Neeraj Pandey, Manoj Kumar Tiwari & Khalid Ibrahim Al-Sulaiti

Academic journals across the globe publish more than a million research articles each year. Most of these articles have the majority of hypotheses validated. These research publications have more positive outcomes than negative results (Fanelli, 2012). The practitioners and policymakers are, at times, skeptical about such journal findings and conclusions. There is a need to introspect and explore pathways for doing more industry-relevant research and designing robust research designs so that the study outcomes have a larger impact on practice and policy.

3.36.1. What is research impact?

The adoption by industry or consumers of any proposed framework, model, findings, being a popular reference material in the domain, research leading to a new product or service, or any one of them impacting practice and policy making is an essential piece of research impact. For example, one of the research articles entitled "*Attention is all you need*" by Vaswani et al. (2017) revolutionized the deep learning and natural language processing (NLP) domain. The proposed technique in the paper analyzed the power of the attention mechanism for input sequencing for NLP-based decisions. It is no surprise that this research work received more than ninety-one thousand citations. Table 4 presents literature review and the proposed definition of research impact:

3.36.2. Research design for impactful research

There are many pressing global problems that would have a direct impact on human sustenance and development besides industry-specific pain areas. Besides conducting literature reviews and going through popular press, the scholars should go out in the field or meet online and interact with key stakeholders in the domain. This provides an opportunity to have the pulse of the generic problem the industry or society is facing (Bornmann, 2013). It also gives insights into probable options for the solution to a given problem. The scholar gets updated about the steps the regulator or industry has implemented to solve this problem. This helps the researcher to avoid falling into the 'reinventing the wheel' trap. Most pathbreaking impactful research happens at the interface of functional areas like information technology and marketing, finance and project management, operations and sustainability, behavioral science, and information technology, etc. Usually, impactful research requires an understanding of the various interrelated functional areas (Milat et al., 2015).

After going through the issue and understanding it, the problem definition, based on the research gap, is a vital part of the research design. Inputs from the different stakeholders in the industry, consumer forums, government, or any other relevant person/body regarding the proposed problem definition would act as a sounding board to further refine it in terms of clarity and precision. The problem should address a highly relevant issue that would significantly impact academia, industry, society, or governance. The problem definition would help in building research objectives and hypotheses. The decision around the methodology, keeping rigor and relevance into consideration, is the next step of research design. Accordingly, the primary and/or secondary data is collected and analyzed. The validation of results with secondary data from the industry, if primary data was used and vice versa, would enhance the rigor of the study. Insights for the target audience (academic, firm, regulator, etc.), in the form of findings or key takeaways for the stakeholders of the study, would also be another critical piece in the entire research design for impactful research.

Table 4
The proposed definition of research impact.

S. No.	Understanding "Research Impact"	Authors
1.	Intellectual contribution to the domain within and beyond academia.	Penfield et al. (2014)
2.	Research should have economic, health, and cultural benefits besides enhancing the academic knowledge base.	Greenhalgh et al. (2016a)
3.	When results are converted into marketing and consumable products or services.	Bornmann (2013)
4.	Leads to the co-creation of knowledge, products, and services, which have a large societal impact.	Greenhalgh et al. (2016b)
5.	Measured by citations, peer assessment, and feedback from policymakers.	Milat et al. (2015)
6.	Qualitative and quantitative measures for assessing social, economic, cultural, and environmental impact of the study	Donovan (2011)
7.	The times the research is taken up, used, and reused in policy and practice settings.	Morton (2015)
8.	Our proposed definition of "Research Impact": "Research outcomes should lead to larger good in terms of superior products, practices, services, policies or any other positive change in the societal ecosystem."	

3.36.3. Making research impact visible and measurable

The publication space is cluttered with top-notch research journals like Financial Times (FT) 50 journals, Q1 listed journals, Chartered Association of Business Schools (ABS) ranked journals, Scopus, ABDC (Australian Business Deans Council) indexed journals; middle order journals; and locally published non-indexed journals. Hence, receiving attention and interest for one's research work is challenging if it is not up to the mark in terms of rigor, relevance, and readability. The novelty of the research problem and methodology adopted to resolve the issue, besides the insights and key takeaways for the practitioner/policymakers, is crucial for enhancing the chances of high visibility for a given research article.

The scholars should take up industry-relevant counter-intuitive research problems. This would require a deep understanding of the customers and industry under study. The scholars should collect primary data through multiple or in-depth interactions with the customers and the company executives. Journals like Decision Sciences, Journal of Marketing, Management and Business Review, and other top journals emphasize interacting with the practitioners and other stakeholders for arriving at the problem. The problem definition should follow a SMART approach. The *specificity* of the problem means clearly highlighting the industry's key pain areas, which have a substantial impact in terms of enhancing revenue, cost-cutting, governance, or related issues. It should be a generic pertinent issue across firms in the industry and not a company-specific problem; for example, common issues may include rising attrition, choice overload, high churn rate, employee mental wellness, etc. The problem should be *measurable* so that the organizations or industry can quantify it. The proposed solution to the problem should be *achievable* and *relevant* so that it can be implemented in the real business world in a *time-bound* manner.

3.36.4. Strategies for research dissemination to practitioners and policymakers

Research dissemination is an important piece in the publication value chain. A few journals, like the Journal of Marketing, Journal of Systems and Software, etc., request seminal paper authors to submit video abstracts or a Talk (in video format) on their published work for posting it on their social media handles and journal webpages. Posting abstracts (text or graphical or video format) on social media sites like LinkedIn, X, and popular blogs by authors helps in high visibility among practitioners. Many publications like Elsevier, Emerald, etc. also allow the authors to provide an executive summary (different from the abstract) in simpler expressions while submitting the manuscript so that the research reaches to the practitioners and others interested in the work. Most journal editors post the "just accepted" articles on their social media handles with the research paper link. This helps to quickly disseminate the research work to a larger audience, including practitioners and policymakers. The authors should summarize their problem statement, methodology, and key takeaway for practitioners/policymakers and send it to senior industry executives and/or regulators through email or LinkedIn messages, along with the link to the complete article.

Active participation of authors in roundtable discussions, conferences, and workshops facilitates the dissemination of their research to policymakers. Participation in training sessions or workshops organized for policymakers also helps disseminate the research work. Highly cited papers in growing areas like generative AI, blockchain, quantum computing, stress tests, etc., also get referred to by policymakers. For example, based on the HBR publication by Simchi-Levi and Simchi-Levi (2020) on stress tests, the US government was considering making stress tests mandatory in critical supply chains. Participation of authors and journal editors in academia-industry-policymakers conclave helps spread the impactful research work among the policymakers. Based on the research publication, brief articles in the popular press or practice journals provide wider reach to practitioners and policymakers.

3.36.5. Methods to track and monitor research impact

Academia is moving beyond citations to track and monitor the research impact of published work. Many European Universities have started to track research performance in terms of impact on the practice and policy. The European Union member states follow performance-based research funding (PBRF) for the allocation of funds to universities and research and development (R&D) institutions (Zacharewicz et al., 2019). There should be qualitative and quantitative methods for monitoring research impact among the stakeholders (Penfield et al., 2014). It isn't easy to quantify each research impact. For example – due to the research impact, any behavioral changes like energy saving habit, maintaining a healthy lifestyle, avoiding phishing traps, etc., becomes challenging to track and measure accurately at an individual level.

The quantitative measures beyond the citations would include the amount of research funding in a particular research domain by the industry and/or by sponsored research providing institutions, the number of patents, the number of reports by statutory institutions like United Nations (UN) institutions, WHO, World Bank, European Parliament, etc. citing the research work. It can also be monitored by the number of mentions of the research in the popular press (online and offline), including in social media platforms, implementation of suggested techniques or tools or approaches in the organizations, number of training programs, workshops, and other outreach activities on the particular research topic, number of domestic and foreign collaborations with outside institutions, centers, or laboratories, and public engagement on reputed online/offline platforms.

3.36.6. Conclusion and way forward

The immense contribution by academia may not be fully utilized if it is not being read or used by various societal stakeholders, including practitioners and policymakers. The academia should align its research, considering the current industry and societal problems. There are many interesting unsolved research problems, some of which, like climate change, data privacy, universal healthcare, workforce diversity, etc., are global problems. The research design should not only be robust to analyze these problems but also must be understandable and convincing to the target audience, particularly to the practitioners and policymakers. The challenges around metrics for measuring the research impact of paper publication may take some time to get resolved. However, an informed discussion on this issue is the way forward to develop a holistic metric on research impact measurement.

3.37. Navigating industry and academic research collaboration - Andrew Parker & Tegwen Malik

When embarking on any research, an idea is first conceived and developed on paper. In this early planning phase academics typically target research funding streams and tailor the narrative and idea accordingly. There are times when these research ideas have been formulated by private companies (or industry) who collaborate with research academics to utilise the skills of researchers embedded within university institutions and to make use of the research environment and laboratory equipment.

It is during this early planning phase that it is important to understand and address the complexities of this type of collaboration between academia and the industry partner. Communication and discussion are critical here which otherwise could give rise to misunderstanding and tension as the project develops. That is to say, typically academics will be more focused on the research and publishing in respected peer reviewed journals (as this can positively affect their academic and research career) whereas industry will be coming to the table and wanting the long-term outcome of the research to be commercially viable and useful to their industry or company. This is further complicated with the expectations and perspectives of the funders and the university institution in question. That is, if the invention were to be successful, who does it belong to? The company (whose idea it conceived from), the researchers and academics involved in carrying out the research and overseeing the research project, the academic institution (whose facilities and staff expertise are being utilised) or the funders funding the project. Typically, the funders will only expect some form of acknowledgements (be it in research papers or any media/marketing initiatives) and are not so focused on taking ownership of any intellectual property (IP).

Some may argue that all this can be discussed after the research project is carried out whereby any proof of concept has been developed, tried and tested. This however is not advisable, and industry can often feel frustrated with the constraints and red tape of institutions which, in some cases, can be the cause of break downs in collaborative research initiatives between academia and industry partners.

For collaborative industry-academia projects that do get off the ground and where the technology is successfully developed (and a prototype mocked up) as part of the research project, another hurdle can be encountered. The university researchers at this point often think their work is complete as the project funding has ended, the agreed outputs with funders achieved, research papers have been published and the research findings have been further disseminated at conferences and sometimes with the media. This however is not the end for the industry partner as for them the technology development is just the start. Now consideration needs to be given to the business side of the technology. So, how is the prototype scaled-up, how can the supply chains be set-up, what is the most cost effective and efficient way of bringing the technology to market, is the technology a viable business solution/offering. All of the elements of good business practice need to be thought through with patents and lawyers possibly being involved to protect the commercially sensitive IP and patents. All this needs careful navigation and managing for research to have real-world impact.

Mindful deliberation on how and when to interact with the media is also important when talking about research impact. If researchers go to the media too early, this can lead to a false impression being given to the public around any potential impact of the research being carried out. So, the question is, when is the right time to go to the media? The reality is technology takes time to develop and test with many ups and downs on the research path. Prototyping and developing good business practices and viability all require the necessary time to advance if they are to succeed without being put under pressure from unnecessary external sources. It is thus wise to do all this first before approaching the media, otherwise inflated expectations can arise by the public and consequently frustration by the commercial industry partner felt if the research impact from real world application are slow to materialise.

3.37.1. Recommendations

With this in mind, the following four recommendations have been formulated:

- **Recommendation 1:**
  Academia must take the time before embarking on a research project with an industry partner to agree on who will own what share of any intellectual property and patents as the technology is developed.
- **Recommendation 2:**
  Consideration should be given to the fact that the development of technology during a research project is typically just the start (usually accounts for about 25% of the overall work required to see it deployed in real world settings). For technology to make it to market there is a considerable amount of further work that must take place and typically would account for 75% further time and effort to become commercially viable and rolled out to market.
- **Recommendation 4:**
  Never be too quick in pulling the trigger when talking to the media. Whilst this might mean no short-term headlines, going to the media too quickly always poses the danger of scuppering any commercialisation of technology. Furthermore, it does the research field a disservice when researchers go to the media too early (sometimes due to a little bit of overenthusiasm) and this can ruin it for others by trying to steal the headlines prematurely before the technology has been properly and robustly developed.
- **Recommendation 4:**

Academics need to think how their research is going to be useful and not just be something that will further their evolution on the research tree.

3.38. Impact of research on practice & policy – Kavita Pathak, Anubhav Mishra & Samuel Ribeiro-Navarrete

Despite a voluptuous growth in research publications across multiple academic and scientific disciplines in the past decade, we have yet to devise reliable and valid measurements to assess the impact of academic research outside of academia (Nunamaker et al., 2017). As an accepted (and sometimes debatable) practice, the academic impact of research can be evaluated based on the quality of journals, theoretical contributions, global rankings, and citation metrics (Dwivedi et al., 2022c). However, the research can be classified as a valid 'high-impact research', if it makes visible and meaningful contributions that matter to society, environment, government policies, industry practices, and individuals.

3.38.1. Designing impactful research

1. A paradigm shift from theory-driven research to practice or evidence-based research.
2. The research topic should be based on real-world problems to offer a compelling reason for practitioners to refer to and apply research findings to industry.
3. At least one research question should address practitioners' dilemma.
4. Authors should utilize consulting or external funding to build the research proposal targeted toward resolving the specific problem(s).
5. Involve (invite) industry experts or policymakers as co-authors to improve the dissemination of findings and increase the impact after publication.

3.38.2. Strategies to reach the intended audience

Authors, editors, and publishers must work together to reach the

intended audience.

Strategies for Authors.

1. Writing using simple and common words and avoiding abstract, technical, or complex words so that non-academic readers can easily understand the content.
2. Brevity and simplicity applied to the Title as well. For example, avoid methodology-specific words such as moderating/mediating/mixed-method/interaction effects, as most of the target audience may not know these terminologies (Warren et al., 2021).
3. Use examples to justify recommendations in the practical implications section.
4. Use social media platforms to promote publications, share articles with key industry representatives, and request feedback and potential recommendations to increase visibility.

Strategies for Editors and publishers.

1. The highlights section should be mandatory and preferably with a standard template to make it more audience-friendly. Presently, the excerpts from the Abstract are presented as highlights.
2. Ensure implications for practice and policymaker sections are written in the audience-friendly language. Another possibility is to provide a brief article summary for non-academic audiences.
3. Similar to the current practice of free access to abstracts, the Implications section (or the proposed summary section) should be made freely available to everyone.
4. Initiate communication with external stakeholders. For example, a summary of all the articles in the published issue should be created targeting the intended audience (similar to 'Knowledge at Wharton website), which can be regularly shared with the audience in the form of newsletters to increase visibility and industry engagement.
5. Top-quality journals strongly focus on rigorous empirical papers. As an industry connect initiative, journals should promote the publication of case studies, research viewpoints, industry insights, etc. Editors may invite experts from Industry or policymakers to share their views in the form of opinions or perspectives.

3.38.3. Tracking and monitoring the research impact

1. Metrics including views and downloads on the journal's website and from social media links.
2. Discussion metrics on social media, including comments on the article and re-posting.
3. Testimonials from the intended audience.
4. Follow-up research with data collection to verify the impact, especially for funded research projects.
5. Mention of research in Industry reports, UN reports, and government policy documents.
6. Readership data of newsletters (issue summary)

3.39. Conducting high impact information security and privacy research: five tenets for cybersecurity research design and execution - Daniel Pienta & Jason Bennett Thatcher

Information Security (ISec) and Privacy research present a unique opportunity for information systems (IS) researchers to have a practical impact on the lives of individuals and organizations. It is unique in that every user of information and community technology is vulnerable to attacks by malicious actors - from something as simple as a phishing attempt for personal information to something more malicious, such as doxing and the release of private information, to something as dramatic as data theft or the destruction of sensitive information (Franz and Thatcher, 2023).

While all individuals and organizations are vulnerable to security and privacy breaches, conducting a high-impact security study can be challenging. In part, this is due to the nature of the phenomenon-Security and Privacy research encompasses a rich domain in which researchers seek to address concerns relevant to individual, organizational, and societal security, as well as a dynamic domain in which new threats emerge and displace old ones on what feels like an almost daily basis (Schuetz, Lowry, Pienta, and Thatcher, 2020).

Here, we briefly outline five key principles for conducting and evaluating high-impact Security and Privacy research.

First, high-impact Security and Privacy research should lead to changes in individual, organizational, and regulatory practices. To help protect organizations, research must do more than simply describe or explain the psychological or social processes that lead to a breach; it should also influence or change how an individual, organization, or regulator approaches information management. For example, while much research has identified the characteristics of phishing messages that make them more persuasive, high-impact security research should have the potential to inform how the National Institute of Standards and Technology (NIST) offers prescriptions for designing anti-phishing training programs. Similarly, research focused on intrusion detection, auditing, and security breaches should have the potential to inform how NIST and organizations design and enforce access control, audit and accountability, or incident response policies. Our point here is that high-impact cybersecurity research will generate knowledge that informs changes, hopefully improvements, in how we secure corporate data and protect individual privacy.

Second, high-impact Security and Privacy research must address applied problems of interest to individuals and organizations. When formulating problems, a researcher should ask, "What is the problem?" and "Why is academia the right place to address it? Once a researcher answers these questions, it becomes much easier to identify a research site that is interested in learning about the privacy threats posed by new technology, investigating a new approach to security training, or better communicating about security threats to vulnerable populations. After identifying a research site, it should be relatively easy to craft a "pitch" that clearly articulates the applied value of your work to potential participants. If you cannot craft such a pitch, take a step back and ask yourself what value you are really providing to an organization. Until you can answer this question, you will have a difficult time securing a research site that offers the opportunity to conduct high-impact research. Even more, you will struggle to navigate the peer review process, as security researchers increasingly ask how work is relevant to real-world security problems.

Third, high-impact Security and Privacy research is attentive to the context and the underlying mechanisms that drive behaviour in that context. By doing so, researchers make it easier to align the unique opportunities afforded by a research site to use theory to identify interesting problems, harvest data required to address the concerns of managers and elicit theory-informed practical implications. In making such assessments, a researcher needs to be able to explain how the type of data they are asking to collect (e.g., real-time, archival, survey, experiment, and so on) informs solving an applied problem. Often, this will require engaging in an iterative discourse, where your pitch hooks the practitioner on solving a problem, engages them in partnering with you to identify what is possible to study, then you, the researcher, must return to theory to identify possible explanations (Durcikova, Lee, and Brown, 2018). Tailoring your work to a specific context and mechanisms is practically important because most security practitioners are not interested in building what they view as opaque theories or abstract concepts; rather, they are interested in securing advice needed to address the problems they confront in the present and in the future. It is also academically important, as you will find it simpler to publish work that offers impactful advice.

Fourth, high-impact Security and Privacy research must go beyond the obvious. Early Security and Privacy research often translated theories from health care or organizational behaviour, such as protective motivation theory or work motivation theory, to explain why fear or

affective commitment motivates individuals to comply with the demands of authority figures. While such work has been foundational, high-impact security work does more than apply existing theory to security problems; it provides a nuanced understanding of how context, features of technology, or shocking events lead to changes in individual and security behaviour. More importantly, it will go beyond the usual suspects of fear and motivation to ask how individual and organizational responses to security measures can have unintended consequences that make the organization more secure or even more vulnerable.

Fifth, high-impact Security and Privacy research is readily communicable to practice. To ensure that research can be communicated to practice, researchers must pay attention to the conversation in practice-whether in the language of the research site or in the language of the broader industry. In doing so, researchers should elicit information about a) what practice considers relevant outcomes, b) how practice measures outcomes, and c) where practice disseminates information. High-impact work should be of interest to industry conferences such as the RSA conferences, practitioner publications such as CIO magazine or Forbes, or for developers of artifacts such as anti-phishing training or other forms of threat detection. Absent such potential, it is more difficult to craft high impact implications for practice that help you earn a spot at a top journal.

If IS Security and Privacy researchers keep these five tenets in mind as they problematize research, design studies, and write up results, we are certain that they will conduct IS Security and Privacy research that is not only impactful but is also well-received at top academic journals such as the International Journal of Information Management, Information Systems Research, and MIS Quarterly.

3.40. Impact of academic research in practice, policy and society - Ramakrishnan Raman, Vikram Kumar, Ikram Jebabli & Rameshwar Dubey

Non-academic research impact is the term used to describe the positive changes, results, or impacts that come about as a result of academic research activities on society, the economy, the environment, or on the facets of human life that go beyond the purview of academia. It represents the practical and real-world significance of scholarly work and its ability to create positive transformations in the world at large. The non-academic research impact can be appreciated when research findings inform the development, or help in the modification, or implementation of government policies or regulations. Also, when research can impact and stimulate economic growth by driving innovation, entrepreneurship, and industry development or when research can have a profound impact on society by raising awareness of critical issues, changing societal attitudes, and influencing behavioral changes, then the non-academic research impact becomes palpable. When the research contributes to addressing environmental challenges, this leads to sustainable practices, enhanced conservation efforts. All of this can mitigate the impact of climate change or influences the cultural and artistic expressions, contributing to the enrichment of cultural heritage and creative endeavors and finally it can lead to enhancing the quality of life for individuals and communities by, for instance, improving healthcare, education, or access to clean water – this leads to a substantial impact as a consequence of the research. In essence, the changes that come about as a result of scholarly investigation and their application to a larger world is the non-academic research impact. It emphasizes the value of conducting research that goes beyond academic publications in order to actively address societal concerns, enhance the wellbeing of people and communities, and contribute to the improvement of the world in which we live.

3.40.1. Steps to take during the research planning/design stage to ensure impactful research outcomes

First and foremost, is the clarity in the research question or the research problem. The research question should be relevant, significant, and have real-world implications. Next is Literature Review which has to gather the current state of knowledge in the field of research and must identify gaps in the literature that the research can fill which can have an impact on the society. Engaging with the Stakeholders and potential end-users can help in understanding their needs, concerns, and priorities to ensure that the research undertaken is aligned with practical utility. Exploring opportunities for interdisciplinary collaboration, as insights from multiple fields can lead to innovative and impactful research outcomes. Another critical aspect is the creation of a theoretical framework that guides the research. This framework should help to make sense of the data and provide a basis for generating practical recommendations. From the outset, one must always consider the practical implementation by considering the real-world applications and implications of the work. The plan to communicate the research findings to a broader audience must also be in place. The avenues for dissemination, such as publications, presentations, policy briefs, or public engagement activities must be appropriately chosen, and this is a knowledge translation strategy which can help in making the research output reach the right audience which can ensure practical implementation.

3.40.2. Strategies authors can employ to ensure their articles reach the intended audience, such as practitioners, policymakers, third sector organizations, and international entities like the UN

The argument surrounding the various forms of research and the audience it aims to serve has a considerable impact on the kind of research a researcher performs and the outlet in which they choose to publish their work (Marcos and Denyer, 2012; Adler and Harzing, 2009; Boyer, 1998). In general, several management researchers aim to reach more than only their peers in academia. According to Perriton and Hodgson (2013), non-academic audiences are extremely important and ought to be given as much weight as academic concerns. Although peer-reviewed journals, which serve almost exclusively academic scholars, continue to be the primary venues for the dissemination of management research, there are signs that other outlets aimed at diverse, non-scholarly audiences are becoming more legitimate. (Aguinis et al., 2014; Pettigrew et al., 2014).

Authors can employ several strategies to ensure that their articles reach their intended audience, whether it's practitioners, policymakers, third sector organizations, or international entities like the United Nations (UN). Preparing a clear and concise title and abstract that succinctly convey the main findings and relevance of the article to the intended audience is vital. Use of the right keywords that resonate with them can be very helpful. Selecting the right journal or publication that cater to the specific interests and needs of the target audience is very important. Choosing the appropriate open-access journal or open access platform and forum can immensely help in maximizing the accessibility. Involving practitioners, policymakers, in the research process, can be of great help. Such collaboration can ensure that the research addresses their concerns and needs. If involvement in research is not possible due to any reason, then reaching out to the potential stakeholders, practitioners and policymakers, before publication- to get their views can help in generating interest.

The research findings must always be written in a clear and simple language. Technical jargon and academic terminology can be avoided which would make it difficult for broader audience to understand. Including visuals, such as graphs and infographics to illustrate key points can enhance understanding and engagement. Based on the research findings, the focus must be to offer actionable recommendations or guidelines that practitioners and policymakers can implement. Preparing executive summaries that highlight the most critical insights and recommendations for policymakers can be immensely helpful. Engaging with the Media can be of value to disseminate the research findings to a wider audience. Giving press releases or media interviews or even sharing the research on social media platforms and academic networking sites and engaging with relevant communities, forums, and

groups to promote the work can be of huge value.

Other strategies can be to present the research at conferences, workshops, and seminars attended by the target audience. Networking at such events can help establish connections, which can in turn help in making the output of research visible to a broader audience. Leveraging the institutional support can also help. Utilizing the institutional communication and outreach resources to promote the research work can also be utilized. Writing guest blog posts for reputable websites, newspapers, or magazines that are read by the intended audience and translating the research into multiple languages, especially if the target audience is an international entity like the United Nations can help. Ensuring cultural sensitivity in communication is very critical. After publication, follow up with personalized outreach to individuals must be taken up, who are the target audience, who should be aware of the research. Sending them softcopies / hard copies of the work or offering to discuss its implications can be of great value. Continuously monitoring the impact of the outreach efforts using metrics like downloads, citations can help to assess the reach and effectiveness of the dissemination strategies.

By employing these strategies, researchers can enhance the visibility and accessibility of their research articles. These strategies can help to ensure their articles reach the intended audience, such as practitioners, policymakers, third sector organizations, and international entities like the United Nations.

3.40.3. A case of Frugal innovation: a way to achieve research impact

The management field is a complex and diverse area of study that significantly impacts practical applications and policies. Theoretical research in this field is particularly important, as it provides valuable insights into how businesses, organizations, and governments can operate more effectively and efficiently. An area of research that has gained significant attention in recent years is frugal innovation, defined as the process of creating affordable and sustainable products, services, and solutions that meet the needs of people in developing and underdeveloped nations (Lange et al., 2023). Despite the potential benefits of frugal innovation, the literature on this topic still needs further development. To fully understand the impact of frugal innovation, it is necessary to view it from a holistic perspective (Govindan, 2024). Unfortunately, academic management research often fails to adopt this approach (Lindgreen et al., 2021). Instead, research tends to focus on popular topics that generate attention and funding, rather than on issues relevant to all societies. This skewed focus can hinder the progress of frugal innovation (Malik et al., 2021). To truly understand the needs of people at the base of the pyramid, researchers must adopt a more purposeful and ethical approach in their work (Lim, 2022; Taylor and Rosca, 2023). They should be willing to engage with communities and stakeholders, listen to their needs and concerns, and develop innovative solutions that are both effective and sustainable. Academic management research must be purposeful, relevant, novel, and ethical. By adopting a more holistic research approach and focusing on topics that have the potential to benefit all societies, researchers can contribute to creating a more equitable and prosperous world.

3.41. Making an impact as an innovation and strategy scholar - Paavo Ritala

The disciplines of innovation management and strategic management are profoundly practical given their close-to-industry topics, and by extension, scholars in these disciplines have the potential to make a major societal impact. What happens within firms and communities gets quickly diffused among academics, and the ideas and insights from academics are adopted among companies. The most generative concepts such as the business model or the innovation ecosystem are great examples of discussions that have been developed in a tight back-and-forth exchange between the academic and practitioner realms.

How academics should pursue research impact is an age-old question. However, the expectations for such impact are on the rise as we are moving from the Humboldtian model of universities as places for independent thinking and reflection towards the "entrepreneurial university", where universities are conducting research and teaching that is more or less directly beneficial to the society and different stakeholders (Carvalho, 2021). It is easy to understand why we've moved broadly to embrace the latter model. After all, it is intuitive that universities should not be separate islands from society, but rather embedded in society in meaningful ways. While critical and independent thinking remains to be important for university research, we also need engagement and embeddedness.

Another parallel change in management academia is the movement towards publishing journal articles as the primary means of classifying research outcomes, with major stratification between journals (Aguinis et al., 2020). Individual researchers, schools, universities, and even nations are ranked and incentivized via metrics that relate to publications, and particularly peer-reviewed journal publications. The upside of this development is that an increasing amount of research becomes visible in a peer-reviewed format, allowing for the cumulation of evidence and ideally increasingly accessible academic output that is useful to societal stakeholders. Yet, focusing primarily on top-tier publications – or just publications in general – might overshadow other means of making a research impact, especially when considered more widely.

The question remains for an individual academic as well as the whole scholarly system – what are the best ways to achieve, encourage, and ensure the societal and practical impact of research beyond simple publication metrics such as publication numbers, types of publication outlets, or citations? It is perhaps easier to define such impact than to identify how it is best created: societal impact of research refers to the tangible and intangible effects of research on society, industry, policy, and other realms outside the confines of academia. It emphasizes real-world applications and relevance beyond mere publication metrics.

In the following, I reflect on three approaches to making of research impact that I've seen either directly or indirectly supported by various scholars, and also reflect on my own experience of the different approaches that innovation and strategy scholars have sought.

3.41.1. The top-down model: acquire the license to operate first

The top-down model seeks to ensure the "license to operate" as an academic by achieving credentials via research training (most notably a PhD degree) and by publishing the research in the field-leading outlets. Proponents of this model (see e.g., Hoffman, 2021) view it as the perfect "both-and" solution to academic and broader societal impact. When the research foundation is solid, both the academics themselves but also the society can put high trust in the advice given by academics via various means.

My discussions with people advocating for this model include suggestions such as providing sound policy advice to different committees and governmental bodies, embedding research evidence as part of MBA and university courses and programs, and being involved in societal discussion via various communication channels and forums. Ideally, by becoming a recognized scholar, making impactful research becomes easier given the heightened legitimacy and visibility.

While grounding its credibility on solid academic credentials and well-recognized publications, the top-down model might inadvertently sideline younger researchers or diverse voices that lack the recognized credentials but offer fresh and relevant insights, potentially leading to a limited and homogenous perspective in research dissemination. This is where the alternative models, as discussed in the following, come in.

3.41.2. The bottom-up model: start with social impact

The bottom-up model starts with research impact and accumulates research evidence on the "way to the top". This means that rather than observing the progressions in the society from afar, the researcher is also an active participant in driving the change. This model is followed in many universities that work closely with the industry, highlighted

particularly in universities where technology, R&D, and design incorporate major parts of the curriculum and faculty profile. It is typical in such contexts to seek research projects (and relatedly, grant funding) to carry out interactive research with companies and other stakeholders, including components from both basic and applied research, allowing to conduct the PhD education and majority of research activities in a way that is tightly coupled to practitioner realm.

The research impact in this model is inbuilt, iterative, and involves co-creation of the impact with the relevant stakeholders, and with research communicated via multiple means and in variety of channels. The drawback in comparison to the top-down model is naturally more applied and actionable research results, which might be at odds with the leading-edge theoretical novelty that many strategy and innovation journals seek. Indeed, with its emphasis on applied, industry-centric research, this model might occasionally overlook or undervalue pivotal theoretical advancements, potentially hindering the holistic growth and evolution of academic understanding.

Thus, it is the responsibility of a scholar following this model to ensure academic credibility while maintaining a close relationship with the practice and the society. Ideally, the relevance of this type of research becomes an asset via access to rich data and insights, which can be then translated to broader audiences.

3.41.3. *The portfolio model: pick your battles*

The portfolio model is a mixture of the previous two approaches and resonates most with me personally. In reality, there are always a variety of research topics with different "clock speeds" and "time horizons", some of which are extremely topical and timely (think about generative AI, for example), while some are more stable and enduring discussions (think about key questions in organization theory).

A portfolio model allows us to engage quickly in pressing debates and emerging developments with preliminary insights. Of course, these should also come from a foundation of scholarly understanding, otherwise, there is a risk of erosion of academic credibility. Yet, academics should be allowed to take on topics and discussions that they are not yet fully "accredited" with an extensive publication trail. In the exponentially accelerating technological change, such a situation is more and more likely.

The portfolio model also includes underneath the important long-term development for academic knowledge in more overarching domains of theory or methodology. This is exactly the underlying "license to operate" that distinguishes scholars from mere opinion leaders, public speakers, or consultants. By achieving a sound understanding of the scientific method, research methodology, and theoretical base in relevant disciplines, an academic can ensure that their novel engagements and interactions with the society are still backed up by the cumulative tradition. This sets academics apart from journalists, consultants, and other non-academic influencers in the public space.

The portfolio model, while offering the flexibility to address both pressing debates and foundational topics, runs the risk of spreading researchers too thin, potentially affecting the depth and rigor of their contributions if not carefully managed. Indeed, since academia is often based on specialization and deep disciplinary insight, the portfolio model might risk remaining shallow and fragmented. It is therefore advisable to "pick your battles" well and focus efforts on areas where the research impact can be most readily made by building on the academic expertise and insight.

3.41.4. *Experiences from the field*

My experiences as the Co-Editor-in-Chief of R&D Management have provided some visibility of how scholars pursue to communicate research impact in the pages of the journal. In line with our mission that we publish articles "which address the interests of both practicing managers and academic researchers in R&D and innovation management" we expect our papers to involve inherently useful insights for society and practice. In fact, over the more than 50-year history of our journal, the topic coverage has followed closely to those immediately relevant to R&D management practitioners in each time period (Ferrigno et al., 2023). Moreover, beyond touching upon topics directly relevant to practice, we also expect these insights to be communicated in the article itself. The best format for this naturally varies and is not always a separate "managerial implications" section, but could also be a readily applicable framework or a process model, for instance.

Furthermore, scholars have built additional means around the article to ensure the impact. For instance, a neat way is to develop handouts and additional materials to help practitioners and policymakers apply research results in a more accessible format. Some topics naturally lend themselves easier to such extensions; well-known examples include a variety of business model canvases, customer value mapping schemes, or typologies and checklists. Another relatively common way is to write practitioner outreach versions of articles, which in our journal has been enabled by the upholding of the practitioner-facing R&D Today website which stands as its own media, involving insights from our journal's authors and editors, but also from anyone else from the innovation management community. Finally, scholars are increasingly embracing also variety of audiovisual means of dissemination, including podcasts, webinars, and also short-form video content, resonating with the changing media use habits of various audiences.

My approach as an innovation and strategy scholar has followed broadly the portfolio model. I started my career in research projects that involved companies with real-life problems, and I developed an understanding of their struggles not independently of them, but together and in parallel. This was tremendously helpful for my growth as an academic, and it certainly had positive effects on my understanding of theory and literature more broadly, as it helped contextualize the issues I saw discussed in theoretical debates. I believe that for innovation and strategy scholarship it is essential to make a societal impact in one way or another. There is time and place for going deep into theory, similarly, as there is going deep into a co-creative project with a firm that is developing a new business model. Regardless of the research I am involved with, or where I publish it, I pursue to use a variety of means to make it meaningful and useful to broader audiences.

I believe that it is the responsibility of any scholar to at least consider how research impact is made, and then explore the most effective and individually-fitting means to do so. Ideally, creating in impact takes both the practice and the scholarship forward in ways that are truly mutually supportive for the long-term benefit of the society, but also make sense in our everyday profession.

3.42. *Research impact: some reflections and recommendations - Suprateek Sarker & Michael Rosemann*

Many academic researchers we know undertake research and publish in highly-regarded journals for the following reasons: 1) They consider it *a requirement* for their entry, survival, and progression in the academic system they work in; 2) they see publications as *an achievement* and a reassurance of the fact that they are good enough, according to some established yardstick; 3) related to the earlier point, they see publication as a game, and *they are keen to play and win* it if they can, and earn plaudits; and 4) they seek *to benefit some aspect of the world* through their research, and in the extreme case, pursue deep satisfaction and even self-actualization through their research endeavours.

The first three may be related to extrinsic motivation whereas the fourth is more intrinsic and directed toward having (hopefully) a positive influence on something, someone, or some situation of relevance to the human condition.

Over the last 10 years or so, we have increasingly been told that our research needs to have impact internal to the academic community, and this, as a first step, has meant a focus on citations, which has led to the adoption of many metrics, each with its own merits and flaws, some ironically *impacting* the knowledge creation and dissemination process in ways that have been characterized as tyrannical (see Burton-Jones

and Wang, 2023 for a brief overview). It is not our intention to engage in a critical discussion of academic impact and related bibliometrics; instead, we will take a broader perspective on the notion of impact as it relates to IS and other business school academic work.

3.42.1. The many faces of impact

We think we would all agree that *academic research does consume a lot of personal, institutional, and societal resources* that could be dedicated elsewhere, and hence it is reasonable to expect that our endeavours should amount to something of benefit to other stakeholders, including other academics, students, practitioners, policy-makers, and more broadly, citizens and the environment. Many journals are thus requiring a clear statement of impact or contributions (e.g., Sarker, 2023). Indeed, depending on the nature of our research, we see many scholars striving to have a positive influence in areas such as technology design, implementation and adoption, education, economic value generation, sustainability, human freedom and psycho-social well-being, and a variety of societal issues. There is, however, a natural urge to make impacts measurable and trackable through standardized means such as metrics.

The first point we would like to make is that metrics can be valuable, but the preoccupation with metrics can be dangerous – it is often misleading and can be gamed (Burton-Jones and Wang, 2023). According to Gaukroger (2012), the "*association of objectivity and quantitative methods has a long history… Quantification… has become so prevalent that it has been taken by many to be what it means to be scientific and objective*" (p. 69), which it is not. Even Einstein is believed to have said, "*Not everything that can be counted counts, and not everything that counts can be counted*" (p. 68). Given the complex, diverse, and multi-dimensional nature of research impact, we need to be cautious about developing and instituting one-size-fits-all metrics for assessing impact.

The second point we would like to highlight is that the nature of impacts that we can possibly have depends on the discipline, the research tradition, the research topics, and the nature of the network of an academic. A criticism that is often directed toward business research, which includes information systems, resembles the following (Porter and McKibbin 1988, quoted in Astley and Zammuto, 1992, p. 443):

> The business world is, generally speaking…, **ignoring** the research coming from the business schools…. The total perceived impact is, judged by what we learned in some 200 interviews in the business sector, virtually nill.

This is very different to the world of medical or pharmaceutical research. In fact, Pfizer's CEO Albert Bourla, in his book Moonshot, highlighted how his organization moved to the "*speed of science"* in the development of its COVID vaccine (Bourla, 2022). These disciplines have a well-defined translational process which takes research as outputs (e.g., a paper) to the stage of outcomes (i.e., industry uptake) and finally impact (e.g., improved physical well-being); a similar process, and also the related ecosystem of stakeholders, is not typically in evidence for IS research.

This, along with the fundamental differences in the nature of IS research compared to that of pharmaceutical research, contributes to only a small proportion of IS research outputs being seen to be having a broader impact.

Astley and Zammuto (1992) addressed some of the criticism leveled at research on organizational science and management literature by noting that there are distinct modes in which this knowledge is used in practice: instrumental, conceptual, and symbolic. Their thoughts are worth revisiting over 2 decades later in the context of IS research. The *instrumental mode* pertains to the "tools, techniques, and practices" our research produces and that may directly be transferred to the world of practice. While there are some instances of knowledge that can be instrumentally utilized (e.g., conceptual modelling, business model innovation), it is unrealistic to expect that knowledge constructed in our scholarly environments, that too within all the different research traditions, will necessarily apply directly in the worlds of practitioners, policy-makers, and so on. The *conceptual mode* pertains to the way academic research offers new concepts and a way of seeing a given phenomenon in a different light that prompts actions that would otherwise not be possible (e.g., disruptive innovation, dynamic capabilities). Much of our academic research diffuses into the world of practice through our students and our writings in the form of "conceptual devices," languages, consultable case studies, and so on (Astley and Zammuto, 1992). Finally, the *symbolic mode* pertains to the way practitioners use academic work for rationalizing, justifying, and legitimating their decisions and actions (e.g., identified best practices). The observed impacts of these modes of knowledge utilization are likely to be different.

The third point we would like to make is that impact can occur or be observable in the short-term or long-term, be direct or indirect, or with limited scope (locally) or broader scope. Any attempt to assess and promote certain types of impacts will privilege or disadvantage certain kinds of research. For example, a direct impact that is visible locally in the short run may not have long-lasting effects. Many times, the most profound impacts are those that are not what practitioners and policy-makers want to hear or find immediately relevant, but those that involve frame-breaking or paradigm shifts in thinking, sometimes even alerting stakeholders of their false consciousness e.g., Lee (1999)).

Fourth, and finally, our observation is that we tend to search for impact potential once research is completed, for example, by hoping that readers of our papers will seek to utilize the findings instrumentally, conceptually, or symbolically as described above. In contrast, *impact-by-design* is characterized by research that is frontloaded with a real-world challenge meaning a research-informed solution has a higher change to be impactful. This requires a high level of awareness of the researcher of contemporary research opportunities that are motivated by a practical problem. Far too often, unfortunately, this awareness is underdeveloped meaning we derive research questions from the accessible body of academic knowledge, and as a result often do not go beyond academic impact. In order to address this, we could feature more demand-driven research challenges at our conferences and special issues. Such *pull-research* (as opposed to push-research where the individual argues for the importance of their work) could be a worthwhile approach, and we need to find ways to embed the impact-by-design mindset in our academic community.

3.42.2. Conclusion

To summarize, as scholars, we cannot just conduct research to meet our narrow career goals of meeting constraints or winning the publication game; we need to consider how our research actually makes a difference. Indeed, the potential to create an impact beyond the academic community is one incentive that attracts young talent to our scientific discipline.

Scholars in IS may have the opportunity to make academic (e.g., downloads, citations), educational (e.g., courses, pedagogical material), organizational (e.g., reputation), economic (e.g., reduced cost, higher revenue), technological (e.g., artefacts), entrepreneurial (e.g., new ventures), regulatory (e.g., policies), societal (e.g., well-being), and/or environmental (e.g., carbon footprint) impacts.[117] Each one of these, including the first category – academic theories with citations and downloads – *can* have an influence on shaping the world around us positively. In encouraging impactful research, we need to respect the volition of the scholar – depending on the nature of their work and the impact(s) desired, scholars should be encouraged to envision their research programs. Evaluation systems and journals that are associated with the career progression of scholars must explicitly value potential impact, but they must be careful to not prematurely judge (value or devalue) certain impacts that can result from Information Systems

[117] Presentation by Michael Rosemann titled *A Template for Measuring Impact of Research*, August 25, 2023.

research projects. Indeed, the annual AIS Impact Award-winning projects highlight a significant diversity[118] that we hope will spawn research showcasing greater and wider impacts of our community.

3.43. Impact of academic research in practice, policy and society - Pallavi Saxena & Ravi Kumar Gutti

Research has been perceived by academia as a systematic inquiry process into a subject with the intent to discover new knowledge. And with research gaining traction, the output of research is continually increasing by both volume, quality and impact. Be it launching low-cost space probes like Mangalyaan or coming out with multiple vaccines to handle the COVID-19 crisis, research has played a pivotal role in catering to needs, wants and desires of the society. The non-academic impacts of research on society have been immense. Research, be it social or scientific, has been the backbone of a country's economic strength. It has helped us understand complex social problems and underlying causes, in order to implement better policies. Research is pushing the environment to become more sustainable and the world more liveable. The ultimate benefiter of all ethical research outcomes is the common man of the society. However, the layman's description of research still remains quite abstract, a mere reconstruction of a few facts he knows. Our society has a similar explanation. Although, as a society, we use the final outcomes of some of the top research works in our everyday lives, we often do not acknowledge the whole process behind it and rarely know anything about the associated research works. As a result, we are unable to leverage the full power of research, but only limit ourselves to some of it. And this calls for some actions to improve the impact.

As we know, research begins with a problem statement, which subtly explains what is intended to be arrived at through the process. This statement is a result of some unanswered questions in the researchers' mind based on their predisposed topics of interest. The planning stage of research work is limited to members of academia, and do not always consult anyone outside. However, as a good practice, if external stakeholders- like local government bodies, non-government organizations and private organizations working in the same area, or even volunteers from the general public- are invited to be a part of the research planning process, the result would be improved impact in terms of obtaining a better problem statement. A researcher or a research unit can consider inviting representatives from the society and carry out a brainstorming session with them to enrich their own plinth of the research design. To go a level up, researchers can consider collaboration with external stakeholders as a tool to increase the societal impact of their research. The collaboration can be non-academic, where the external organizations act as agencies who help the research work and publicize the collaborative effort. The collaboration could be from a local body to a national or international organization like the UN or similar versatile organizations. The depth of collaborations would improve the quality of knowledge transfer between academia and society, thereby bridging the gap and improving the impact (Sivertsen & Meijer, 2020).

It is well known that the quality of education imparted by the schools of a country is an indicator of its prosperity. It has also been established that the school-age is when students are inquisitive and are in a position to acquire most of their lifetime skills. However, students entering undergraduate courses right after school are at times not in the position to handle research (O'Sullivan & Dallas, 2010). Researchers can be encouraged and incentivised to reach out to schools around their research offices and engage the students, right from secondary level, in fundamental research tasks on a periodic basis. The partnership would not only help communicate the research work of the lab among the big cohort of students, but also train the next generation early on going into research. Finally, it is important to communicate the ongoing, planned and completed research works to the wider audience. Universities and research institutes have been following standard procedures of communication- websites, magazines, periodicals etc.- for quite some time in spreading the word about their research. However, in the digital era, it becomes important to give equal importance to modern forms of communication like social media applications or take help of social influencers in research, in order to maximize the social impact. One more approach to improving the impact includes getting selected researchers to be a part of popular podcasts or TV shows, which is viewed by the masses, where they can discuss the relevance of the current research going on in their respective institutions.

In conclusion, research has undeniably emerged as a potent force shaping the progress of our society, advancing our understanding of complex issues, and driving innovation for the betterment of humankind. Yet, the disconnect between the academic research process and the broader public remains a challenge. To enhance the impact of research, it is imperative to engage external stakeholders in the planning stages, fostering collaborative partnerships that bridge the gap between academia and society. Additionally, nurturing a culture of research among students at an early stage and embracing modern communication channels, such as social media and popular media platforms, can amplify the dissemination of research findings. By taking these actions, we can unlock the full potential of research and ensure that its benefits are accessible to all, ultimately driving progress and prosperity for our society as a whole.

3.44. Creating meaningful research programs instead of "chasing after papers" - Daniel Schlagwein

In line with the mission statements of many academic societies and universities, I view the ultimate purpose of academic research, which, unlike corporate R&D, is often publicly funded, as contributing to knowledge that benefits society at large. As such, there is, in my view, an inherent ethical obligation for research to contribute to practice, policy, and stakeholders outside academia, regardless of the prevailing academic game du jour. Over the past decades, we seem to have gone a bit too far down the path of rankings, ratings, and local KPIs – what you might call the "internal game" of modern academia (for reasons and effects beyond what I can fully outline here). It is sufficient to say there has recently been an increased recognition that academic research must emphasize more than just rankings and KPIs and (return to) engagement with external, real-life stakeholders to provide more "societal impact", the topic of this editorial.

Here, I will, as briefly as possible, a) Define what "societal impact" means, b) Discuss how societal impact can be supported, both in design and writing, in a research paper as part of a research program, c) Describe what researchers can do, measure, and track regarding impact beyond papers, and d) Provide a brief illustrative example from my own research.

3.44.1. Defining societal impact

First of all, "societal impact" is or should be achieved through the same research studies and knowledge contributions that also constitute "scholarly impact", "theoretical contributions", and so on. It is not additional, separate writing or a type of consulting-type, theory-free work. The old adage, "nothing is as practical as a good theory", generally holds true. With one caveat, we must ensure the adage does not misguide researchers towards "ivory tower" theory-for-theory's-sake research. This refers to producing papers and theories that are detached from real-world problems and are perhaps crafted more for publication prospects than with societal needs in mind ("pointless theory" is not "good theory", to be clear). It is not an either-or situation; it is an intersection.

To claim societal impact, research should benefit some non-academic group or purpose in a significant way. For whom or what is the research impactful should be known and stated. One approach could be broadly

[118] https://ishistory.aisnet.org/awards/ais-impact-award/

differentiating between impacts on scholarship and theory, society and practice, and students and education (aligning with typical publication formats such as research papers, media reports, and lecture notes). Clarke and Davidson (2020) and Tsui (2022) suggest identifying specific stakeholders impacted—individuals, organizations, environment, society, consumers, employees, patients, firms, entrepreneurs, NGOs, governments, marginalized groups, system sponsors, and so on. In our own analysis of justifications provided by authors in their papers, we use values – Boltanski and Thévenot's "*orders of worth*", value systems held simultaneously across modern societies, values that matter to people – to elucidate the ultimate intended impact of the research. For instance, is the research ultimately to support environmental improvement (green order of worth), enhance creativity and art (inspired order of worth), or promote economic efficiency (market order of worth), and so on? (Spindeldreher et al., 2020). Often, it can be seen that papers could have been clearer in what they actually supported.

For readers seeking a "top-down" framework of societal usefulness, the United Nations Sustainable Development Goals (UNSDG) offer an often-cited reference for our global, collective aspirations. Alternatively, a "bottom-up" approach – what personally drives you as a scholar? – is an alternative starting point (it was mine).

3.44.2. Societal Impact in Research Papers and Programs (Design and Writing)

The invitation to this editorial, sought thoughts on designing and incorporating societal impact into a paper. In relation to a single paper, both in its design and writing, I concur with Burton-Jones et al. (2023) that the "knowledge gap" must be articulated not only in relation to the literature but to the societal situation. This means authors should seek societal impact by focusing on an urgent societal problem, a tangible real-world issue, and a "gap in societal knowledge" (not only "a gap in the literature", even if this gap then likely also exists). This approach should shape the study's topic in its design phase and be articulated clearly in the paper's introduction when writing. Further, the prevailing understanding in society and among practitioners, not just the academic literature, should be problematized, focusing on the issues arising from this constrained knowledge. This evaluation should inform the specific study design and then, in writing, be explicated in the introduction and possibly in the overview/review section. Finally, the paper should discuss how practitioners need to change their actions or beliefs based on the research findings. To bolster credibility and deeper understanding, ideally, the researcher should either possess professional expertise or seek field experience in the relevant domain during the research (I note my personal preference towards field research, for that very reason).

Relying on single papers for significant societal impacts might stretch what can be expected. Instead, I add the idea of long-term "research programs" to achieve meaningful societal impacts – with individual papers then serving only as components of a broader scholarly initiative.

A "research program" entails an extended exploration of a specific research theme or topic. Unlike isolated papers targeting specific questions, a research program includes multiple interconnected studies, cumulatively building a comprehensive body of knowledge. Establishing such a program demands vision, time, and dedication. Institutional support, like forming research groups or centres, is often crucial. Fostering networks with industry experts, co-authors, and stakeholders is key to ensuring the research's real-world relevance and applicability. This program shifts a scholars' focus from merely "chasing papers" to genuinely "becoming an expert in X", committing to a topic, and ensuring deeper engagement with the subject and a more significant societal impact. (see also Nunamaker et al., 2017).

3.44.3. Making, measuring and tracking impact

In addition to considering values and stakeholders beyond academia, and designing and writing these considerations explicitly into studies that may form not just a single paper but a larger research program, what else can authors do to increase impact?

Media, social media and events are probably the most immediately actionable items.

An obvious action space are social media from LinkedIn to X/Twitter, podcasts, blogs or The Conversation. These platforms can assist in making research more accessible, reaching wide audiences and in "building a following". There is a broad range of "social media analytics" available, including engagement rates and shares. (Personally, somewhere between concerns about shameless self-promotion and Big Tech business models, I never warmed up to social media, but I accept they are an obvious place for most to start.).

Media offices at universities are often helpful in establishing relationships with journalists. This can lead to writing op-eds for mainstream media outlets to share research findings with the public. Television, radio, and print interviews can also help authors reach a broader audience. The impact here can be tracked and measured via "media mention": tracked mentions of the research in news articles and television/radio segments. Google Alerts can be useful for finding media mentions. (Personally, I recently discovered I was twice featured in a Spanish newspaper, El Paíz, for example).

Organizing conferences, events, workshops, or public lectures with various stakeholders can help increase impact and foster networking. Attendance rates and post-event surveys can also provide insights – and often serendipitous linkages emerge that are not easy to track short-term but open opportunities long-term.

There are many other ways to make an impact, such as providing advice to governments, the UN, organizations, communities, and consulting. However, these are not always directly accessible, and opportunities often arise from the aforementioned efforts.

3.44.4. Case example

As a brief example, in my research on digital nomadism, I designed it as a research program rather than as a single study or paper to ensure societal impact. In addition to my personal research, which included among other types about a year of ethnographic work, I recruited three PhD students (Angty, Blair and Julian), each with a specific focus, to address particular aspects of digital nomads (digital remote workers). Angty examines the impact of digital nomads on local communities (from the local perspective). Blair delves into the impact of digital nomadism on nation-states and the fundamental questions of critical sociology. Julian investigates the impact on organizations, probing the concept of organizing itself. To date, this work has resulted in approximately 20 peer-reviewed papers. I have provided advice to the Government of Thailand regarding their Digital Work Permit (a visa designed for digital nomads) and their corresponding digital nomad web platform, for example. Before writing this piece, I had just returned from a local community in Australia, Mallacoota, where I travelled to help set up a digital nomad location. I have also given keynotes, participated in panels, workshops, and talks at various (non-academic) conferences, been featured in media reports, and led the creation of a web platform. Generally, my approach was not to treat digital nomadism merely as a nominal topic for a paper, disconnected from its reality, and then move on to the next topic. Instead, I am committed to the topic and hope to make a (modest but meaningful) contribution to the knowledge of all parties involved and, by implication, how digital nomadism's future shapes out. While academic papers are a tangible outcome of this program, they are not the sole, or even the primary, metric of success for me.

3.45. Acknowledge the differences and appreciate the complimenting capabilities for impactful and sustainable Industry-Academia collaborations - Hergen Schultze & Vinay Kumar Singh

3.45.1. Industry and academia – same but very different

We have been involved in many industry-academia collaborations over the last two decades. First and foremost, let's delve into motivation,

a topic we consistently address when interacting with academia. Industry and academia possess distinct incentives, and our aim is to identify common ground for cooperation. Obviously, in academia, the most important currency is recognition by publication (citation), and that's the very first difference in the industry. The majority of our industry endeavors involve confidentiality, preventing us from disclosing our activities to the public. This fundamental difference serves as a significant starting point for potential conflicts.

Furthermore, academic research is driven by the pursuit of novelty, often venturing into uncharted territory. In contrast, industry projects may involve securing intellectual property, such as patents, but sometimes the ultimate criterion is simple functionality. In industry, the prevailing belief is that if a solution works and someone is willing to pay for it, that's sufficient. Efficiency, speed, and reliability on a larger scale take precedence in the industrial context, contributing to a significant variance in motivation.

Another difference is the tools. As an example, when we partner with universities involved in our academic alliances, Ph.D. students working in their university laboratories adeptly modify device software and create code that seamlessly interfaces with equipment. Such actions, however, would be considered a safety hazard in the industry. So, in academia, things must work once, but in industry, things must work undisrupted even after they are given out of our hands to end users. That never happens in academic research. Here, one never hands over your academic research to anyone. You always keep it under control.

3.45.2. Two main differences we see – Motivation and Tools

So, there needs to be a bridge between the two. Common ground is found in a few areas, with the most trivial one being financial incentives, particularly in funding. Academic research often requires financial support, which the industry can provide. Collaboratively securing grants is another viable avenue for obtaining funding. However, what we regard as the primary catalyst for academic-industry collaboration is the mutual focus on tackling challenges and problems. We often hear our academic partners visit our plant, stating – "*Your problems are so intricate that I couldn't even fathom them in my wildest dreams*." So, from an academic perspective, the industry problem is fascinating to work. Thus, the industry's willingness to share these challenges with academia can motivate academic partners to engage with us more actively.

Another key factor contributing to our success is genuine collaboration. It's about more than simply outsourcing research through contracts; the traditional approach of handing over a project to the university and expecting them to handle it in isolation won't yield favorable results. The industry should consider universities as something other than merely service providers or extended workbenches because the disparities between the two are significant, and this approach is bound to be ineffective. What's essential is spending quality time together. For instance, when an industry sponsors a Ph.D. program at a university, a co-supervisor from the industry should be actively engaged with the Ph.D. candidate. Together, they collaborate on writing papers and conducting experiments. One valuable feedback from one of our numerous collaborations is that their students benefit from a level of guidance provided by industry professionals that they wouldn't usually receive solely from the university. Exposing these students to industry researchers who apply these methods in practical, everyday contexts enriches their Ph.D. theses with invaluable insights and specific contextual knowledge.

These are the soft factors, while the tangible factors are considerably more complex – specifically, what actions should be taken with the outcomes? Many academic partners typically produce a research paper and, at best, share the source code. But how does Industry make practical use of this? Industry professionals often find themselves needing to essentially start from scratch. We've attempted to address this challenge with limited success by jointly developing software. However, the inherent issue in this scenario is that neither the university nor the industry (particularly non-IT companies) has a strong background in software development. Thus, the notion of how to effectively deliver this software to external stakeholders seems unfamiliar and non-intuitive. This, in turn, poses a significant barrier for Industry. Because, in the end, the industry needs software that is usable with a relatively high level of readiness lever. Using the Technology readiness level by NASA, 0 to 9, we would talk about level 7 here. We have not seen any university providing anything above 3. There is a big gap; however, what is working quite well, which we do currently, is we have tried using open-source methodology in both directions. One option could be that the university contributes to the already established open source and maintains it with the open-source community. This gives a tangible result, not a random piece of code but well-maintained and curated packages.

3.45.3. Accept and appreciate

Both parties must acknowledge the stark differences in their respective worlds. Academia must accept that roughly 90% of what we do as an industry is irrelevant to them and vice versa. This limited overlap can complicate the quest for a substantial common ground essential for building a sustainable partnership. Nonetheless, by acknowledging and valuing this shared territory, successful collaboration can ensue, potentially yielding valuable research and publications.

To foster such collaborations, we would need people who, on the industry side, spend time thinking about the exact development need/research need. What's currently missing in the field? For instance, there are instances where the most suitable algorithm for a particular problem has been known for years, but computational complexities have hindered its practical application. Demonstrating a method is one thing, but making it efficient, i.e., fast and cost-effective for real-world use, is another challenge. While academic research may have explored this for two decades, practicality remained out of reach due to computational limitations in the past. This demands someone who can pinpoint the optimal moment when these methods become practical. Industry needs might not always be groundbreaking innovations but rather applications that can effectively address practical challenges.

Hence, academia and industry must collaborate to address four key questions: What interests the industry? What problems does the industry encounter? What motivates academia, and what capabilities do they bring to the table? Moreover, every application holds the potential for meaningful publication, and journal editors should expand the discussion section to allow a broader perspective where researchers' findings are contextualized in the landscape of problems they address.

3.46. Opportunities for improving alignment of academia and practice - Chitra Sharma

Academic research concerns itself with creation or study of phenomenon, technologies, process models, case studies etc. which are directly or indirectly connected to practice, and almost every journal /thesis has a section on 'contribution to practice', however, there exists a chasm that divides academic research from practice.

While there can be many impediments to the manifestation of academic research in practice, opportunities exist in the following key areas:

First area that potentially needs to be addressed is the '***mutual agreement of academia and practitioners that they are different from each other'.*** A practitioner who enters the academic world has to constantly redefine him or herself to stop acting like a consultant and submit to the rigour of academia. While there are certainly merits to it, *the practice* is looking for some translation of theory to real world and that gap is usually filled by consultants who are often churning out their own proprietary material, and aggressively marketing the same. Academic research needs ***'account managers'*** to push academic work to practice and close the feedback loop for academia.

Second area to be addressed is ***'access and articulation'.*** Practice is constantly under pressure to re-invent *aka* transform itself and is usually

looking at process, methods and technology at the same time to make a step change. In that scenario, even if they reach out to academic research it may not be bundled for use. Special issues are useful, but they may be subscription based and appear somewhat expensive. A researcher gets access to papers through channels such as library access etc. but such options are not often available with the practitioner. Finding ways to ***provide access to reasonably priced or even open access publications*** can prove to be useful.

Further, academic papers are difficult for a practitioner to read; for example, a journal paper pertaining to 'antecedents of a particular phenomenon', would be 'what causes or leads to a phenomenon' for the practitioner. What could help is the ***simpler articulation*** or having more practice focused journals which are also rated high in rankings, else the best minds in academia may not be incentivized to publish therein.

Third area that can be addressed is the 'time to market' of academic research. This can be broken into two elements: first the recency of the phenomenon, which can be addressed by embedding researchers in practice who can understand the phenomenon while it evolves and demonstrate value of academic research to practice. The second element is the turn-around time (TAT) of journal review of publications. An already dated research in terms of the newness of the phenomenon renders itself fit only for academic consumption after its caught in the TAT trap. A systematic analysis on how to remove the non-value adds may be required. In parallel, with every desk rejection, for fitment issues, editing staff may suggest journals that can be a better fit, and facilitate the right routing of entries and ease the choking pipeline. Perhaps the time has come for one of the blind reviewers for academic research to come from the practice side.

3.47. Translating academic research into practice and policy:The 'IM-PA-CT' framework - Antonis C Simintiras & Salah Al-Sharhan

A perceived limitation of academic research is a lack of 'real world' influence (e.g., government and business policy making and societal effects). Here we propose a succinct framework for academics to (a) design and conduct more translational research, and (b) better delineate the practical relevance of their research. In an ideal world, academic research has a profound influence and transformative potential across diverse domains, such as the economy, commerce, society, culture, public policy, services, health, the environment, and overall quality of life. This is reflected in the British Research Excellence Framework (REF) Guidance on Submissions bulletin (2019), which highlights the necessity for research impact to transcend the confines of academia (i.e., beyond publishing papers for the sole purpose of publishing). However, narrowing the gap between academic research and effective practice remains a challenge.

The non-academic research impact agenda is rising (Gunn and Mintrom, 2016), and literature on research activity (i.e., research into research) is fast growing, covering topics such as: research inputs (i.e., planning and resources supporting research); research activities (i.e., processes generating new knowledge and applications); research outputs (i.e., data dissemination and knowledge transfer); research outcomes (i.e., output implementation and applications), and research impact (i.e., tracking and monitoring changes to domains, such as the economy, beyond contributions to knowledge). Stemming from these, we propose a streamlined framework, built on three pillars we believe are pivotal to generating translational and impactful academic research. These are: illuminating minds, pioneering advancements, and catalyzing translation (collectively and conveniently termed IM-PA-CT), discussed below.

3.47.1. Illuminating Minds

Academic research finding dissemination outside of traditional publication models and academic conference attendance can take many forms. One is outreach and extension – sharing research with the broader non-academic community via workshops or seminars. This is prevalent in fields such as agriculture, whereby university employed 'extension agents' offer advice, organize practical workshops, and distribute newsletters summarizing academic and commercial developments to local farmers. This is an effective bridge over the gap between academic and non-academic communities by making research directly relevant and applicable to the end user.

Another channel is public engagement. This is less targeted, involving the use of social media, blogs, and popular science writing aimed at general audiences. Public engagement can also involve participation in events such as "science café" (sciencecafes.org) and "PubhD" (pubhd.org), where academics talk about their research to a layperson audience in a café or pub/bar, typically without the use of aids (e.g., PowerPoint). By sharing insights and discoveries in such informal and personable forums, researchers can inspire curiosity and interest in non-academic audiences, ultimately fostering a greater appreciation and support for research.

A third avenue is via community partnerships, which are more structured and collaborative in nature. One example is a program to bring local secondary or high school students into the university for a day. Further to learning about research itself (many high school students think Professors only teach), and research topics, students have an opportunity to physically see facilities such as biochemical laboratories or super-computer clusters. This is a more active method of learning. Additional benefits of community partnerships include potential student recruitment and maintaining public (e.g., parental) support for publicly funded research.

Moreover, "illuminating minds" is reciprocal asthese activities can help researchers better understand the needs and concernsof non-academic communities.

3.47.2. Pioneering advancements

Research novelty is central to progress; however, novel research can take many forms. One is applied research, focused on developing practical applications or solutions to real-world issues. Examples include drug development or making airplanes more fuel efficient. The potential impact of applied research is usually obvious. In contrast, fundamental research describes research without a direct benefit to a particular end user. For example, deciphering how a protein within a cell functions, or whether stress influences purchasing decisions. Such research revolves around processes and concepts, and often leads to the foundation for applied studies.

A third, mutually inclusive, path to pioneering advancements is interdisciplinary collaboration. This involves coalescing skills and technologies from academics (and non-academic professionals) across multiple fields. One example is investigating cologne effects on brainwave activity. Interdisciplinary research often produces more innovative solutions and advancements with broad societal impacts.

Another increasingly popular route to pioneering advancements is through technology transfer. This typically involves patenting or licensing academic innovations and technologies to non-academic sectors. Another technology transfer mean is "spin-out" companies by academics, in collaboration with their universities. These can drive research finding commercialization, while retaining intellectual property ownership and hopefully profits.

3.47.3. Catalyzing translation

This third framework pillar broadly refers to institution-level pathways to achieving and promoting their research impact. One such route is policy advocacy, the goal of which is to essentially convince the government that greater investment (either via public or private funds) in academic research provides short and long-term benefits. One example of policy advocacy would be to provide tax incentives to companies invested in academic research projects.

Another mutually beneficial pathway to impact is knowledge exchange platforms. These are typically university-industry collaborations in which academics and private-sector professionals addressing a

common challenge can freely sharing insights. One example is the British Knowledge Transfer Partnership (KTP) scheme (ktp-uk.org), which has paired ~800 businesses with 100 universities, or other research organizations, to train over 800 graduates in research at the interface of academia and industry. In addition to catalyzing academic research translation, such schemes more readily lead to student employment after graduation.

Finally, impact assessments can effectively encourage researchers to consider the broader impact of their work, beyond traditional metrics. This includes measuring practical applications, benefits, and transformations that their research can bring, either directly or indirectly, to non-academic fields and communities. Science Foundation Ireland (SFI) has many useful resources for research impact assessment (sfi.ie/funding/award-management/research-impact/).

In closing, we hope this concise **"IM-PA-CT" framework** helps academics realize the greatest potential of their research, for their own benefit, as well as all of ours.

3.48. The impact of academic research on practice and policy - Hanlie Smuts, Machdel Matthee & Marié Hattingh

The impact of research cuts across different disciplines to produce a robust and comprehensive solution to dynamic and evolving problems that can make a positive difference in communities, government, non-governmental organisations (NGOs), academia and private sector organisations. The practical contribution of academic research should be in the advancement of knowledge, innovations, practices, policy formulation, technologies and community development (McPhee et al., 2018). Within the African context, and specifically the South African context, academic research can inform practice, solve complex contextually specific problems and inform policy. However, for complex reasons, that is not always possible in the context of a developing nation.

3.48.1. Steps to take during the research planning/design stage to ensure impactful research outcomes

Research planning and design need to cross many disciplinary boundaries to create a holistic outcome. Specifically, they should engage stakeholders such as the community, government, suppliers and funders in significant ways throughout the research process, rather than merely collecting data, informing stakeholders and sharing knowledge afterwards. It is therefore pertinent to have community representatives that can present the real needs of stakeholders when planning a research project. The impact of a research project should bring about a change in society's knowledge, which could change society's behaviour to improve its general wellbeing, which includes the environment, as well as people's mental and general health, education, nutrition and poverty (the global challenges contained in the United Nations' Sustainable Development Goals). In some scenarios, researchers and/or funders assume the needs of community members. This can lead to community members adopting outcomes that are not aligned with their needs. This is a waste of time and resources. Therefore, research projects need to adopt a participatory design approach to ensure that community members' needs are understood in their context. As they are part of the solution, the adoption of the outcomes should be more easily achieved. In addition, whole ecosystems should be considered, including the often-conflicting views of different stakeholders and existing power relations. Impactful research often involves solving complex problems. Therefore, the following methods and tools are recommended:

- Applied research – finding practical solutions to existing problems using empirical methods, including:
  1. Ethnography, to observe and understand communities' cultural dimensions.
  2. Participatory design/Design Thinking, where the community member is part of defining the problem and designing and evaluating the solution.
  3. Action research and Design Science Research, where researchers go back into the communities to test their research.
- Tools and approaches suggested by systems theory, such as Soft Systems Methodology and Critical Systems Heuristics – understanding the views and needs of all stakeholders.
- Longitudinal research – realising that the impact is often only visible after an extended period.

Academic articles need to be structured in such a way that collaboration among stakeholders, the community, potential policy influencers and academics is evident. To ensure optimum visibility, the paper's title and research problem should reference the practical nature of the research problem. The research design should clearly describe which stakeholders were involved and the extent to which they were involved in the study. The practical contribution section of the paper should clearly report the impact of the study, and not merely illustrate a theoretical difference.

3.48.2. Strategies authors can employ to ensure their articles reach their intended audience

- A grant (national or international) will ensure that a visible problem is addressed and that study results are communicated. Ideally, the research should be funded by a governmental institution, for example, through a Brazil, Russia, India, China, South Africa (BRICS) grant, in conjunction with a grant from the South African Medical Research Council (SAMRC) (SAMRC, 2021).
- Collaboration and policy think tanks with governmental institutions will ensure that research projects are aligned with governmental initiatives.
- Collaboration with community organisations that focus on supporting community development will result in tangible and visible results.
- Transdisciplinary research will assist in the incorporation of diverse points of view that will allow researchers to complement and capitalise on each other's strengths.
- Communicating the results in such a way that all communities can understand them and have access to them, such as in popular articles.

3.48.3. Methods to track and monitor research impact

Academic research performance management sometimes drives quantity over quality research outputs, skewing research rewards and incentive systems. A way to counter this is for researchers to define a major research project with several smaller deliverables. The impact measurements of the project should be part of the project definition. The outputs can be delivered in conjunction with other co-researchers or students. The focus should be on the difference that the research project can make as a whole and not on the research product as an academic output. Transdisciplinary projects can also assist, as other disciplines have a variety of performance measures. The future research section should include a follow-up on impact measurements.

3.48.4. Ways to demonstrate an article has made a tangible impact

The only way a researcher will know whether their research has made an impact is to go back to the stakeholders and assess its impact. For communities that have basic human needs, such as food, water, electricity, shelter and basic education, theoretical contributions are not enough. Hence, impactful academic research should involve the private sector and governmental partners to create a conducive socioeconomic environment in which all stakeholders can thrive.

3.49. The quest for impact? Bringing down the Ivory Towers of research - Cristina Vanberghen

The world of academic research has a unique mandate since it is both

objective and draws upon a wide-ranging pool of knowledge. It therefore enjoys a unique capacity to tackle the multiple challenges faced by our societies. Academic research thus has a strategically significant mission. Its fundamental mission is – or should be - to have an impact on society and on policy formulation as well as unifying various domains of human knowledge into a single cohesive vision. That vision, that mandate must be rooted in a global perspective on international relations, seeking to address the pressing needs of our interconnected world. Academic collaborative efforts, as an interdisciplinary project by design, must encompass all fields of knowledge, fostering academic exchanges among students and professors and facilitating joint research projects focused on shared societal interests.

In this context we can wonder **why there is a perceived lack of impact of academic research on society?** I suggest there are several reasons for this which are highlighted in the nine issues below.

Issue 1: we can observe that research findings are usually published in academic journals, and in formats which are not easily accessible to the general public, policymakers, or professionals outside academia. So, this raises questions of access and dissemination. This hinders the spread and the positive impact of the research.

Issue 2: academic research is often written in technical language that may be difficult for non-experts to understand - with the consequence of creating a barrier to translating research into actionable policies or lack of impact on practice.

Issue 3: there is often a significant time lag between the completion of research and its implementation in real-world settings. It takes time for research to be published, and then integrated into policy or practice.

Issue 4: academic research may not always align with the most pressing societal issues or practical needs. It is important therefore to prioritize topics that are academically interesting and have a immediate real-world relevance.

Issue 5: in our pressurized world, there is a lack of rewards: academic research is often not incentivized for being published for its societal impact. It can have a discouraging effect on the need of connecting with the broader research community in order to explore the practical application of research.

Issue 6: there is an incompressible silo approach in much of the research world that limits interdisciplinary research cooperation. Consequently, there is a lack of collaboration between researchers, policymakers, practitioners, and community stakeholders that can have a negative impact on the translation of research into action.

Issue 7: the research world is increasingly confronted with resource constraints that limit researchers' capacity to engage on a large scale, to prioritise public communication, or collaborations that could have an impact on their research. There is also some inconsistency in aligning research funding with our societal needs. In short, a mismatch between research output and societal impact.

Issue 8: policymaking and professional practices can be resistant to change or slow to adopt new research findings, especially when they challenge established norms or interests.

Issue 9: talking from experience, there are institutional barriers to collaboration and an unjustified "uncollegial" competition. It is not only that some academic institutions and academic leaders may not provide sufficient support or incentives for their researchers. Even if the research is in line with new societal developments, it may be enough that one leading academic researcher has a negative view on a potential area of work and a promising research initiative may be scotched with no explanation.

The research world needs therefore to be more democratic and to work in a co-creative way at multiple levels, fostering collaboration, and aligning research priorities with real-world needs.

I truly believe that there is a lot of work to do in order to improve the impact of academic research on society, through a range of measures which first encompass systematic 360 degrees impact assessments covering societal, economic and policy impact of the research projects. The research world needs to engage with a collaborative spirit that can lead to more relevant and impactful outcomes; and it must make an effort to communicate its findings in language accessible to the general public. This can include writing articles for non-academic publications, giving public lectures, participating in media interviews, and outreaching via social media. It is important equally to engage in advocacy efforts to promote the use of evidence-based research in policymaking and encourage interdisciplinary collaboration within academia. We need a holistic approach, and interdisciplinary research if we want research to be impactful.

Providing researchers with training on policy analysis and communication can have a real impact on our society's capacity to meet challenges. Research should be focused on topics of importance for our society from a long-term perspective. Not all researchers done with this spirit. Certainly, at times, we need "fast research" able to answer the most urgent questions of our society and fostering a culture of engagement and relevance in academia. This is not always the case, but this is only way to increase the societal impact of academic research. Finally, achieving societal impact can take time, and the path to that impact may vary depending on the nature of the research and the field of study. It is therefore important to remain persistent and committed to making a positive difference through the research efforts.

The final question is: **can the research world bring something new to our society?** In an era of the trivialization of academic research, research offers an opportunity to foster a new dialogue aimed at inspiring a global spiritual renaissance, one that can reignite our fascination with life and living. We lack an approach to academic research that is deeply rooted in our real world. It is essential to add to the numerous academic research which often focuses solely on economic and quantifiable aspects, the enduring dimension of human life and culture. This is imperative for building a fairer, more balanced world.

Researchers, like poets, play or should play, a fundamental role in the realm of citizenship and cultural diplomacy. Academic researchers can be a central axis in the global evolution of our new century, primarily focusing on the essential issues facing our humanity. The revolution in academic research revolution must be accompanied by a cultural revolution. It is time for our academic research to find meaning and soul so that humanity can feel more at home in this world. Every researcher should consider him or herself a cultural force capable of participating on a global scale and contributing to history and societal well-being, rather than merely being seen as a researcher fund applicant.

So, what is essential is to incorporate into research theories is this dimension of human fulfilment, which is rooted in culture. The mission of research should be to bring spiritual convergence and bring societies and peoples closer together. I take the example of Mircea Eliade who was a Romanian historian of religion, fiction writer, and philosopher and who made significant research contributions to the study of religion and spirituality. His work was primarily based on the dissemination of knowledge and ideas about religion, spirituality, and myth from various cultures, including India, to a European audience. Eliade's writings often explored the themes of religious symbolism, mythology, and the sacred, drawing from his extensive research into the religious traditions of India and other cultures. He played a crucial role in introducing and popularizing the research of comparative religion and the understanding of Eastern religious concepts in Europe through his books and academic work. Eliade's contribution helped bridge the gap between Eastern and Western religious thought and contributed to a deeper understanding of spirituality and religious practices worldwide. That is what I call the impact of our research on our humanity.

In a world where our minds are inundated with propaganda and virtual reality, turning research into a series of responsible acts is more important than ever because the subtle manipulation of the human mind is more harmful in the long run and the propaganda occurring inside our borders via social media could nowadays become deeply embedded in the cultural communities of our entire planet. The world needs a great research pact to support our societies – so researchers must mobilise. We need researcher- poets, researcher-philosophers to help us to rediscover

the spiritual dimension of our society. They have nothing to lose but their chains!.

3.50. Building bridges: collaborative research models for real-world impact - Ákos Varga & Csaba Csáki

One[119] of the main challenges researchers face today is how to ensure that their research has a meaningful and lasting impact on the real world. This contribution addresses this gap by focusing on how researchers may adopt *collaborative research models* that involve interdisciplinary, cross-sector, and cross-border partnerships with practitioners, policymakers, and organizations from different areas and with differing backgrounds and cultures. By engaging with wider stakeholders throughout the research process, researchers can increase the chances of their research making a tangible impact outside the academic circles as well.

Collaborative research models have several benefits for both researchers and non-academic partners. First, they can enhance the quality and validity of research by bringing together diverse perspectives, expertise, and methods to address complex and multifaceted issues (Nunamaker et al., 2017). Second, they can foster mutual learning and knowledge exchange between researchers and stakeholders involved, leading to new insights and innovations that can benefit all parties (Gagliardi et al., 2008). Third, they can facilitate the dissemination and implementation of research findings by creating networks and platforms for communication, feedback, and advocacy.

However, collaborative research models also pose significant challenges that need to be addressed. One of the main challenges is how to establish and maintain effective and sustainable partnerships that are based on trust, respect, and mutual benefit. This requires researchers to adopt a participatory and inclusive approach that involves stakeholders from the outset, i.e. considered as part of the research design, as well as throughout the data collection, analysis, and dissemination stages. Another challenge is how to balance the different expectations, interests, and agendas of researchers and stakeholders, as well as the cultural, funding, practical and ethical issues that may arise from their collaboration. This requires researchers to negotiate clear roles, responsibilities, and boundaries with their partners, as well as to ensure transparency, accountability, and reflexivity in their research practices.

To overcome these challenges and to fulfil related requirements, researchers need to adopt a systematic and strategic approach to their chosen collaborative research model. This involves identifying relevant stakeholders for their research topic, assessing their needs and interests, and establishing a common vision and goals for the collaboration. It also involves designing a suitable research methodology that accommodates the diversity of partners and methods involved, as well as developing a plan for communication, coordination, evaluation, and dissemination of research outcomes.

Drawing an outline for a collaborative research model involves *structuring the research process* to ensure effective collaboration among stakeholders:

Define objective:

Clearly state the research goals. Identify the societal or academic challenges the research aims to address. Keep a holistic view.

Identify stakeholders:

List potential collaborators: practitioners, policymakers, organizations, and other researchers. Determine the role and contribution of each stakeholder in relation to the objective established. Engagement with non-academic partners should consider the same principles as for academic ones.

***Assemble an (interdisciplinary) team*:**

Look for both variety and synergy in the backgrounds that allow for differing perspectives and viewpoints to meet, collide and challenge openness and understanding while pushing for collaboration. Ensure a good selection of expertise and methodological experience.

***Secure funding and institutional support*:**

Collaborative teams can share experiences about how to mobilize resources. Seeking external support (in the form of either funding or institutional backing) the professional network can improve the efficiency of related efforts.

Establish a collaboration framework:

Define the collaborative team model, ensuring it allows individual research while influencing common outputs. Establish communication channels and regular check-ins. Part of the framework (as remains of the post-COVID world) is the consideration how to apply remote collaboration tools.

Design research methodology:

Choose methods that accommodate diverse partners and techniques. Ensure the methodology acknowledges drawing or sketching as a form of knowledge production, if relevant.

Assign roles and distribute responsibilities:

Clearly delineate roles for each collaborator. Establish decision-making processes and conflict resolution mechanisms.

Formulate data collection and analysis plan:

Determine how data will be collected, stored, and shared among collaborators. Define the analysis techniques and tools to be used.

Prepare for feedback and iteration:

Create a system for continuous feedback from all stakeholders. Adjust research processes based on feedback.

Plan dissemination and implementation:

Plan for the communication of findings. Leverage networks for feedback, advocacy, and implementation.

Integrate evaluation:

Assess the effectiveness of the collaboration not only at the end, but during the research project, for example at milestones. Measure the real-world impact of the research.

Look for future collaboration:

Based on evaluations, identify areas of improvement for future collaborative endeavours. Foster relationships for ongoing or future research collaborations.

By following this outline, researchers can ensure a structured and effective collaborative research process that has the potential to maximize real-world impact.

The advent of cloud-based platforms, video conferencing tools, and collaborative software has transformed collaborative research and have enabled seamless integration between team members scattered globally. Such technological advancements allow for real-time data sharing and fostering a more immediate and dynamic feedback loop. Additionally, Artificial Intelligence and Machine Learning can assist in data analysis, offering nuanced insights that might be difficult for human researchers to discern. As researchers plan for collaborative ventures, understanding and leveraging these digital tools can significantly enhance efficiency and outcomes. While they come with their own set of challenges, such as cybersecurity concerns, the potential they offer in breaking geographical and temporal barriers is undeniable.

3.51. Sympraxis between academia and practice - Polyxeni Vassilakopoulou, Ariana Polyviou, Arve Haug, John Soldatos and Ilias O. Pappas

3.51.1. Collaborative engagement with practice for two-way knowledge flow

Non-academic research impact refers to the tangible benefits or influence of research beyond academia, in other words, addressing problems and bringing improvements in the real world (Pappas et al., 2023). Unlike academic impact, which involves scholarly recognition within

[119] *Disclaimer*: After the first draft, the question about the real-world impact of collaborative research models was posed to the ChatGPT 4 generative AI tool to check for general ideas on the topic. No actual AI generated text was used during the writing of this contribution.

the academic community, non-academic research impact entails buy-out from non-academic stakeholders that can take action to ensure positive changes that result from research endeavours. This type of impact can manifest in various ways, such as informing policy decisions, advancing technology, enhancing operations and their outcomes.

Collaborative engagement between academia and practice helps ensure that research is directly applicable and beneficial to the intended target groups. ***Sympraxis,*** a word deriving from Greek,is:

> a concept that describes constructive, collaborative engagement between academia and practice in a two-way flow of knowledge so researchers can better comprehend practice, while practitioners become more familiar with research approaches and the state of the art.

It entails blending academic and experiential knowledge towards solutions requiring both rigorous inquiry and pragmatic feasibility and partnering in disseminating findings via academic and practice-oriented publications. Sympraxis aims to overcome historical divides between academia and practice by promoting respectful, synergistic relationships, where both parties can benefit significantly from one another's expertise, resources, and perspectives. Relationships that are equally beneficial for both academics and practitioners, usually in different ways, are critical for a truly symbiotic relationship.

Sympraxis research aligns with the needs and interests of stakeholders beyond academia and has a clear link between research outcomes and their operationalisation. This also includes publishing in outlets that address non-academic audiences while linking and referencing academic publications on the same research topic to ensure dissemination of findings beyond academic circles. Researchers should aim to publish their findings in outlets that are accessible and relevant to non-academic audiences, however, it is also important to connect these works to the peer-reviewed academic publications on the same research. At the same time, academic articles need to include sections to make research impact visible. This bidirectional linking is important to provide evidence of the credibility, veracity and rigor of the work. In the paragraphs that follow we present two exemplary forms of Sympraxis between Academia and Practice: clinical research and academia-practice partnerships for innovation.

3.51.2. Clinical research

In clinical research the focus of research activities is to contribute to organisational improvements helping to uncover real insights both on the part of the organisation and the research (Vassilakopoulou et al., 2023). It requires working together with organisational participants who become active inquirers. The sympraxis of practitioners and researchers makes it possible to reach insights that may have never occurred to either practitioners themselves or to the researchers in a traditional case study. In recent clinical research, a Research Champion from the practice side helped to develop relationships of high intensity and mediate initial trust formation mechanisms. The Research Champion, also a co-author in this contribution, was key in connecting research with practice and fostering a genuinely collaborative process. The organisation allocated resources and worked together with the researchers to explore possibilities for better leveraging technology in service delivery. A key part of the project was focused on investigating how service agents make use of a chatbot and the clinical research outcomes were about forming a human/AI partnership, while interacting with citizens (Vassilakopoulou et al., 2023).

3.51.3. Academia - practice partnerships for innovation

Embedding sympraxis in research project consortia ensures that projects can better respond to the instrumental and social objectives of research calls. The European Commission funds programmes for research and innovation, which are effective examples of the value of sympraxis. The co-authors of this contribution have been successful in working together to acquire such funding, demonstrating how sympraxis enables impact, not only in terms of expanding existing knowledge, but also through innovation management, stakeholder engagement and development of business models aiming at exploiting research results. Depending on the aims of the research call and expected outcomes, sympraxis can denote different levels of basic and applied research which diversifies the academia and practice engagement in a project. For instance, research and innovation actions focusing on the establishment of new knowledge or the exploration of a new solution up to the level of a small-scale prototype testing impose a higher involvement of academia, compared to innovation actions incorporating a greater scale of product planning, product and market validation. In the latter, the project is invited to deliver outcomes at a higher Technology Readiness Levels (TRL) and thus for-profit partners of the consortium may be invited to partly fund their participation in the project as a means of demonstrating their confidence and commitment in commercializing the project results.

3.51.4. Successful sympraxis

Sympaxis research enwidens access to real-world data, allowing for a richer and more integrated understanding of the phenomenon being studied. Indeed, recent work echoing these benefits, provides guidance on how such research can be designed and executed as well as illustrative examples on how they can be presented (Polyviou et al., 2023; Vassilakopoulou et al., 2023). A successful symparxis entails genuine partnering between academia and industry. This allows for academic and experiential knowledge to be incorporated in the research process while research outcomes can be tested in real-world use cases to facilitate fine-tunings and ensure the relevance, value-added and engagement of the potential end-users.

Sympaxis needs to be mutually beneficial which can be achieved in different ways. This type of collaborative engagement allows organisations to strengthen and leverage their relationships with universities. Concurrently, universities can extend their reach, enrich their research efforts, and enhance their networking capabilities. *Sympraxis* enables academic institutions to increase their visibility as experts in specific research areas, thus elevating their overall reputation. Additionally, project funding increases job opportunities and expands the institutions' research capacity. Sympaxis nurtures a symbiotic relationship between academia and practice, bridging theoretical research with practical applications and mutually fostering growth, visibility, and opportunities for both parties.

3.52. Look inward to create greater societal impact: six suggestions - Viswanath Venkatesh

The concern that research does not have a broader impact on organizations and society has been a topic of discussion for some time now. Granting agencies, such as the National Science Foundation in the U.S., have been emphasizing the importance of societal impact in the evaluation guidelines. Similarly, various academic organizations have announced awards for impact. Yet, the conversation about impact continues, largely because a number of factors, such as the focus of journals on more traditional problems, little to no relevant training on doing impactful work, limited understanding on what it means to do impactful work, lack of access to contexts where impactful work can be conducted, and difficulties in collecting relevant data.

In this short commentary, I will communicate a few ways to increase that researchers can have greater societal impact. I organize my thoughts into three areas of change: (1) Paradigm and Problems; (2) Bring Rigor (Science) to Practical (Societal) Problems; and (3) Disseminate Differently.

3.52.1. Paradigm and problems

*Embrace a Nontraditional, New Paradigm***:** To me, this starts with a nontraditional paradigm. Most researchers, especially in business schools, are trained to be positivists (quantitative researchers) or

interpretivists (qualitative researchers) in terms of their philosophical standpoint. Sometimes, these choices are not explicitly made but ingrained in their PhD training. To make societal impact, one often needs to step outside these bounds and embrace a nontraditional philosophy of science, such as the transformative emancipatory paradigm. This will be especially relevant if one is seeking to make an impact on the less privileged citizens of communities and/or underprivileged communities.

Join a New Conversation: The problems we research and the stakeholders we seek to serve largely dictate if we will have societal impact. The tried-and-true metaphor that research and papers are about joining a conversation is a starting point for thinking differently so as to have societal impact. Those seeking to have greater societal impact should seek to join a different conversation that has a different set of participants, some of whom could be outside academia. In other words, deliberately seek to study new problems with a new, different set of stakeholders. Rather than simply seeing how research that has been conducted can be connected to practice (e.g., society), plan for this deliberately.

3.52.2. Bring Rigor (Science) to practical (societal) problems

Who was Impacted? Being deliberate about the paradigm and problems we use leads to the next step in what we do, like in all science: be rigorous in our pursuits. One of the approaches to doing this will be to understand who is being impacted and the ways in which they are being impacted. Having been an evangelist for mixed-methods research for some time now (Venkatesh et al., 2013; Venkatesh et al., 2016), I strongly advocate for qualitative work to complement quantitative work to gain a rich understanding of the impact on society.

Measuring and Tracking Impact, even beyond the Study Timeframe:

Another aspect of the rigor is to be able to quantify impact. This will mean using scientific measurement approaches, along with a rigorous design (which may not always be possible), and tracking impact over time, even if that means tracking the impact beyond the study timeframe, as designated for your research project pursuit. After all, you do not need to be limited in your observation window if the lifecycle of the phenomenon is longer.

3.52.3. Disseminate Differently

Write for Academic Journals:

Some journals may specifically value research that focuses on societal impact. This may include some of the journals that you already target. However, some journals that do not typically publish work that focuses on societal issues may need more education on the importance of the problem. In a sense, this is true of all papers. Highlight the importance of the problem that you are pursuing. The more the unique the context or the societal problem that you are pursuing, the more you may need to do to help the traditional reviewer and editor base understand the problem and its significance. The onus is on the authors—always!.

Write for Practitioner Outlets and Various Media:

Having an impact on society means writing for different outlets beyond academic journals. A number of practitioner outlets exist that will surely be keen to share the stories of broader impact, especially if it includes recommendations for various organizations, both for-profit and not-for-profit entities. Additionally, various media outlets, both traditional and social media platforms will allow for quick and impactful dissemination of the knowledge gained. From the perspective of rewards and recognition, although the traditional metrics may not value these works or their consequent impact, the reward is in the recognition in these alternative forums. That in turn may create opportunities for other traditional pursuits, such as a field experiment at an organization, that in turn lead to benefits that the current system rewards.

3.52.4. Summary

Academia is a big ship. It will only turn slowly. Various efforts are underway to do more responsible and societally meaningful science. While those changes happen, more grassroots efforts to change our own focus as scientists will help us have greater societal impact. I suggested embracing a transformative emancipatory paradigm, pursuing societally relevant problems, studying these problems rigorously, measuring and tracking the impact over time, writing for traditional academic journals by highlighting the significance of the scientific problem being studied, and writing of practitioner outlets and various other media to create greater awareness of the impact and by providing recommendations from which others can learn.

3.53. Impact of research on practice and policy - Giampaolo Viglia

Have you ever read a research article or a monograph in which the entire practical implications section includes sentences like “Companies and policymakers might use these results…”. Well, this is - generally - the type of speculation that does not translate into real research impact. Contrarily, research impact comes from collaborating with stakeholders since the beginning of the research, such that the findings can directly translate into a change.

Developing impact requires a strong collaboration with key stakeholders to address a business or societal problem from the design phase of the research. The result of this co-development should lead to a clear leap of practical knowledge that changes the existing practices or develops entirely new solutions (Keeling & Marshall, 2022).

An article that aims to demonstrate research impact should explain the collaboration process with key stakeholders in detail. A practical example is setting up a field study to demonstrate the impact of one variable over the other causally and then discuss the impact of these actions for different stakeholders (see Acuti et al., 2023; Bergers et al., 2023).

One frequently forgotten area is how we use academic articles as a tool for knowledge exchange. We write with the implicit notion that we inform academic and practitioner groups about examining, investigating, and evaluating complex subjects. However, academic writings may need to explain impact more explicitly. Authors can employ two essential strategies to ensure their articles reaches the intended audience: knowledge mobilization and knowledge co-deployment. The first form revolves around developing policy briefings (the so-called “white papers”), awareness campaigns, and dissemination through practitioners’ or policymakers’ channels. The second form circles around the actual implementation of solutions that are directly implemented already during the research development.

While academic impact does not mention real change, measuring research impact requires defining the desired change, identifying where it will be seen, how it will manifest, and how to capture the data. Multiple stakeholders may have different forms of impact from the same research. Change requires engagement and ownership from stakeholders to be realized. For instance, measuring the impact of a field experiment on reducing waste would require tracking the benefits of that campaign in terms of reduction of waste through a demonstrable approach (e.g., accurate purchase data or recycling data) and for a sufficient period (i.e., was the change short-lived or sustained?).

We must return to the core definition of research impact to demonstrate that an article has made a tangible impact. The Australian Research Council (2023, p. 1) defines it as “*the demonstrable contribution of research to changes that bring benefits to the economy, society, culture, public policy or services, health, the environment or quality of life.*” We need indicators and evidence of successful engagement (and means of measurement). An example is having a regular dialog with critical institutions and or any other target audience, with written evidence by stakeholders, law documents, or policy reports (e.g., MarketWatch).

In conclusion, to identify a successful pathway to impact, we need to focus on the real world since the early stages of the process involving key stakeholders in the creation of knowledge.

3.54. Engaged and impactful research by design - Tim Vorley and Levent Altinay

3.54.1. Introduction

Today's academics are expected to respond to the expectations and needs of different stakeholder groups including students and peers, practitioners, policy makers and businesses. In the past, however, the work of academics was essentially twofold: First, to deliver teaching and learning, often inspired and informed by research, in order to equip learners with the skills to become future business leaders. Second, the role of research academics was to advance the frontiers of research through our contributions to theory and knowledge.

The demands on universities, and business schools in particular, to demonstrate their relevance and value has become more acute. This direction of travel is not new, with Clark Kerr, the former president of the University of California, making reference to the 'multiversity' in 1963 as a reflection of the increasingly expanded purpose and value of universities (Kerr, 2001). Some 60 years later the demand on universities to be engaged and impactful has become more prominent, fuelled by the rhetoric of universities as the engines of the knowledge economy.

Once upon a time, business academics did research on organisations and businesses. This evolved to see academics doing research in organisations, and this was succeeded by academics doing research with organisations. This shift exemplifies the engagement of researchers necessary to co-create and co-produce rigorous international leading research. The shift towards co-creation has also been prioritised by funders, as well as a growing number of funding multidisciplinary calls dedicated to promoting collaboration and supporting engagement and impact.

This era of engagement and impact has placed increasing demands on academics. Further to the academic outputs of research, there is a need for more accessible user-oriented outputs as well as a need to map and track the impact on partners and beneficiaries. As engaged and impactful academics, the work no longer starts and stops with the research. It often begins with knowing your partner and their needs through to the end of an iterative impact journey - it is a long game.

3.54.2. Doing relevant research

Academics are accustomed to thoughtfully situating their research and identifying their contribution - often building on the shoulders of giants. However, for engaged and impactful researchers, the task of conceiving a new project begins in knowing and understanding the partners or beneficiaries as much as it does the literature. Appreciating what they want and need from the research is as important as the academic contribution - and rarely are they interested in the academic contribution to theory and knowledge, they are looking for applied insights that can make a difference to their work and practice.

So, understanding who they are and what they need is crucial, yet academics are not consultants, and the purpose is not to address the needs of the prospective user or beneficiary. For many 'traditional' academics, this will demand the development and honing of their skills to be more engaged and impactful, or working in teams with colleagues that bring complementary expertise. The challenge is in squaring the circle to deliver rigorous and robust research that makes contribution to academic debate and real-world practice. That is to say advancing theory and knowledge but with a consideration of its use - something that is not always central to the thinking of business school academics. These contributions will not necessarily be the same, although the underpinning research may well be. This is engaged and impactful research by design.

One increasingly popular form of engaged and impactful research is engaged scholarship. Pioneered by Andrew H. Van de Ven (2007), 'engaged scholarship' is a participative approach towards research that brings together researchers and practitioners - creating new learning communities. And business schools provide an ideal forum to close the gap between theory and practice. Through deeper engagement with practitioners working in the public, private, and third sectors, academics can pursue research with relevance that makes new contributions to theory.

The simplified engaged scholarship model in Fig. 3 shows engaged scholarship as an iterative process comprising four dimensions. While the problem-solving quadrant may give rise to interventions of solutions that have an impact, there is impact across the diamond where academics engage with partners. The iterative nature of the process also provides opportunity to assess and evaluate the nature of engaged scholarship and its impact. This, in turn, enables those engaged to review and adapt their understanding and practice to further develop their engaged scholarship and its associated impact.

Two distinct but related practices are co-creation and co-production, which provide powerful lenses for working with partners. Through a process of sharing and reflecting, teams of academics and practitioners can develop important generative inputs to the research design process. The process also includes consideration of the intended transformation and outcomes as a result of the research, redressing the traditional power dynamic and agency between researchers and the subjects of the research.

3.54.3. Impactful by design

Engagement is crucial to impact. There is a need to ensure productive and constructive engagement between academic and practitioner communities from the outset in order to maximise the potential for impact. Contrary to the widely held assumption among the academic community that research impact occurs upon the completion of the project, or as we start disseminating the findings through various dissemination channels, impact can start at the inception of a project. That is not to say it cannot occur later on or at the end of a project, although it is more likely to occur if considered earlier in the project.

Impact is rarely serendipitous and is often both deliberate and intended. As such, impact not only merits but necessitates consideration. Research projects need to be designed with impact in mind if they are to be impactful - and there are volumes dedicated to the topic of research for impact (Vorley, Rahman, Tuckerman and Wallace, 2022). This is not to predetermine or prescribe any impacts of the research, but rather to ensure that any anticipated impacts of the research are understood and

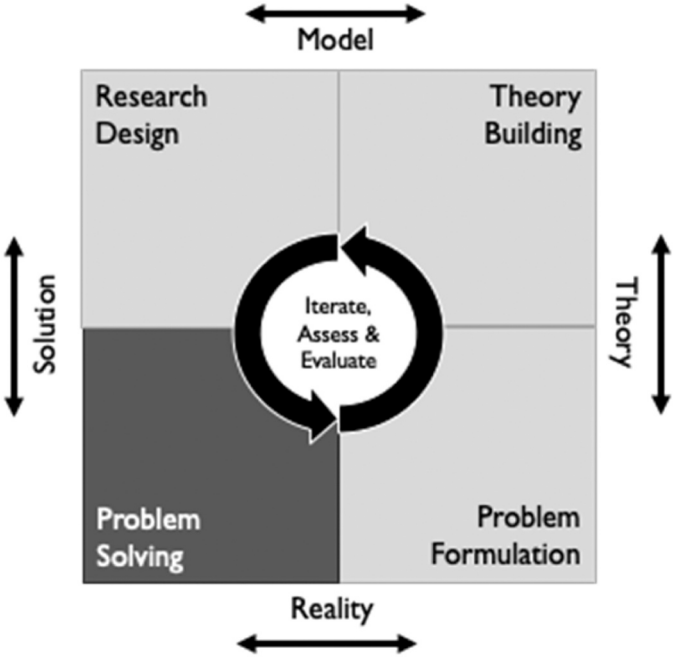

Fig. 3. Simplified engaged scholarship model (
Source: adapted from Van de Ven (2007)).

evaluated. In the same way we use hypotheses to frame research, so we can use the same approach in relation to impact. Such an approach would enable the researchers and practitioners co-creating the research to imagine and identify opportunities for impact from its inception.

The prospect of impactful research needs to not only be robust and rigorous, but sufficient upon which to instigate change. This means ensuring that the research is commensurate with the impact that it seeks to have. For example, it might be sufficient to base research that seeks to impact operational processes in a firm on that firm, but it would not be sufficient as the basis for sector wide transformation of operational processes. The scope of the intended impact is intrinsically linked to the scope of the research in this sense - and neither is necessarily better or worse that the other, although research that is wider in scope has the potential to be broader in terms of its impact.

In both of the above scenarios, whether relating to a firm or sector, early engagement and co-creating the research is likely to yield more impactful outcomes. Any given firm or sector is less likely to adopt recommendations from research undertaken 'on' them than research co-produced 'with' them. Working collaboratively provides a means to identify and socialise emergent implications and impacts of the research throughout the research process, which is often key to their acceptance and adoption.

3.54.4. Assessing and evaluating impact

As already noted, impact can be a long-term game. Landing the impact of research is also an iterative process, and one that often requires reviewing and reframing. As research and impact evolve it is often necessary to ensure that the mechanisms are in place in order to continue to deliver the intended impacts. By articulating the intended impact in terms of a theory of change, a methodology more associated with evaluation (HM Treasury, 2007), it is possible to assess whether the intended impacts are being achieved.

In much the same way that impact does not happen after the research but with it, so assessing the impact does not need to happen after the impact has occurred. In fact, the period when the impact is occurring presents the greatest opportunity for real-time assessments and evaluation to influence decisions and shape activities to realise the intended impacts. Understanding what works, and why, is crucial to realising the intended impacts. Where research insights do not give rise to impact, this may relate to the activities to realise the intended impact as much as it does the research itself.

The benefit of approaching impact as an engaged process that is entwined with engaged research provides a means to systematically reflect on the extent to which the intended impacts are achieved. In Fig. 4 we present a simple logic model as a means to illustrate the impact journey and evidence the intended impact. Research can be both an input to and output of the model, as well as contributing to the outcomes and impacts themselves. But, as with all evaluative methods, the value of the logic model is only as good as the indicators used and evidence captured.

3.54.5. Final thoughts

Impact has come to feature prominently on the agenda of academics and universities. Impact is more than a requirement of research assessments such as the UK's Research Excellence Framework and the Research Assessment Exercise in Hong Kong, as well as the likes of the Knowledge Exchange Framework in the UK. The impact agenda is about something fundamentally more important; it is about relevance. As universities, and business schools in particular, seek to reconnect with the communities they both serve, there is a need to rethink the value or research beyond the academy. This is transformational thinking. Yet impact is as much an art as it is a science, and realising transformational outcomes is about relationships as well as research.

Engagement and impact is not constrained by disciplines. There has been a proliferation of multi and interdisciplinary projects. While academics possess deep disciplinary knowledge, the 'problems' being addressed are unlikely to be disciplinary in nature. Even with the contextual knowledge of professionals, policymakers and practitioners engaged in the research, there is a value in thinking and working across disciplinary boundaries. Business schools provide a space and forum to convene such debates, bringing together different theories, to build new models and develop solutions that address our shared reality.

Even with the utmost planning impact is not assured and, like research, can lead to unexpected and unintended outcomes. These outcomes are in themselves important insights for academics and practitioners engaged in research and impact activities, as well as the institutions of which they are a part. Indeed, it is important that universities, departments, and schools support engagement and impact as a strategic priority if that is what it is. For now, at least, the lexicon of engagement and impact has become normalised within universities and, as a result, the onus for academics to demonstrate their relevance is arguably greater than ever.

Michael Crow at Arizona State University has long argued the dangers of filiopietism in higher education, noting that the competitive advantage of universities is in what they do differently (Crow and Dabars, 2015). If we are to see the prevailing isomorphism continue to occur among universities, then engagement and impact have the potential to provide a renewed source of competitive advantage. While the focus of engagement and impact will remain as broad as the academics who are engaged, there is a need for universities to prioritise global challenges, such as climate change and sustainability, as well as local and national socio-economic imperatives. It is only in this way that universities and their constituent departments and schools will realise such a transformational vision.

3.55. Placing an ACE in the hole of academic research - Michael Wade

If a tree falls in the forest, do you hear it? In the realm of academic research, the answer is no. Unfortunately, far too much academic work fails to make an impact on the very practice that it purports to influence. I recall as a junior academic writing a paper describing a measurement tool to assess ecommerce performance. It was the late 1990 s and many organizations were struggling to adapt to new technologies, processes, and ways of working. I had meticulously developed and tested an assessment tool to measure how organizations could advance towards their ecommerce objectives. The paper had been through multiple rounds of peer review, with major changes made along the way. Before I submitted the final version to the publisher, I reviewed it one last time. I realized that I had omitted to include the actual survey instrument in the paper. They very thing that was most useful to practice was missing, and no one had noticed!.

Indeed, impact for practice is often little more than an afterthought in academic work. Relevance is very much the minor cousin of rigour. To fix this problem will require a wholesale redesign of the system of academic review, tenure, and promotion; I will leave this for others to address. My comments here are restricted to the very practical process of preparing academic research for practitioner audiences. If it is not read or understood by practitioners, academic research may as well be a tree falling silently in a forest. It will create no impact.

I propose that all academic writing that aspires to create impact on practice should follow a process I call **ACE (Accessible – Consumable – Effective)**, which is an acronym to describe 3 article characteristics (Table 5).

3.55.1. Accessible

The first problem with impact is that a lot of academic work is not accessible to the very people it is designed to help. Many of today's most prestigious academic journals, the ones that the best researchers aim to publish in, sit behind paywalls. In my area, business and management, the likelihood that a manager or executive will have access to an academic subscription service like JSTOR, ScienceDirect, or ProQuest is almost nil.

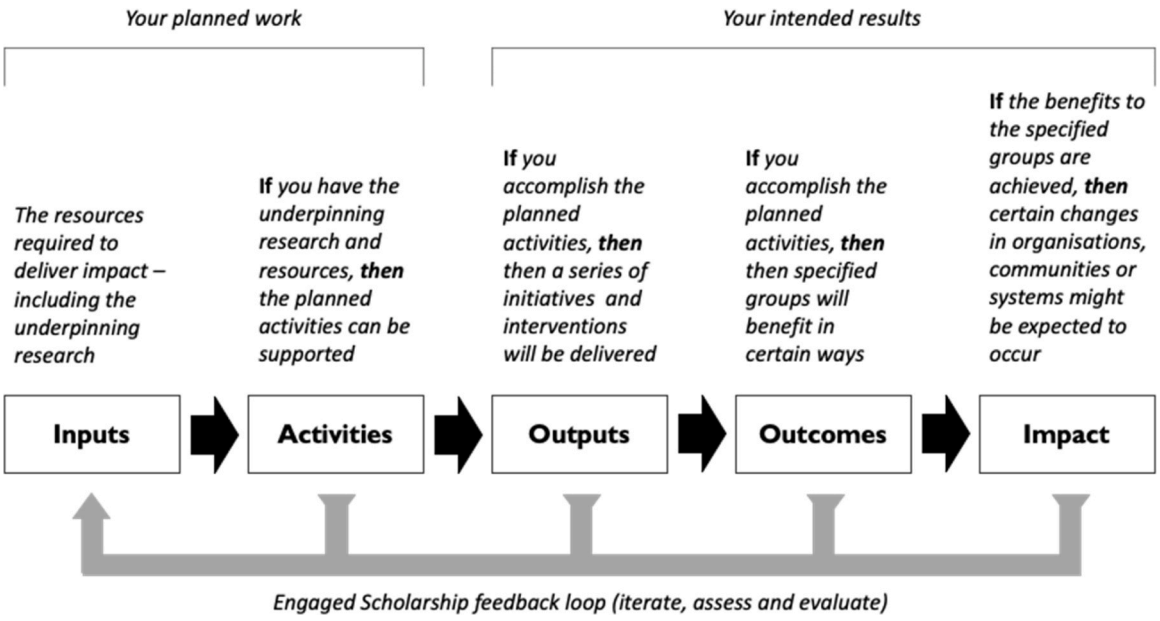

Fig. 4. Simplified logic model illustrating the impact journey.

So, if researchers want to create impact, they need to publish in outlets that are easy to access. Academic readers will immediately point to a problem with this suggestion. The outlets that are most valued by tenure and promotion committees are often the least accessible to practitioners. Indeed, none of the journals in the Financial Times 50 list (valued by many business schools as top tier) is freely available without a subscription. This system is rigged against practitioner impact!.

One way to improve accessibility is to rewrite the main insights of the article, being careful to respect copyright restrictions of course, and publish these in a more accessible format, such as in a popular press article, open-source journal, blog, or a LinkedIn post.

3.55.2. Consumable

Even if an academic paper is accessible, it may not be consumable by non-specialized readers. Academic papers are written in a peculiarly esoteric way, in language that most people struggle to understand. Determined readers need to work very hard to disentangle meaningful insights from academic verbiage. Many academic articles include a 'benefits for practice' section for this purpose. However, this section is often tucked away at the back of an article and consists of a few paragraphs of platitudes.

Based on my experience, the attainment of practical impact or 'consumability' can be vastly improved by adopting a few simple practices.

***Create an executive summary*:**

Start a paper with a concise summary of the main findings of the research, written in plain language. For example, instead of saying, 'The ontological examination unveiled a positive correlation between X and Y,' say 'Our research found that when X increases, Y often does as well.' Keep jargon to a minimum.

***Explain the problem's real-world relevance*:**

Add a description of why the issue studied matters to practitioners. For example, you might say, 'Organizations often struggle with employee engagement. Our research can help them identify the reasons behind this.'.

***Provide actionable recommendations*:** Offer specific, step-by-step actions or strategies that practitioners can implement based on the findings. For example, 'Based on our findings, organizations can improve engagement by implementing weekly feedback sessions and recognizing employee achievements.'.

***Use visual aids*:**

Graphs, flowcharts, and diagrams can help distil complex concepts into easy-to-understand visuals.

***Include real-world examples or case studies*:**

Illustrate the findings with real-world examples or brief case studies that practitioners can relate to. For example, 'UBS implemented our suggested strategy and saw a 15% increase in employee satisfaction within 3 months.'.

In essence, the 'benefits for practice' section should transform rich, often complex academic content into actionable insights that practitioners can easily comprehend and apply.

Table 5
How to Improve the Impact of Academic Research.

Category	Accessible	Consumable	Effective
Challenge Problem	Can I find it? Most academic work is inaccessible to the very people who it is designed to benefit.	Can I read it? Most academic work is unreadable by non-experts.	Does it matter? Most academic work studies topics that few people care about. Further, they rarely describe how to use and scale the findings.
Solution	Make academic papers as widely available as possible.	Write academic papers in a way that maximizes understandability.	Make sure that key findings and benefits are described. Provide advice on how to apply them.

3.55.3. Effective

To create impact, academic work needs to be in some way useful or effective. If it doesn't provide a benefit, then it's unlikely to provide impact. Unfortunately, a lot of academic work is not very relevant to most practitioners, Again, I may have a bias here as I operate in the domain of business and management research, but if research doesn't offer much in the way of practical usefulness, then why does it exist?

Not only is the best academic work useful, it is useful at scale. That is, the findings are relevant and meaningful across of range of applications. They need not only to be significant (in the statistical sense) but also substantive. Too much academic work is just placing another brick upon the top of an already tall wall.

A good example of an article that was effective and scalable is the paper 'Attention is all you need' published in the proceedings of the Conference on Neural Information Processing Systems in 2017. The paper provided a clear explanation of its method and findings, including offering links to the underlying model and data. It subsequently became the conceptual foundation of many large language models, and was a strong influence on the development of the GPT models from OpenAI.

3.55.4. Conclusions

Ensuring academic findings are easily accessible and actionable for practitioners is essential for bridging the gap between research and real-world application (Table 5). Some journals have attempted to make their research both rigorous and relevant. The Harvard Business Review, MIT Sloan Management Review, Stanford Social Science Review, and MISQ Executive come to mind. Unfortunately, these outlets are exceptions. Most academic journals continue to be inaccessible, unconsumable, and ineffective for all but the most intrepid practitioner.

Writing academic articles that are ACE-compliant is a shorthand to ensure that the research impacts not just the academy, but also a wider audience.

3.56. A business practitioner-centred approach to accessing academic research - Paul Walton

One of the key principles in the delivery of information (through digital products or other content) is that the services should be based on user needs and be user-centred (UK Government Digital Service). When we consider whether academic research is read by practitioners, therefore, we should start with the practitioners.

This article focuses on business practitioners who want to understand whether research can help them change their organisation in some way. It provides a high-level analysis of the question: how can business practitioners more easily access reliable, high-quality information about academic research and use it to help them transform? It summarises some key challenges, how information is accessed and how that access can be improved.

We can understand the nature of the challenges through some underlying psychological issues. It has been known for a long time that people make tradeoffs when trying to access information—summarised as the "principle of least effort" (Ferrero, 1894; Zipf, 1949). Simon (Simon, 1991) developed this idea in his concept of bounded rationality. This is the theory that when people make decisions, they are limited by the difficulty of the decision, their own limitations, and the time available. Simon invented the term "satisficing" to embrace the concept of doing what is good enough. The impact of Simon's ideas in business is summarised by Cristofaro (Cristofaro, 2017).

More recently, Kahneman (Kahneman, 2011) has expanded on (what he calls) the "law of least effort" and demonstrated the difficulties that people have recognising the quality of information they are working with. He concludes that, without making a conscious effort, people will make do with poor quality information when making decisions. He summarises this in the phrase "what you see is all there is".

So, when trying to access information, people always make tradeoffs between finding information of the right quality and the effort and time involved. And they also need to understand how to apply the information to the questions they want to address.

This means that we can analyse the issue in terms of the following:

- **Information quality**—information that is accurate, complete (because it addresses the whole of the question under consideration) and is sufficiently detailed (Walton, 2014, 2015);
- **Ease of access**—this is the other side of the tradeoff equation. How much effort and/or time will be required to find and understand the information required (Walton, 2019)? And does it fall within acceptable bounds (using Simon's term)?
- **Ease of application**—even if the right information is easily available, how well does it contribute to the decisions that need to be made (Walton, 2020)? How much additional time and effort is required?

Information quality. The quality of academic research is uneven (Goldacre, 2009). It can often take time for a consensus to emerge on key ideas, especially in the case of major changes (see, for example, Kuhn's analysis (Kuhn, 1970) of paradigm shifts in the case of scientific research). Even when they are reliable, individual papers often tackle only a small subset of a wider issue. For a business practitioner it can be too difficult to understand the overall position without exerting a considerable effort (so tradeoffs come into play).

Ease of access. The starting point for this isn't good. There is a large cultural difference between academics and those in industry. Their objectives and ways of working are very different. The purpose of most academic papers is not to generate action in industry.

We can think of this as a large-scale knowledge management problem. Knowledge management is difficult enough in a single organisation (summarised in the title of the paper "*If only HP knew what HP knows*" (Sieloff, 1999)) and more difficult at a much wider scale. For non-academics, academic research is very difficult to navigate: there is no way of searching effectively, there are paywalls (journals that aren't open access) and papers are often opaque.

Ease of application. The difficulties with transformation (Davenport, Spanyi, 2019) are often not about the ideas being implemented but about the execution. How closely does the information match the particular needs of an organisation? How can theoretical ideas be turned into practice in a complex organisation? Practitioners need information about how research ideas apply to their organisation as well as information about the ideas themselves.

These factors show that it is difficult for people in industry to learn directly from academic research. So how, then, do they learn about new ideas?

The simple answer is that mostly they don't, at least not directly—they rely on others. Table 6 provides a simple overview of some of the channels through which business practitioners consume academic information about changing their business.

Management-aligned research organisations, analysts and consultants conduct research or summarise academic literature and produce papers that are designed to be easily consumed by managers. These are often delivered through tailored web sites and apps (for example, the McKinsey and Harvard Business Review apps).

Product suppliers incorporate research in their products. For example, the "explosion" in generative AI (Singla, 2023) is based on decades of research in AI, and its inclusion in numerous technology products (Davenport, Barkin, Tomak, 2023).

The standards developed and promoted by standards organisations include examples of good practice often generated by research.

Applying new ideas requires a different form of expertise supplied by consultancies or SMEs. In turn, these often do their own research based on the output from academics, analysts and others but also they learn from the case studies in which they have been involved.

The complexity of the channels shown in Table 6 indicates the difficulty of the problem. So, how can improvements be made? This is a difficult topic that requires more research, but we can consider it from three angles:

1. the structure of the research information;
2. the use of new technology;
3. changes to information access channels (as in Table 6).

Information structure. The challenge of making academic advancements available to practitioners is critical in healthcare. In response, the medical profession has defined a model that directly addresses the challenges. There are different versions of the model but the "5 S model"

Table 6
Channels to academic information in support of transformation.

Channel	Examples
Management-aligned research	HBR, MIT Sloan, …
Other research	Other academic research
Analysts	Gartner, Forrester, …
Strategy consultants	McKinsey, Bain, …
Other consultants	Capgemini, Accenture, …
SMEs	Numerous smaller organsiations
Product suppliers	AWS, Microsoft, …
Standards organisations	BCS, PROSCI, …

(Haynes, 2006) provides a convenient focus for discussion. The model has 5 levels:

Studies Level: the papers in the academic literature;.

Syntheses Level: reviews of a topic in the literature to eliminate the quality issues with individual papers and establish a complete and accurate point of view;.

Synopses Level: "succinct descriptions" of an individual study or syntheses;.

Summaries Level: integrating evidence from lower layers to "provide a full range of evidence concerning management options for a given health problem";.

Systems Level: the mechanisms, like decision support systems, by which all of the above are embedded in day-to-day usage.

Note that the different levels change the focus from the research itself to the application of the research. There are large differences between healthcare and the general needs of organisations but the 5S model captures an important principle: the need for a foundation of high-quality information (syntheses), the need for ease of access (synopses, summaries and systems) and applicability (summaries and systems).

New technology. The synopses and summaries in the 5S model help to analyse and summarise large quantities of underlying information. But this capability is also one of the strengths of Generative AI (GenAI) Large Language Models (LLM) (Mollick, 2022). There are many risks associated with LLMs (Blackman, 2023) partly based on their tendency to create "hallucinations" (i.e., to invent information) because they are statistical models of language not models of knowledge. However, enterprise implementations of LLMs (Davenport, Alavi, 2023) mitigate these risks by focusing the language capabilities of LLMs on good quality information (such as the syntheses in the 5S model).

GenAI can also improve the "systems" element of the 5S model. GenAI is being included in numerous software products and is also enabling "citizen developers" to create apps that can access information much more easily (Davenport, Barkin, Tomak, 2023). In this way GenAI will improve ease of access. If the underlying information also contains examples of how the research can be applied, then the systems will additionally improve ease of application.

Information access channels. GenAI has the potential to disrupt existing mechanisms for accessing information. So, we can expect it to have an impact on Table 6. As in so many other areas, the key is access to information of the right quality (e.g., "syntheses" in the 5S model). Depending on the availability of that information, many existing or new participants may decide to provide GenAI tools that use it. For example, academic groups may find it advantageous to use this approach themselves to make their research more widely accessed.

This analysis shows that it is difficult for business practitioners to understand how academic research applies to them. As a result, there are a number of organisations that can help (at a cost). In the future, Generative AI may provide an avenue for making significant improvements so long as it can work on good quality syntheses of the research and case studies.

4. Discussion

Several strands of thought related to the challenges in manifesting the impact of academic research can be extracted from the many insightful contributions by academics, practitioners, and policymakers from various regions of the world described in the previous section. Fig. 5 captures an overview of the thoughts underlying these contributions which are brought together in this discussion section.

4.1. Uniqueness of academia and practice

Academics and practitioners are essentially two unique groups with vested interests and several idiosyncrasies that make them unique in their own ways (3.46).

Academia is characterized by the conduct of novel research and the publication of findings for public consumption (3.45). Academia may protect novel ideas through intellectual property applications or patent offices (3.2). Researchers may consider publications as a 'right-of-passage' for entering into the academic profession and as achievements that ratify their abilities and may be focused on publishing in high-quality journals (3.37, 3.42). They may be concerned about the "publish or perish" culture that seems to assess their performance within their academic departments and schools (3.5). Academics may engage in research that does not always produce tangible products, processes, or patents that are usable in practice and by industry but may instead focus on increasing knowledge or discovering fundamental principles while employing complex methods that may not be easy to comprehend, let alone implement (3.5, 3.14, 3.29, 3.47). Researchers may focus on theory building to the extent that it may not hold much value beyond academic settings (3.34).

Industry practices focus on solving immediate problems without disrupting operations (3.45). To accomplish such goals, practitioners need to identify quick solutions while pressed for time leading to frequent tradeoffs in finding reliable information of good quality necessary to solve problems (3.28, 3.56). They may favour solutions that are ready for market and can be implemented with little effort (3.2). Industry practice emphasizes the need for confidentiality of competitive and operational information and the use of non-disclosure agreements that could keep sensitive information away from the public eye (3.45).

4.2. Disconnect between academia and practice

The differences between academia and practice are largely instrumental in widening the disconnect between the two groups despite their uniqueness. The core beliefs of academia that publishing is required for advancing careers and receiving incentives may not be helpful in solving real life issues faced by practitioners (3.34). Academic research may not always result in specific solutions to address societal issues or practical needs and hence may not be applicable for practice (3.34, 3.49). Academia generally does not favour being the extended workbench of practice and strives to protect its boundaries (3.35). Non-academic and non-expert audiences may struggle to comprehend the language of academic publications that may be highly technical and stylistic thus being unable to appreciate the quality and usefulness of the research findings outside of academia (3.49). While academia produces good research, practice may question whether the research is usable and useful for their purposes (3.11). Practice desires ready-to-use innovations whereas academia strives to also identify innovative methods for developing innovations that can be replicated over time, requiring adequate resources and people along with patience, persistence and time (3.2). Despite these challenges, academia has produced innovative solutions that have informed and contributed to practice in several domains (3.1, 3.2). However, significant time lags between production and implementation of innovations are not uncommon and the impact of academia on practice may not be appreciated until several years later (3.2, 3.14, 3.49).

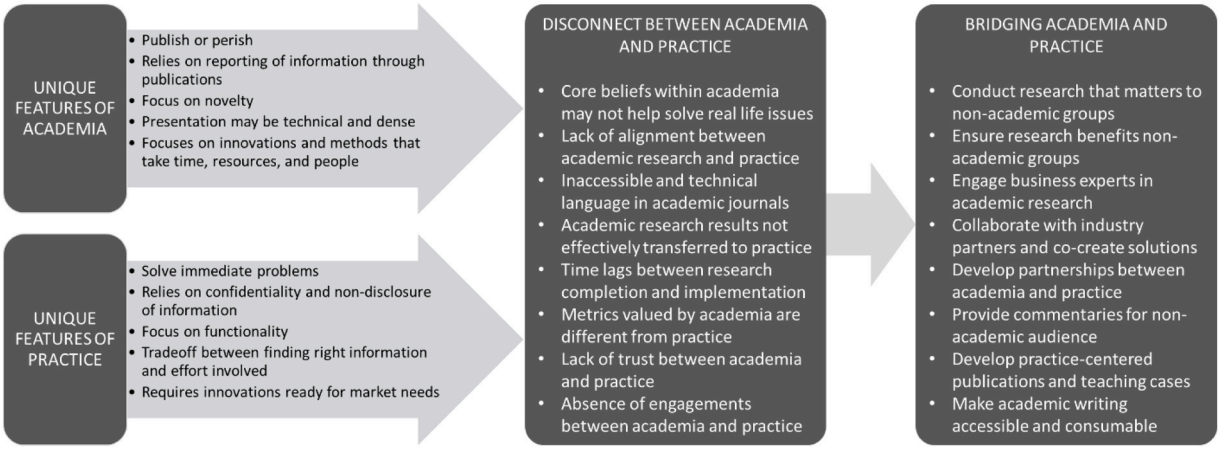

Fig. 5. Overview of themes underlying the contributions.

4.3. Bridging academia and practice

Several approaches could be considered when striving to bridge academia and practice to enhance the impact of academic research. Fundamental to such bridging initiatives would be an ongoing collaborative partnership between academics and practitioners (3.8, 3.17, 3.28, 3.29, 3.30, 3.35, 3.37, 3.43, 3.45, 3.49, 3.50, 3.51, 3.53). Collaborative partnerships facilitate conversations that help identify and engage different stakeholders who could benefit from academic research, pathways for research that benefit non-academic groups, and co-creation of knowledge and multidisciplinary solutions (3.14, 3.16, 3.18, 3.26, 3.29, 3.30, 3.43, 3.44). Academia can identify questions relevant for practice, engage practice experts in academic research, address applied problems for practice, integrate different viewpoints in research, and bring scientific rigor to practical problems (3.5, 3.17, 3.27, 3.29, 3.39, 3.52). Practitioners should be willing to engage with academia, educate academics on their needs and expectations, and help co-create research that can add practical value and have real industry impact (3.17, 3.21). Researchers could also strive to make academic writing accessible to practitioners, such as writing commentaries for non-academic audiences, and developing practice-centric publications and teaching cases (3.4, 3.9, 3.55). Academics could provide value through executive education and doctoral programs, participate in townhall meetings (to disseminate research findings to the public), and undertake funded projects and case studies for practitioners (3.4, 3.9, 3.26). Academic journals could offer industry segments oriented towards practice, require well-articulated practical implications of academic research, launch practitioner publications that translate academically rigorous content into easier formats, embed and engage with practitioners on editorial review boards, and clearly identify knowledge gaps addressed by research (3.3, 3.8, 3.23, 3.38, 3.44). These could pave the way for relevant academic research that could address unmet needs of different stakeholders, conduct research that matters to practice, and yield significant benefits to practice (3.21, 3.23, 3.24, 3.54).

4.4. Maximizing research impact

Given the foregoing descriptions of academia and practice, overcoming the challenges in manifesting the impact of academic research requires thoughtful and deliberate intervention and action. Fig. 6 shows the 4D (Design – Deliver – Disseminate - Demonstrate) model that can serve as a mechanism by which academic research impact can be managed.

The ***'Design'*** stage provides an opportunity for researchers to identify questions that may be relevant for practice and to embrace nontraditional paradigms (3.29, 3.52). Academia may strive to design research for impact (3.7, 3.14, 3.15, 3.19, 3.22, 3.33, 3.36, 3.38, 3.40, 3.48), which requires a definition of the non-academic impact of academic research since universal definitions of 'research impact' are non-existent (3.6, 3.15, 3.20, 3.25, 3.52). Research impact should extend and be suitable beyond academia and address contributions to individuals, organizations, communities, industries, economies, society, environment, and government policies (3.1, 3.13, 3.31, 3.38). Researchers should consider adopting participatory design approaches to ensure that stakeholders' needs are understood in their context. Useful ways to identify high-impact research may be to seek and obtain national or international grants from government institutions, policy think tanks, and community development organizations (3.41, 3.48). However, it is helpful to recognize varied ways in which impact may be felt - in the short-term or long-term, limited or broad in scope, direct or indirect, and may not lend well to quick assessments (3.13, 3.42, 3.44).

The ***'Deliver'*** stage focuses on how best to present and convey the findings of the completed research. Research articles should make their contributions clear and the research impact visible to readers (3.12, 3.15, 3.20, 3.22, 3.36, 3.48). Visibility of research impact can be achieved using clear titles and explaining what has changed as a result of the research effort in the abstract, introduction, discussion, and conclusion Sections 3.4, 3.7, 3.22 and 3.27. Research articles could describe practitioner-oriented aspects of the research, how the research findings may be applicable to different groups of non-academic stakeholders, and the societal impact of research (3.10, 3.14). An emphasis on the implications for practice section to demonstrate the impact of research findings beyond academia is crucial (3.15).

The ***'Disseminate'*** stage deals with ways in which the research findings are effectively publicized and shared beyond academia. Academia should be diligent and deliberate about sharing findings with the intended audience for the research (3.7, 3.15, 3.22, 3.27, 3.38, 3.40, 3.48). Since the audience may include practitioners, policy makers, third sector organizations, and international agencies (such as the United Nations), there needs to be significant consideration given to the clarity, readability, and accessibility of research articles and their findings (3.7, 3.31, 3.32). Researchers may resort to different approaches to increase dissemination such as allowing open access to research articles, bringing industry experts together to share innovative research findings, and participating in roundtable discussions and workshops organized by external stakeholders (3.9, 3.26. 3.36, 3.40). Other opportunities for dissemination include preparing infographics and blogs, developing videos and animations, creating webinars and podcasts, using social media platforms, and sharing findings on classical media channels such as newspapers, magazines, television, and radio (3.6, 3.12, 3.15, 3.21, 3.23, 3.26, 3.27, 3.32).

The ***'Demonstrate'*** stage aims to monitor the extent to which completed research impacts the external environment (3.27, 3.36, 3.44).

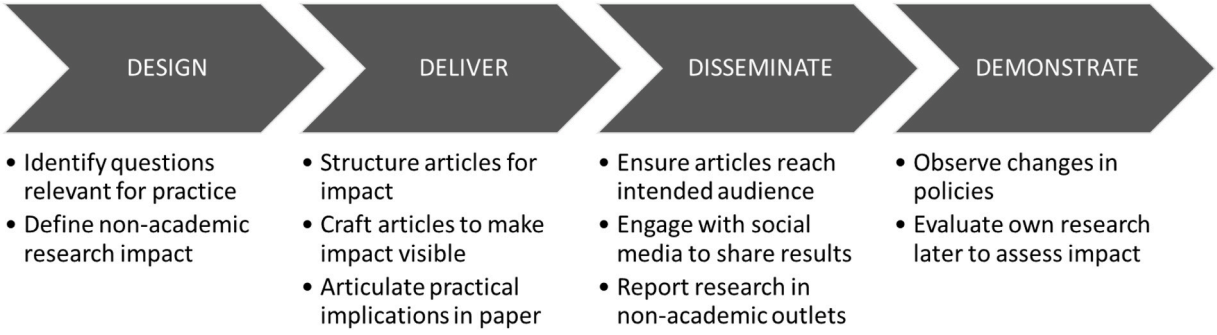

Fig. 6. The 4D Model for manifesting academic research impact.

Demonstrating that research findings have been useful to practice and contributed to social progress, organizational efficiency and effectiveness, product quality, and the health and wealth of people should be a significant and intentional part of academia (3.11, 3.22). Academia should accord greater importance and engage in intentional action to demonstrate research impact (3.7, 3.10, 3.11, 3.14, 3.20, 3.22, 3.23, 3.27, 3.33, 3.36, 3.44, 3.48, 3.54). Two aspects of impact may be considered: reach and significance. Reach represents how widespread the impact is and assessed using both quantitative and qualitative metrics. Quantitative data can range from metrics such as number of citations, Altmetrics and PlumX metrics, amount of research funding, number of patents, number of reports citing research work, number of mentions in popular press including television and radio, number of foreign collaborations, news media and social media coverage, online dialogue and inquiries generated, utilization rates of tools produced, number of policy reforms influenced, testimonials confirming research results, and successes in grant applications (3.11, 3.23, 3.32, 3.33, 3.36, 3.44). Qualitative data may use ratings to capture the extent to which the research problem was well-defined, self-evaluations assessing the scope and influence of research findings, and interviews or focus groups with policymakers, industry executives, and community leaders (3.19, 3.22, 3.33). Significance represents the importance of the impact. The extent to which academic work has shifted public or policy discourse, provided transformational knowledge, and influenced government policy are good indicators of significance (3.7, 3.11, 3.33). Academia should strive to obtain both quantitative and qualitative data from practice including organizations, industry groups, and external stakeholders to demonstrate research impact (3.14, 3.23, 3.36, 3.48). These could be challenging exercises since the mechanisms to demonstrate impact may not be well-defined, stakeholders may hold very different interpretations of impact, and the impact could be both positive and negative for stakeholders. Attention to both reach and significance would be helpful in demonstrating the extent to which practice values academic research and the extent to which the research findings are usable over time (3.11, 3.20).

The 4D model should be considered as a "co-productive" approach whenever possible. That is, both academics and practitioners may participate in activities underlying the 4D model. During the 'Design' stage, academics and practitioners could engage in defining the research along with the impact. This enables a clear identification of the eventual impact of the proposed research and an appropriate design of the research to achieve such an impact. During the 'Deliver' stage, academics could seek comment from practitioners on the research methodology, survey instruments, and data collection. This may help determine the extent to which the findings of the planned research could be appropriate, generalizable, and beneficial to practice and policy. During the 'Disseminate' stage, both academics and practitioners could participate in sharing the research findings for broad reach and accessibility. This involves tailoring the language of the research findings for different stakeholders to enhance readability and usability. During the 'Demonstrate' stage, academics and practitioners could jointly strive to highlight the impact of research in terms of both awareness and acceptance. This could include basic metrics such as citations but also evidence such as testimonials from practitioners, improvements in productivity or sustainability, and changes to policy.

4.5. Recommendations for stakeholders

The foregoing discussion uncovers several paths forward for enhancing the seemingly elusive impact of academic research, which can be used to generate recommendations for stakeholders in academia and practice.

Universities and research institutions may engage in efforts to convey academic research to external constituents through dedicated web sites, newsletters, and blogs that describe research projects and findings as well as their applicability to different spheres of practice. Researcher profiles and expertise descriptions along with related research articles may also be maintained for consumption by external constituents. The research units within universities, in addition to managing funded projects, should strive to close the loop by disseminating completed research works to constituents beyond the funding agencies. Press releases, media stories, and bulletins could be planned to highlight academic research and its usefulness to practice. Since academic research may not always be funded by external agencies, it may be important for academic leadership to invest time and effort to promote academic research to practitioners. These would be instrumental in bringing awareness of academic research and related findings to practice such that practitioners may seek academic expertise to address short- and long-term problems. Soliciting feedback from practitioners and research consumers on the extent to which they found academic research to be useful for their strategic and operational activities would further help establish research impact. Funding agencies that sponsored academic research may strive to establish the usefulness and effectiveness of academic research by publicizing funded research projects, research findings, and the ways in which academic research impacted the lives of individuals, activities of organizations, and well-being of society.

5. Conclusions

The synthesis of academic and practitioner insights underscores the distinct landscapes of academia and practice, each with its unique contributions and constraints. Academia's focus on theoretical advancement often results in research outputs that are not relevant or immediately applicable in practical settings, contributing to a persistent divide between research and its wider practical impact on industry, government, and wider society. The drive within academia to publish often overshadows the pressing need for research that directly addresses real-world problems, widening the gap between knowledge creation and application. Conversely, the practice-oriented need for immediate, relevant and applicable solutions, may overlook the fundamental and perhaps more strategic insights offered by rigorous academic research.

Bridging this divide necessitates a deliberate emphasis on collaborative partnerships, co-creation of knowledge, and multidisciplinary approaches that engage all stakeholders. The 4D model proposed in this study – ***Design - Deliver - Disseminate - Demonstrate***, provides a structured approach for academia to consciously align research endeavours with practice. Designing research with practical impact in mind, delivering clear and accessible findings, disseminating insights beyond academic circles, and demonstrating tangible benefits to practice, are crucial steps towards maximizing the societal and practical relevance of academic research.

To capitalize on this model, academics are recommended to pivot toward more inclusive and accessible communication, engage with practitioners in meaningful dialogue, and consider the societal implications of their work. Similarly, practitioners must recognize the value of research insights and actively participate in the research process. Collectively, these efforts can yield a more symbiotic relationship between academics and practitioners, ensuring that academic research not only advances knowledge but also contributes substantially to industrial and societal progress and the practical solutions needed in today's world.

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Declaration of Competing Interest

Nothing to declare.

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