Track 3 - Bringing responsibility to firm practices: how?

(Tatiana Aleksandrovna Iakovleva, UiS; Elin Merethe Oftedal, UiS; Arnt Fløysand, HVL; Luciana Maines, Unisinos University, Porto Alegre)

Wednesday 28th 13:30-15:30 – Session 1 – Chair: Tatiana Iakovleva

Thursday 29th   08:30-10:30 – Session 2 – Chair: Luciana Maines

Friday 30th   13:20-15:00 – Session 3 – Chair: Arnt Floysand

Session 1
Chair: Tatiana Aleksandrovna Iakovleva, University of Stavanger, Norway.

Abstracts

Mainstreaming responsible innovation in business: a comparative systematic review of business ethics and innovation management literature

Agata Gurzawska, Trilateral Research, Waterford, Ireland

With the arrival of more disruptive technologies, it is important and urgent to have systemic solutions to integrate responsibility into the companies' technological innovation. While various existing studies provide comprehensive state-of-the-art literature reviews on responsible innovation (RI), this study takes a unique approach and focuses on (1) the integration of RI in mainstream research on business responsibility and innovation, and (2) proposes a future research agenda. Specifically, this paper addresses the question of to what extent two major bodies of literature, namely business ethics (BE) and innovation management (IM) have integrated the concept of RI and how they perceive it, whether they are convergent or rather different from the policy-making and academic conceptions.

The analysis reveals three main themes across the BE and IM literature streams, namely (1) the benefits of RI; (2) the drivers of RI; and (3) the implementation of RI typically including internal aspects of the company (internal environment), such as organisational culture and employee engagement, leadership and knowledge management, and external aspects of the company (external environment) such as stakeholder engagement. The results show that RI in business is not entirely unknown, however, companies focus on the outcome of innovation, namely products, process and services, and their impact on society and the environment and how they contribute to addressing grand societal challenges. RI in business is about innovation that does not harm people and the planet, but at the same time, it moves a step forward ("doing good"), and contributes to sustainable development. RI is thus about companies redefining the purpose of the technologies they develop and ultimately the purpose of themselves doing business. It is evident that both streams of the

literature search for connecting RI to the company's strategy. Nevertheless, there is relatively limited discussion about systematically organising the process of innovation in a responsible, ethical and sustainable way. There is therefore a significant gap between how policymakers and scholars define RI, and how companies perceive it. The RI conception in business is still in a sensitive phase of theory building.

Finally, this study proposes an agenda for future research to better understand the theoretical and practical perspectives of RI in business including open research gaps and new paths that could be pursued by researchers in the future. Those gaps and future research involve questions related to two aspects (1) the conception of RI in business, and (2) the implementation of RI by businesses.

Are Innovation Ecosystems Supportive of Responsible Innovation?

Luciana Maines da Silva[1], Kadigia Faccin[2]

[1] Unisinos University, Porto Alegre, Brasil; [2] Fundação Dom Cabral, Brasil

The field of entrepreneurship, particularly through discourses about innovation ecosystems, often promotes the idea that innovation generates positive social and economic outcomes (Stahl, 2022). However, this view is challenged by authors like Jasanoff (2011) and Nathan (2015), who argue that the benefits and disadvantages of innovation are unequal. They emphasize that technological innovation can impact human rights, moral claims, economic status, and other significant aspects of individuals and groups affected. This perspective brings to light ethical issues arising from new technologies, which are currently a central point on political agendas, accompanied by detailed and thorough public debates (European Commission, 2021). Stahl's study (2022) criticizes the current discourse of innovation ecosystems for not paying enough attention to ethical issues, highlighting this gap in the literature and questioning how it can be overcome. Startups represent a contemporary and innovative way in which technological innovations are introduced to the market, challenging us to consider their economic benefits and the ethical and distributive implications of these innovations. In the wake of looking at startups, it is important to highlight that these companies are often inserted in innovation ecosystems, which "is the evolving set of actors, activities, and artifacts, and the institutions and relations, including complementary and substitute relations, that are important for the innovative performance of an actor or a population of actors (Granstrand & Holgersson, 2020). Many startups connect more directly with incubators, technology parks, or even smart cities, seen as urban innovation ecosystems (Camboin et al., 2019). Startups continuously receive mentorship and feedback about their products, especially when participating in acceleration programs or pitching their ideas to investors and potential customers. Regular evaluation and guidance are crucial for startups to refine their offerings, align with market needs, and understand the broader impact of their products or services. Involvement in these programs provides startups with opportunities to gain insights from experienced entrepreneurs, investors, and industry experts. Such interactions enhance their business strategies and bring to the forefront considerations about their innovations' ethical, social, and environmental implications. Furthermore, this constant cycle of feedback and mentorship within innovation ecosystems prompts a critical examination of these ecosystems. It raises an

important question about the nature and effectiveness of support systems in fostering responsible innovation. Specifically, it leads to the pertinent research question: "Are Innovation Ecosystems Supportive of Responsible Innovation?" This inquiry delves into whether these ecosystems encourage innovation and business growth and ensure that these innovations are developed and implemented ethically, socially responsible, and environmentally sustainable. Addressing this gap, this study explores how startups incubated in Technology Park incubators foster innovation, centering on four dimensions: anticipation, reflection, responsiveness, and inclusion. Currently in the data collection phase, the study anticipates completion by February/24, encompassing a sample of approximately 300 Brazilian startups. Employing a structured questionnaire blending quantitative and qualitative inquiries, the data analysis hinges on the qualitative comparative analysis (QCA) methodology. This method allows for a fusion of qualitative and quantitative techniques to distill data and construct novel theoretical frameworks (Schneider & Wagemann, 2010)

References

Camboim, G. F., Zawislak, P. A., & Pufal, N. A. (2019). Driving elements to make cities smarter: Evidences from European projects. Technological Forecasting and Social Change, 142, pp. 154-167.

European Commission. White Paper on Artificial Intelligence: a European approach to excellence and trust https://commission.europa.eu/document/d2ec4039-c5be-423a-81ef-b9e44e79825b_en

Granstrand, O., & Holgersson, M. (2020). Innovation ecosystems: A conceptual review and a new definition. Technovation, 90, 102098.

Jasanoff, S. Constitutional Moments in Governing Science and Technology. Science and Engineering Ethics, 17 (4) (2011), pp. 621-638, 10.1007/s11948-011-9302-2.

Nathan, G. (2015). Innovation process and ethics in technology: an approach to ethical (responsible) innovation governance. Journal on Chain and Network Science 2015 15:2, pp. 119-134

Schneider, C. Q., & Wagemann, C. (2010). Standards of good practice in qualitative comparative analysis (QCA) and fuzzy-sets. Comparative sociology, 9(3), pp. 397-418.

Stahl, B. C. (2022). Responsible innovation ecosystems: Ethical implications of the application of the ecosystem concept to artificial intelligence. International Journal of Information Management, 62, 102441.

Stilgoe, J.; Owen, R.; Macnaghten, P. Developing a framework for responsible innovation. Res. Policy 2013, 42, pp. 1568–1580.

Innovation Communities: creating bottom-up spaces for responsible innovation - the case of intelligent biomanufacturing

Alexandra Müller[1], Robaey Z[1], Asin Garcia E[1], Martins dos Santos V[1]
[1] Wageningen University, The Nederlands

In the Industry 4.0 era, research and business sectors are presenting increasingly bold solutions to address our global crises. This era of technological and scientific advancement,

while promising, brings a unique set of challenges with it. 1,2 As we delve deeper into the intricacies of specialized fields, the risk of losing sight of the overarching goal – creating a sustainable world – increases. 3 The emerging field of intelligent biomanufacturing serves as a prime example of this complexity, necessitating a multifaceted understanding of the synergy between informational, technical, and biological systems. For novel processes like these to have impact, an integration of sectors such as ecology, agriculture, end-of-life product and waste management become crucial to create circular production processes. Additionally, considering insights from ethics, consumer advocacy, regulation and the media are relevant for creating accepted and sustainable technologies. 4 This leads us to a pivotal question: How can we create a space that embraces a diversity of sometimes conflicting viewpoints, to ultimately optimize decision-making processes and cultivate a sense of collective responsibility?

The answer may not be straightforward, but it is clear that no single entity can shoulder this responsibility alone.5 It is in this context that the creation of specialized communities of practice (CoPs) for innovations emerges as a silver lining. CoPs are a network of people with diverse competencies who share a common interest and regularly meet to discuss concerns of the shared interest. The basic idea behind CoPs is an age-old one, but these communities are being increasingly recognized as a tool for effective collaboration, being a foundation of varied practitioners and a channel for successful knowledge transfer. 6–8 Establishing CoPs could deliver answers to questions as on how to ensure that all stakeholders remain engaged, informed, and educated about cutting-edge developments? Or how to accelerate solving problems that demand an increasingly interdisciplinary approach to be truly safe and sustainable? And how can we guarantee more flexible, and yet resilient, approaches to produce our daily goods, new therapeutics or to mitigate pollution?

Recognizing the potential of transferring the concept of CoPs to an innovation landscape, our focus shifts towards creating a comprehensive framework to facilitate their formation. Offering an environment for people from the quadruple helix concept9 , potentially fostering open science, an honest sharing of concerns and room to find solutions for challenges we urgently need to address. To create this ecosystem of experts for collaborative problem-solving and innovative thinking, we will create innovation communities (ICs) by: (a) defining the clear scope and aims (of the novel biomanufacturing process), identifying specific challenges and uncertainties; (b) identifying and engaging relevant internal and external stakeholders, building (interdisciplinary) partnerships and collaborations; (c) develop a governance structure to ensure efficient management of the community; (d) create communication platforms for regular meetings and workshops for an easy collaborative environment; (e) create a knowledge-sharing culture, which includes open dialogues on concerns regarding intellectual property sharing and data management; (f) creating feedback loops, that access and evaluate the progress and impact of the ICs; and (g) developing a long-term vision for the sustainability of the community.10–12

The authors are part of four large EU and national biomanufacturing projects, where the methodology for ICs is introduced and revised through an iteration of workshops. These will set the stage for a profound exploration on how innovation communities can nurture responsible innovation. At the end, we aim to culminate our lessons-learned in a guideline for cutting-edge solutions. These will be designed universally for widespread utilization. The objective is to offer a clear, accessible pathway for the establishment of innovation

communities, ensuring that knowledge is not just generated but shared, discussed, and applied effectively.

References

1. Pozzi R, Rossi T, Secchi R. Industry 4.0 technologies: critical success factors for implementation and improvements in manufacturing companies. Prod Plan Control. 2023;34(2):139-158. doi:10.1080/09537287.2021.1891481

2. Rana B, Rathore SS. Industry 4.0 – Applications, challenges and opportunities in industries and academia: A review. Mater Today Proc. 2023;79:389-394. doi:10.1016/j.matpr.2022.12.162

3. Pimentel E, Cho CH, Bothello J. The blind spots of interdisciplinarity in addressing grand challenges. Crit Perspect Account. 2023;93:102475. doi:10.1016/j.cpa.2022.102475

4. Miehe R, Buckreus L, Kiemel S, Sauer A, Bauernhansl T. A Conceptual Framework for Biointelligent Production—Calling for Systemic Life Cycle Thinking in Cellular Units. Clean Technol. 2021;3(4):844-857. doi:10.3390/cleantechnol3040049

5. Gurzawska A, Mäkinen M, Brey P. Implementation of Responsible Research and Innovation (RRI) Practices in Industry: Providing the Right Incentives. Sustainability. 2017;9(10):1759. doi:10.3390/su9101759

6. Liu Z, James S, Walpole G, White GRT. A communities of practice approach to promoting regional circular economy innovation: evidence from East Wales. Eur Plan Stud. 2023;31(5):988- 1006. doi:10.1080/09654313.2022.2132785

7. Snyder WM, Wenger E. Our World as a Learning System: A Communities-of-Practice Approach. In: Blackmore C, ed. Social Learning Systems and Communities of Practice. Springer; 2010:107- 124. doi:10.1007/978-1-84996-133-2_7

8. Wenger E. Communities of practice: a brief introduction. Communities Pract.

9. Afonso O, Monteiro S, Thompson M. A growth model for the quadruple helix. J Bus Econ Manag. 2012;13(5):849-865. doi:10.3846/16111699.2011.626438

10. Watermining. EU Horizon 2020 Research and Innovation project. Implementation. watermining. Deliverable 2.1 Community of Practice Roadmap and Facilitation Guidelines (M6). Accessed January 31, 2024. https://watermining.eu/implementation/#WP2-Co-creationthrough-socialengagement-for-societal-embedding

11. Amos GJ, Awuah GB. In search of competitiveness through innovation-driven CSR initiatives in Multinational Enterprise subsidiaries in developing- countries. Published online 2017.

12. Yaghmaei E, Van De Poel I. Assessment of Responsible Innovation: Methods and Practices. 1st ed. Routledge; 2020. doi:10.4324/9780429298998

From Vision to Action: Empowering Innovation Managers and Technology Developers in Responsible Care Technology Innovation

Hilde Vandenhoudt[1], Vigneron L[2], Adriaenssen I[1], Moerenhout T[3]

[1] Thomas More University of Applied Sciences, Turnhout, Belgium; [2] University of Liège, Belgium; [3] University of Otago, Dunedin, New Zealand.

In 2018, the King Baudouin Foundation, a Belgian philanthropic organization, initiated a project call focused on care technology to enhance the quality of home care. The large response of 58 proposals also revealed significant deficiencies. Recognizing the need for a guiding framework to foster human-centered technology aimed at enhancing the quality of life, the Foundation embarked on a participatory strategic foresight process, resulting in the development of eight actionable caring technology principles (8 CTPs), as outlined in a forthcoming paper (under review in JRI).

Subsequently, a learning community was established to raise awareness regarding the 8 CTPs and to facilitate the sharing of experiences related to their adoption and integration into the innovation cycle of health technology enterprises and care organizations. This community, comprised of citizens, patients, healthcare professionals, technology developers, and academics, convenes regularly.

Tools that foster responsible and sustainable health technology innovation are being cocreated and undergoing testing. Inspirational use cases are shared and documented. A common language of the 8 CTPs has been developed through stakeholder consultation, and an inclusive version of the 8 CTPs is currently being tested with both Dutch-speaking and French-speaking participants. The added value of embracing and implementing the 8 CTPs is being investigated across all stakeholder groups.

This presentation will focus on the practical application of the 8 CTPs, which closely align with principles for responsible innovation, within the health technology industry. A tailored tool designed specifically for innovation managers and technology developers is now being introduced. Experiences concerning its utilization, challenges encountered, and opportunities will be shared at the conference. The tool starts with a self-assessment exercise, evaluating adherence to each principle against predefined objectives. Markers delineating various levels for each objective have been established. A spiderweb visualizes the current state alongside the desired state. Additionally, for each objective, indicators facilitating change and practical tools to attain the desired outcome are linked, including methods for user engagement. Living labs, involved in the co-creation and testing phases, bridge the gap between end-user involvement and technology development, aiding health technology developers in determining when to engage diverse stakeholders, including endusers, throughout the process.

These tools should be regarded as instruments fostering dialogue on inclusive design processes rather than checklists in the narrow sense of a tick-the-box exercise. They aid in identifying blind spots during the development, implementation, and evaluation of caring technology.

The next phase of the learning community involves engaging investors and funding organizations, aiming to incorporate the 8 CTPs as assessment criteria for co-funding initiatives.

By integrating these principles into health technology innovation, it is possible to build a more just, trustworthy, and autonomous care technology ecosystem that prioritizes the wellbeing and rights of citizens and benefits society.

Reference

Raeymaekers, P., LyRaGen, & Mathy, J. (2020). Une Technologie Saine Pour des Soins à Dimension Humaine. Teckno 2030 – Le rôle de la technologie dans l'amélioration de la qualité de vie liée à la santé des citoyens dans leur vie quotidienne. https://kbsfrb.be/fr/une-technologie-saine-pour-des-soins-dimension-humaine-teckno-2030-lerole-de-la-technologie-dan