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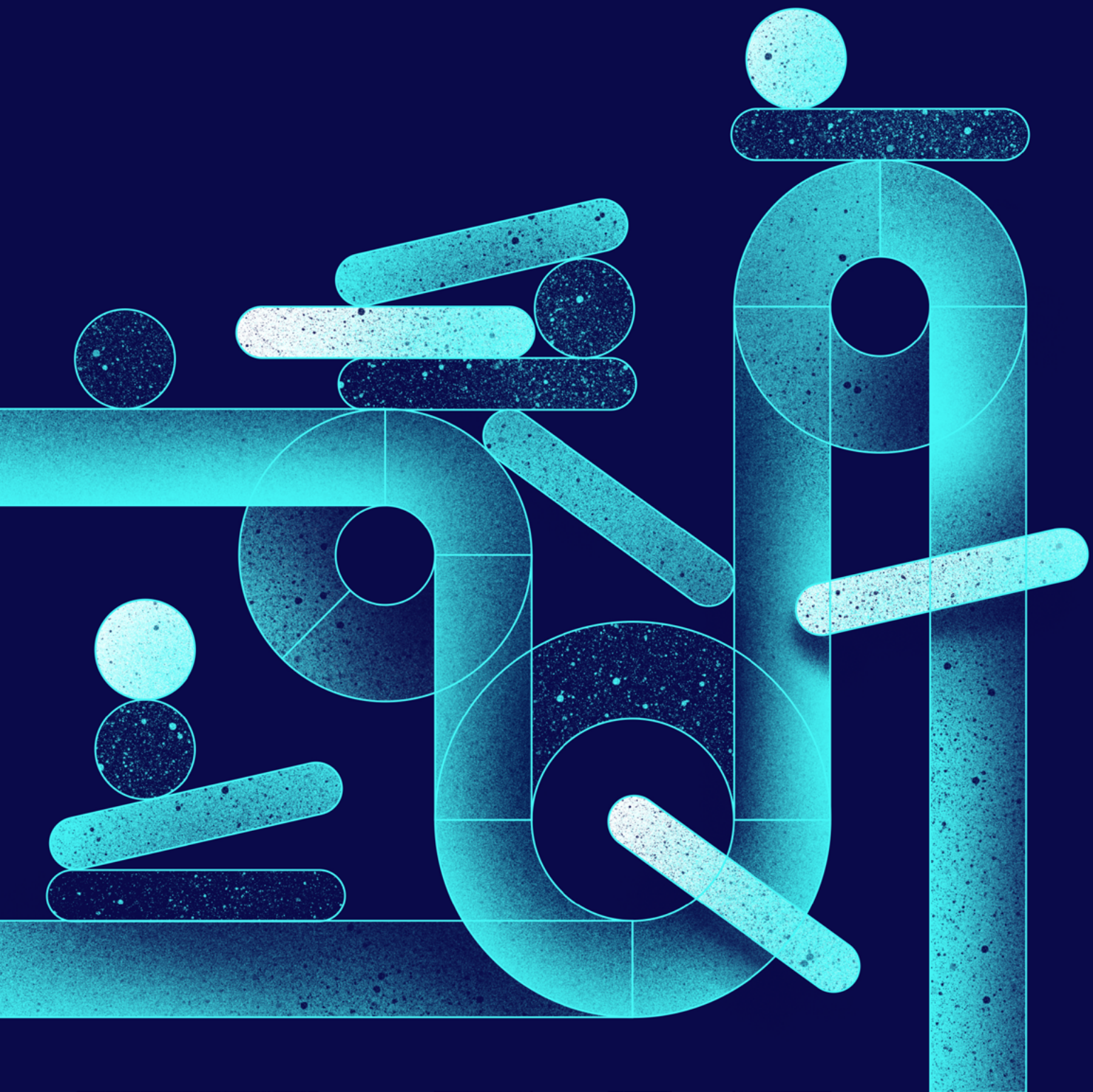

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Social Innovation and Its Expanding Impact by Universities: Introduction to the Thematic Issue

In recent years, social innovation has emerged as a transformative paradigm, capturing the attention not only of scholars but also of practitioners, just as policymakers. As societies face increasingly complex and multidimensional challenges ranging from longstanding social and economic inequalities to emerging issues in environmental sustainability and digital transformation, the demand for innovative, systemic solutions is more critical than ever. Social innovation, distinct from technological or commercial innovation, is characterised by its focus on generating social value and fostering systemic change through new ideas, relationships, and institutional arrangements.

Universities occupy a unique and increasingly central position within this landscape. Traditionally viewed as knowledge producers and educators, universities are now recognised as pivotal civic actors and catalysts for social innovation. Their evolving missions encompass not only teaching and research but also a 'third mission', fostering societal engagement, regional development, and collaboration with a diverse array of stakeholders from non-academic communities. Hence, universities can also serve as laboratories for experimentation and as role models for broader societal transitions, especially when exploring the intersection of social innovation with other transformative agendas, such as the circular economy, sustainability, or digitalisation, led by the challenging role of artificial intelligence in knowledge acquisition.

The initial idea of this thematic issue of *Management* was to present fundamental professional views on social innovations and to demonstrate their impacts through selected concrete case studies. To our great and certainly positive surprise, the response from authors was exceptionally large and, above all, high in quality. All of the contributions received confirmed and reinforced the strength and close connection between the fundamental drivers of knowledge transfer at universities and research institutes, which, in the case of social innovation, are joined by groups from non-academic circles, too. As a result, the original idea of one thematic issue was expanded into two consecutive thematic issues, whose common thread is related to the presentation of the roles of key players in social innovation on the part of universities (the aforementioned thematic issue) and on the part of research institutes and other non-academic groups (the next thematic issue). At this point, a deep gratitude goes to the editorial management for this valuable opportunity.

This thematic issue foregrounds the multifaceted roles universities can play in advancing social innovation and its future impacts. Through bibliometric analysis, qualitative synthesis, and in-depth case study analysis, the contributions in this issue map the evolution of scholarly attention to social innovation, identify conceptual trends, and highlight practical pathways for institutional integration. Following by the introductory literature review contribution, further case studies from the University of Trieste (Italy) and the University of Primorska (Slovenia) illustrate how educational offerings, research initiatives, community engagement, and governance practices aligned to promote both social innovation and circular economy principles can all be triggered and driven by higher education institutions. Furthermore, the issue addresses the pedagogical dimension of social innovation, emphasising the importance of experiential learning, collaboration with real-world partners, and the cultivation of agency and identity among students. Innovative course designs that integrate reflection, action, and community-building are shown to produce lasting social impact, equipping graduates to become changemakers beyond the classroom.

All of the stated roles that universities can undertake in relation to social innovation have been transforming them into key nodes within innovation ecosystems, bridging the gap between knowledge transfer to knowledge creation and societal transformation. The findings underscore that universities can make a change in relation to social innovation either on various levels: be it on the micro level (like through new courses,

training and mentoring programmes), at the meso level (through their research and lab opportunities for the epistemic communities), or at the macro level, as a partner in wider social innovation ecosystem activities, driven by knowledge co-creation.

But, although universities can be a vital catalyst for change in all the stated missions, their systemic impact is often constrained by structural inertia, disciplinary silos, and misaligned incentive systems. A recurring theme across the papers is the need for universities to move beyond ad hoc projects and embed social innovation as a core institutional strategy. This requires harmonising internal policies, fostering interdisciplinary collaboration, and developing robust metrics to evaluate the social impact that the universities' work on social innovation is bringing not only for themselves, but especially for wider societies.

In sum, this thematic issue offers a comprehensive exploration of social innovation's theoretical foundations, institutional challenges, and practical implications from the universities' perspectives. It calls for a strategic reorientation of universities to embrace their roles as agents of societal transformation. By fostering inclusive, interdisciplinary, and impact-driven approaches, universities can help shape sustainable and equitable futures for their communities and beyond. They need to become a partner not only for their students, own employees, and other higher education institutions, not only for other related organizations, especially research institutions, but also for practitioners, for policymakers, and above all for society.

With the wish that you find the contributions in this thematic issue on the universities' role in social innovation useful, we also invite you not to forget about the coming new part, being focused on the research institutes' and non-governmental organisations' impacts of social innovation.

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Social Innovation at Universities: Mapping Roles, Research Content Directions, Challenges and Implications

Social innovation has emerged as a transformative paradigm as well as a potential solution for addressing complex societal challenges, be it from the issues of inequality, better living conditions, to climate change, and digitalisation. However, despite the growing academic as well as also political attention, its theoretical framing and institutional embedding remain fragmented. Universities, through their roles as knowledge producers, educators, and civic actors, hold one of the central and unique positions in shaping social innovation ecosystems. This article explores how universities can contribute to social innovation, what institutional and systemic barriers limit their engagement, and how they can strategically integrate social innovation within their missions. Combining bibliometric analysis and qualitative synthesis, this paper maps the evolution of research on this topic, identifies key conceptual trends, and outlines pathways for future orientations. The findings reveal that while universities act as important catalysts for societal transformation, their systemic impact remains constrained by structural and also political inertia. The paper concludes with recommendations on how to strengthen social innovation capacities of the universities roles and missions for social innovation.

Keywords: social innovation, universities, knowledge transfer, bibliometric analysis

Družbene inovacije na univerzah: kartiranje vlog, raziskovalnih vsebinskih smeri, izzivov in implikacij

Družbene inovacije so se uveljavile kot preobrazbena paradigma in potencialna rešitev za obravnavo kompleksnih družbenih izzivov, od neenakosti in izboljševanja življenjskih pogojev do podnebnih sprememb in digitalizacije. Kljub naraščajoči akademski in tudi politični pozornosti pa njihovo teoretsko uokvirjanje in institucionalna vpetost ostajata razdrobljena. Univerze kot proizvajalke znanja zasedajo eno izmed osrednjih in edinstvenih vlog pri oblikovanju ekosistemov družbenih inovacij. Prispevek raziskuje, kako lahko univerze prispevajo k družbenim inovacijam, katere institucionalne in sistemske ovire omejujejo njihovo delovanje ter kako lahko strateško vključijo družbene inovacije v svoje poslanstvo. Z združevanjem bibliometrične analize in kvalitativne sinteze prispevek kartira razvoj raziskav na tem področju, opredeli ključne konceptualne trende in začrta poti za prihodnje usmeritve. Ugotovitve razkrivajo, da univerze sicer delujejo kot pomembni katalizatorji družbene preobrazbe, vendar njihov sistemski vpliv zaradi strukturne in politične inercije ostaja omejen. Prispevek se zaključuje s priporočili za krepitev zmogljivosti univerz na področju družbenih inovacij.

Ključne besede: družbene inovacije, univerze, prenos znanja, bibliometrična analiza

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Introduction

The concept of social innovation has gained increasing relevance in recent years as societies grapple with multi-dimensional challenges ranging from global warming and migration to social exclusion and digital divides. Unlike technological or commercial innovation, social innovation seeks to generate social value and systemic change by addressing unmet needs and fostering new relationships between actors (Moulaert et al. 2013). Within this paradigm, universities are increasingly recognised as strategic agents that can link knowledge production with societal transformation (Benneworth and Cunha 2015).

The traditional missions of universities, being primarily focused on teaching and research activities, have in the case of social innovation expanded also towards a so called 'third mission', according to which, the universities' role related to social engagement, regional development, and collaboration with a wide range of different non-academic stakeholders becomes central (Etzkowitz and Leydesdorff 2000). This widening of the universities' position outside their own doors has transformed them into key nodes of innovation ecosystems. As one of the many stakeholders of the stated ecosystem that needs to collaborate for a final success (e.g. innovative solutions), universities are the ones connecting all of the involved through the transfer and further on co-creation of knowledge. However, while universities' role in technological innovation is well established, their contribution to social innovation remains conceptually underdeveloped and empirically fragmented (Cajaiba-Santana 2014; Howaldt et al. 2016).

This article builds on recent research in innovation studies, organizational theory, and higher education policy to conceptualize how universities foster, implement, and sustain social innovation, as can be read on the stated topics in top academic papers over the 2006 to 2025 period. The main argument of the paper is that to fully realize their societal potential, universities must integrate social innovation as a core institutional strategy, not merely as a peripheral or project-based activity. Doing so, the paper contributes to ongoing debates by synthesizing the current literature and offering a further discussion grounded in empirical bibliometric data.

Theoretical Background

Social innovation is 'a fast-growing phenomenon' (Oeij et al. 2019, 243). During the last decade, the term 'social innovation' has attracted significant attention by policymakers and academics (Van der Have and Rubalcaba 2016). The interest in social innovation has been reinforced by the need for novel solutions to wide range of pressing social problems including climate change, economic inequalities, obesity crisis, advance of populism etc. (Tjörnbo and McGowan 2022). The rapid growth of the field of social innovation is thus fostered by various trends such as significant declines in public spending, the engagement of organizations and citizens in innovation, narrow economic views on development, criticism of dominant business models, and the needs of developing economies (Van der Have and Rubalcaba 2016).

Speaking about social innovation, we can define the phenomenon as the process of developing new ideas, institutions, or relationships that meet social needs more effectively than existing alternatives (Pol and Ville 2009). Its theoretical roots span multiple disciplines, including sociology, economics, and political science. The literature distinguishes between two main perspectives: (1) social innovation as a corrective mechanism addressing market and policy failures, and (2) social innovation as a transformative process that reshapes power structures and social relations (Cajaiba-Santana 2014). Nevertheless, social innovation is seen as a driver of interdisciplinary and transdisciplinary research (Moulaert et al. 2013).

In the context of higher education, social innovation mostly intersects with the concept of the entrepreneurial and civic university. The 'entrepreneurial university' emphasizes economic engagement and knowledge commercialization (Clark 1998), while the 'civic university' focuses on social responsibility, inclusivity, and community well-being (Goddard et al. 2016). Both perspectives highlight the importance of universities as mediators between public, private, and civil sectors, aligning with the quadruple-helix model of innovation (Carayannis and Campbell 2010).

Although policy makers recognize that universities may play an important role in social innovation development generating new knowledge or developing skills in the domain of of social innovation (European Commission, Directorate-General for Research and Innovation. 2018), there is a dilemma about university involvement in social innovation by the universities themselves, facing their own challenges in aligning universities' core teaching and research missions and the promotion of social innovation. In this

Table 1 A Typology of How Universities Might be Able to Contribute to Social Innovation

Support provided	Role name	Contribution	Actor
Knowledge	Knowledge provider	The university provides existing knowledge or creates new knowledge which informs the development of a solution	Academics, research centres
	Knowledge bridge	The university works with a social partner to co-create new knowledge which contributes to a social innovation	Academics, students, science shop, service learning
Material resources	Financier	The university invests in activities which contribute to testing or upscaling SI activities and delivering innovative services	University trading company
	Landlord	The university makes its facilities available during the SI process, including offices, libraries, and laboratories	University estates department
'Know how' and 'know-who'	Advisor	The university provides advice to social innovators on how best to access external knowledge resources/who might be able to help them	Transfer office, business development officers
	Mentor	The university helps to persuade third parties of the value of the SI and them to adopt or invest their own resources in the social innovation	Senior managers, university corporation, university boards

Note Modified after Benneworth and Cunha (2015, 518).

regard Benneworth and Cunham (2015) identify three kinds of university support to social innovation process: 1) providing knowledge, 2) providing material resources, and 3) providing 'know how' and 'know-who', stressing that it is necessary to align social innovation and the university strategy to optimize a university contribution to social innovation (see also table 1).

Hence, despite all the starting conceptual advances, the integration of social innovation within university systems faces multiple challenges, including disciplinary silos, rigid evaluation frameworks, and insufficient incentives for academics to engage in socially oriented projects.

Therefore, understanding how universities can operationalize social innovation through their work requires a very special attention. In this article we are addressing it through a meta synthesis of quantitative mapping of the existing research trends in the field of universities' roles and related academic publication topics on related issues.

Methodology

To provide a comprehensive view of how universities engage with social innovation, this study employs a bibliometric analysis, further on followed by qualitative analysis of the quantitative findings. The integration of these approaches ensures systematic coverage of existing scholarship, with the aim to build further interpretive framework for understanding the analysed topics of social innovation and universities.

A systematic search was conducted in the Web of Science Core Collection using the Boolean query in April 2025. The keywords: '*universit**' and '*social innovation*' needed to be present in the title, abstract, or keywords of the articles. English was chosen as the search language. Only articles published in peer-reviewed journals, books and book chapters were selected, as these contained the most reliable knowledge. This yielded 256 publications spanning the years 2006–2025 (until April 2025). Bibliometric analysis was conducted using VOSviewer and the Bibliometrix R package to identify trends in publication frequency, co-citation, and co-authorship networks.

The qualitative phase involved thematic coding of the 50 most-cited papers, guided by Gioia et al.'s (2013) method for developing grounded theoretical categories. The analytical framework in this paper emphasized two fundamental dimensions: (1) mapping of the analysed publications' attention on the stated topics, (2) mapping

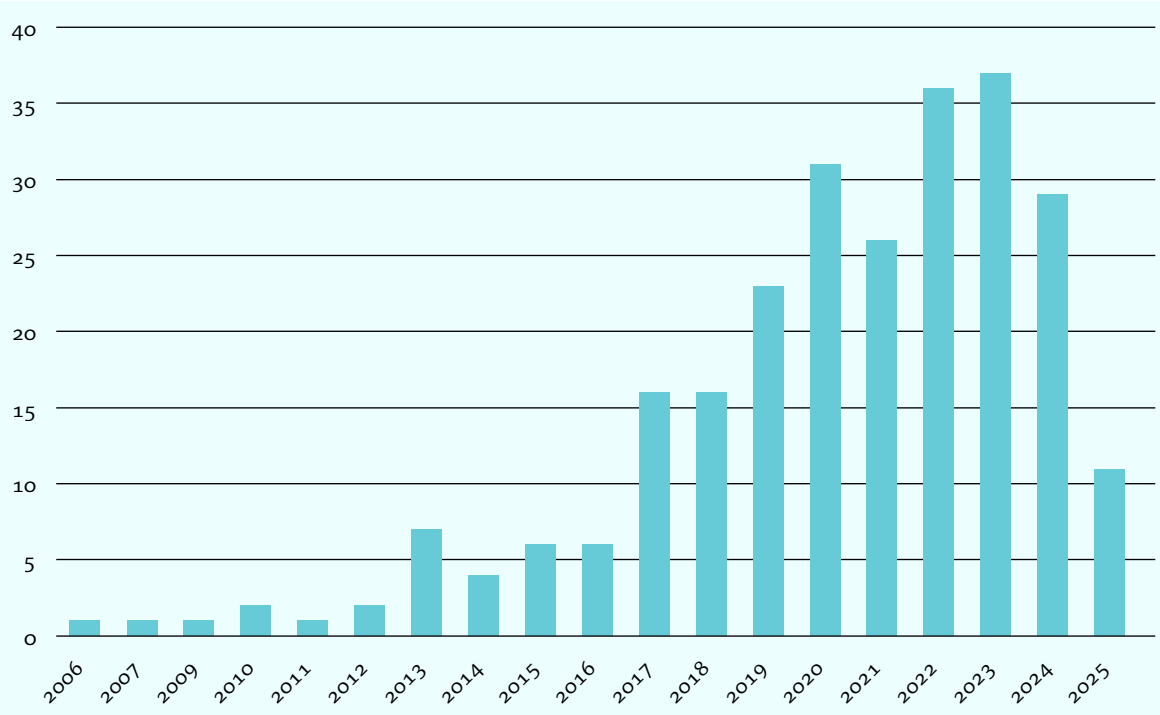

Figure 2 Number of Publications, Including Social innovation and universities, by year

the dominant discourse as exposed in the analysed publications.

To ensure methodological rigor, triangulation between bibliometric and qualitative findings was applied. Reliability was strengthened through peer review of coding categories and consistency checks. Given the secondary nature of the data, no ethical approval was required, but all sources were properly cited.

Results

Mapping Scholarly Attention on Social Innovation and Universities

A systematic search, performed using the Web of Science Core Collection (WOS) database, shows a clear upward trajectory in scholarly attention to universities and social innovation, particularly after 2015. This aligns with broader international policy initiatives, especially the European Commission's first official document addressing social innovation in 2013, following by the United Nations Sustainable Development Goals (SDGs) big policy document, adopted in 2015, and further the European Commission's Horizon Europe framework being adopted in 2021, all directly referring to the role of social innovation and related work of universities and research. As can be seen from the figure 2, the number of papers from the years 2006–2025 has mostly been increasing, except for the Covid-19 year 2021, and the last fully observed period in 2024.

The sequence of the authors who have the highest number of citations is as follows: Morawska-Jancelewicz, Joanna (225 citations), Spengler, John D. (193 citations), Purcell, Wendy Maria (193 citations), Henriksen, Heather (193 citations), and Carayannis, Elias G. (165 citations), with the most prominent journals in terms of number of publications being: Sustainability (with 24 articles), Social Enterprise Journal (with 14 articles), Technological forecasting and social change (with 14 articles), International Journal of Sustainability in Higher Education (with 6 articles), and Higher Education Skills and Work-Based Learning (also with 6 articles). Regarding the rest of the journals, only 16 journals have published 2 articles, while 143 journals have published 1 article.

Geographically, the research is concentrated in Europe and North America, with emerging contributions from Latin America and Asia. Among the top 15 countries ranked by the number of publications USA secured the top position with 40 published documents, followed by Spain with 30 documents, United Kingdom with 28 documents, Canada with 25 documents, Italy with 18 documents, and Germany with 13 documents. European countries dominate the ranking in terms of total number of documents and citations.

Table 3 Top Institutions Ranked by the Number of Publications

Rank	Institutions	Documents	Citations	Total Link Strength
1	University of Northampton (UK)	8	123	106
2	Tecnológico de Monterrey (Mexico)	5	47	26
3	University of Waterloo (Canada)	5	34	31
4	Mount Royal University (Canada)	4	37	59
5	Politecnico di Torino (Italy)	4	72	1
6	Tongji University (China)	4	34	3
7	University of Minho (Portugal)	4	152	120

As can be seen from the table 3, the most prolific institutions include the University of Northampton (UK), Tecnológico de Monterrey (Mexico), and the University of Waterloo (Canada). These universities serve as regional anchors of social innovation, integrating teaching, research, and community partnerships. Regarding the rest of the institutions, 17 universities have published 3 articles, 44 universities have published 2, while 317 universities have published 1 article on the analyzed topics.

Mapping the Dominant Academic Discourse on Social Innovation and Universities

Speaking from the content perspective, the keyword analysis of the most citations identified five thematic clusters: (1) sustainability and higher education institutions; (2) social entrepreneurship; (3) third mission and community engagement; (4) innovation ecosystems; and (5) co-creation and service learning.

The 18 references with the highest total link strength which can be considered the main theoretical pillars of the field, are presented in table 4 and figure 1.

In table 4 and figure 1 the red cluster focuses on social innovation, which links sustainability, higher education institutions, sustainable development goals, open innovation, co-creation, design education, and covid-19 (1). The green cluster connects the keywords innovation, entrepreneurship, education, universities (2). The

Table 4 The 18 Most Connected References

Rank	Reference	Citations	Total Link Strength
1	Benneworth and Cunha (2015)	43	383
2	Bayuo et al. (2020)	30	268
3	Cajaiba-Santana (2014)	26	245
4	Van der Have and Rubalcaba (2016)	18	221
5	Pol and Ville (2009)	27	220
6	Murray et al. (2010)	27	215
7	Mulgan et al. (2007)	24	178
8	Edwards-Schachter and Wallace (2017)	14	170
9	Avelino et al. (2019)	19	170
10	Mulgan (2006)	21	165
11	Bellandi et al. (2021)	12	152
12	Cinar and Benneworth (2021)	11	142
13	McKelvey and Zaring (2018)	13	140
14	Etzkowitz and Leydesdorff (2000)	17	135
15	Moulaert et al. (2005)	14	131
16	Neumeier (2012)	10	119
17	Westley and Antadze (2010)	9	116
18	Phills et al. (2008)	11	109

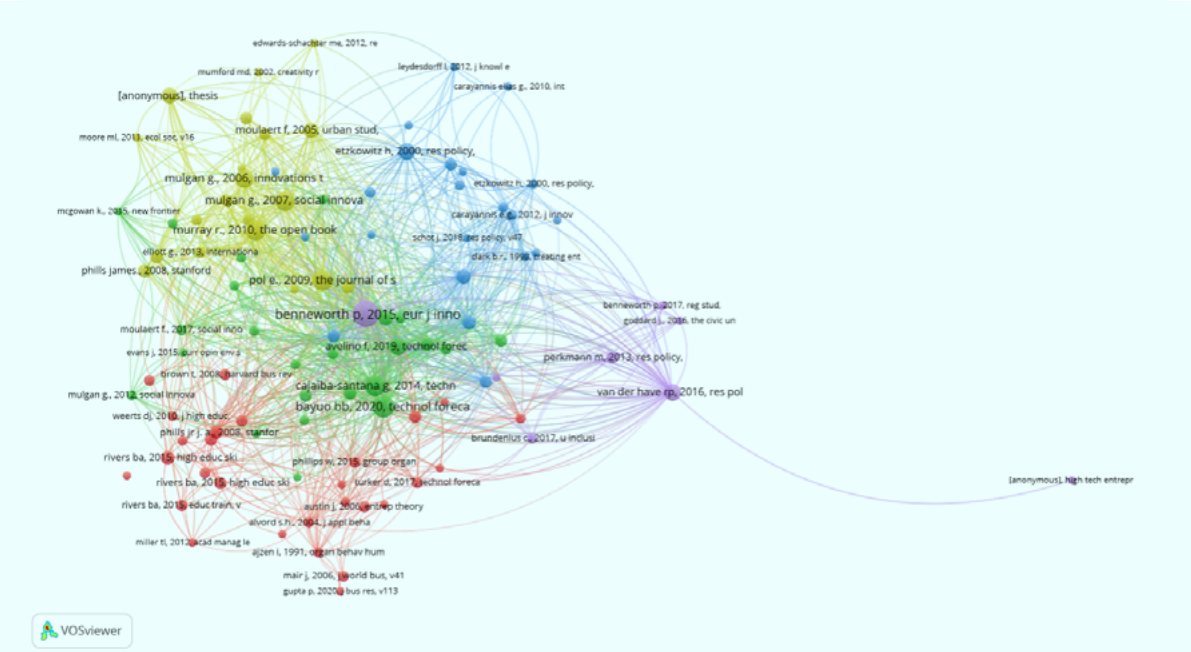

Figure 1 Network Visualization of Co-Cited References

blue cluster shows a strong connection between the keywords third mission, university, sustainable development, entrepreneurial university (3). The yellow cluster links social entrepreneurship, community engagement, and knowledge transfer (4). And the lilac cluster connects higher education, service learning, and collaboration (5).

Confirming the identified the scattered picture revealed by our analysis, also a systematic literature review on the role of universities in the emergence development, and impact social innovation by Bayuo et al. (2020) concludes that different motivations drive university engagement in social innovation in teaching, research, and third mission. The research interest in drivers of social innovation was focused mainly on the third mission of the university through corporate social responsibilities and extension services. The research on drivers of social innovation in the other two missions of the university is more fragmented. The research findings highlight the internal pressures from students and lecturers on the teaching and learning systems to become more responsive to social needs as well as external pressures from stakeholders on universities to engage in social innovation through research (Monteiro et al., 2021).

Discussion

Conceptually, the field of social innovation and universities remains scattered, fragmented and still not completely consolidated, revealing also a gap between rhetorical commitments and institutional implementation, as well as politically fostered rhetoric, and policy agenda for more structured policies and impact metrics, as revealed through the evidence of a tight intersection between the first political documents on the topics and synchronous growth of academic publications around 2015.

The findings highlight universities' multifaceted contributions to social innovation across three primary roles: (1) knowledge generation through research and education; (2) capacity building via partnerships and training; and (3) systemic mediation by connecting diverse stakeholders and a wide range of different topics, related to social innovation and universities. Moreover, linking social innovation with digital transformation and sustainability agendas amplifies universities' impact on local, regional, national and even international innovation ecosystems, confirming the existence and need of the triple- and quadruple-helix frameworks, linking academia with government, industry, and civil society (Etzkowitz and Leydesdorff 2000; Carayannis and Campbell 2010). So, both from academic and also policy perspective, fostering social innovation requires multi-level coordination between universities, governmental authorities, as well as of course business actors, and in the cases of social innovation non-governmental representatives. When co-creating special innovation policy strategies, a move beyond ad hoc project funding and estab-

lish frameworks that recognize social impact as a legitimate dimension of academic performance thus need to exist to align universities' societal role in a wider system environment, like the national innovation strategies, as well as European priorities such as the European Green Deal and the Digital Education Action Plan are.

Conclusions and Implications

This study reinforces the growing importance of universities as agents of social innovation and societal transformation. It contributes to theory by clarifying the conceptual overlap between the entrepreneurial, civic, and socially engaged university models, and to policy by offering a set of possible evidence-based recommendations for the universities' future functional as well as also institutional orientation.

Key recommendations include: (1) promoting and fostering social innovation education within curricula; (2) fostering intersectoral and interdisciplinary collaboration and research, especially through living labs and knowledge hubs expanding from knowledge gaining and transfer to common knowledge co-creation mission; (3) continuing with the global approach of promoting social innovation roles and impacts of universities; and (4) establishing harmonized metrics system that reward social impact of universities work for social innovation. These steps would help reposition universities as pivotal drivers of sustainable and inclusive innovation ecosystems.

For the future, research should adopt longitudinal and comparative perspectives, exploring how national policy contexts and governance structures shape universities' social innovation trajectories. The ongoing challenge is to bridge the gap between conceptual enthusiasm and practical implementation, ensuring that social innovation becomes an integral component of the university's identity and societal mission. Finally, also the mission and role of universities in contemporary times of big changes, fostered especially by digitalisation and artificial intelligence call for an adaptation to future modes of operation of universities as central places of knowledge acquisition.

Acknowledgements.

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References

Avelino, F., J. M, Wittmayer, B. Pel, et al. 2019. 'Transformative Social Innovation and (Dis)Empowerment.' *Technological Forecasting and Social Change* 145:195–206.

Bayuo, B. B., C. Chaminade, and B. Göransson. 2020. 'Unpacking the Role of Universities in the Emergence, Development and Impact Of Social Innovations – A Systematic Review of the Literature.' *Technological Forecasting and Social Change* 155:120030.

Bellandi, M., L. Donati, and A. Cataneo. 2021. 'Social Innovation Governance and the Role of Universities: Cases of Quadruple Helix Partnerships in Italy.' *Technological Forecasting and Social Change.* 164:120518.

Benneworth, P., and J. Cunha. 2015. 'Universities' Contributions to Social Innovation: Reflections in Theory and Practice.' *European Journal of Innovation Management* 18 (4): 508–527.

Cajaiba-Santana, G. 2014. 'Social Innovation: Moving the Field Forward.' *Technological Forecasting and Social Change* 82:42–51.

Carayannis, E., and D. Campbell. 2010. 'Triple Helix, Quadruple Helix and the Knowledge Economy.' *International Journal of Technology Management* 46 (3–4): 202–231.

Cinar, R., and P. Benneworth. 2021. 'Why Do Universities Have Little Systemic Impact with Social Innovation? An Institutional Logics Perspective.' *Growth and Change* 52 (2): 751–769.

Clark, B. 1998. *Creating Entrepreneurial Universities: Organizational Pathways of Transformation.* Issues in Higher Education 12. Pergamon Press.

Edwards-Schachter, M., and M. L. Wallace. 2017. ''Shaken, but not Stirred': Sixty Years of Defining Social Innovation.' *Technological Forecasting and Social Change* 119:64–79.

Etzkowitz, H., and L. Leydesdorff. 2000. 'The Dynamics of Innovation: From National Systems to Triple Helix.' *Research Policy* 29 (2): 109–123.

European Commission. 2013. *Guide to Social Innovation*. Publications Office of the European Union.

European Commission, Directorate-General for Research and Innovation. 2018. *A European Ecosystem for Social Innovation.* Edited by L. Georghiou. Publications Office of the European Union

Gioia, D., K. Corley, and A. Hamilton. 2013. 'Seeking Qualitative Rigor in Inductive Research.' *Organizational Research Methods* 16 (1): 15–31.

Goddard, J., E. Hazelkorn, and L. Kempton. 2016. *The Civic University: The Policy and Leadership Challenges.* Edward Elgar.

Howaldt, J., D. Domanski, and C. Kaletka. 2016. 'Social Innovation: Towards a New Innovation Pa-

radigm.' *RAM. Revista de Administração Mackenzie* 17 (6): 20–44.

McKelvey, M., and O. Zaring. 2018. 'Co-Delivery of Social Innovations: Exploring the University's Role in Academic Engagement with Society.' *Industry and Innovation* 25 (6): 594–611.

Monteiro, S., R. Isusi-Fagoaga, L. Almeida, and A. García-Aracil. 2021. 'Contribution of Higher Education Institutions to Social Innovation: Practices in Two Southern European Universities.' *Sustainability* 13 (7): 3594.

Moulaert, F., D. MacCallum, and J. Hillier, eds. 2013. *The International Handbook on Social Innovation*. Edward Elgar.

Mulgan, G. 2006. 'The Process of Social Innovation.' *Innovations* 1 (2): 145–162.

Mulgan, G., S. Tucker, R. Ali, and B. Sanders. 2007. *Social Innovation: What It Is, Why It Matters, How It Can Be Accelerated*. Young Foundation.

Murray, R., J. Caulier-Grice, and G. Mulgan. 2010. *The Open Book of Social Innovation*. Young Foundation and Nesta.

Moulaert, F., F. Martinelli, E. Swyngedouw, and S. Gonzalez. 2005. 'Towards Alternative Model (s) of Local Innovation.' *Urban Studies* 42 (11): 1969–1990.

Neumeier, S. 2012. 'Why Do Social Innovations in Rural Development Matter and Should They Be Considered More Seriously in Rural Development Research? – Proposal for a Stronger Focus on Social Innovations in Rural Development Research.' *Sociologia Ruralis* 52 (1): 48–69.

Oeij, P. R., W. Van der Torre, F. Vaas, and S. Dhondt. 2019. 'Understanding Social Innovation as an Innovation Process: Applying the Innovation Journey Model.' *Journal of Business Research* 101:243–254.

Phills, J. A., K. Deiglmeier, and D. T. Miller. 2008. 'Rediscovering Social Innovation.' *Stanford Social Innovation Review* 6 (4): 34–43.

Pol, E., and S. Ville. 2009. 'Social Innovation: Buzz Word or Enduring Term?' *Journal of Socio-Economics* 38 (6): 878–885.

Tjörnbo, O., and K. McGowan. 2022. 'A Complex--Systems Perspective on the Role of Universities in Social Innovation.' *Technological Forecasting and Social Change* 174:121247.

UN General Assembly. 2015. *Transforming Our World: The 2030 Agenda for Sustainable Development*. A/RES/70/1. United Nations.

Van der Have, R. P., and L. Rubalcaba. 2016. 'Social Innovation Research: An Emerging Area.' *Research Policy* 45 (9): 1923–1933.

Westley, F., and N. Antadze. 2010. 'Making a DIfference: Strategies for Scaling Social Innovation for Greater Impact.' *Innovation Journal* 15 (2): 2.

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Universities as Drivers of Social Innovation and Circular Economy: Insights from the University of Trieste

Universities are main actors capable of fostering social innovation (SI) and advancing circular economy (CE) practices through education, research, community engagement, and internal governance practices. This article examines the University of Trieste (UNITS) as a case study to explore how universities can promote synergies between SI and CE. By analysing in-depth secondary and primary data, our study maps the activities implemented by the University to spread the two paradigms by specifically organizing them in four fields: teaching and student engagement; research and knowledge transfer; third mission and societal outreach; and sustainability practices. Through this mapping activity, this study identifies five benchmark activities that are considered highly impactful in spreading both SI and CE paradigms: the PhD Program in Circular Economy, the RUS Food Working Group, the ARETS water project, the adaptive reuse of the Ex-Ospedale Militare, and the Innovators Community Lab. Our results provide food for thought for policy makers and practitioners, showing some activities that might be replicable among higher education institutions worldwide.

Keywords: university, social innovation, circular economy, sustainability, higher education

Univerze kot gonilniki družbenih inovacij in krožnega gospodarstva: vpogledi z Univerze v Trstu

Univerze so ključni akterji, sposobni spodbujati družbene inovacije (angl. *social inovations* – SI) in pospeševati prakse krožnega gospodarstva (angl. *circular economy* – CE) preko izobraževanja, raziskovanja, sodelovanja s skupnostjo in notranjih upravljavskih praks. Prispevek obravnava Univerzo v Trstu (UNITS) kot študijo primera z namenom preučitve, kako lahko univerze spodbujajo sinergije med SI in CE. Z analizo poglobljenih sekundarnih in primarnih podatkov naša raziskava kartira dejavnosti, ki jih univerza izvaja za širjenje obeh paradigem, pri čemer jih posebej razvršča v štiri področja: poučevanje in vključevanje študentov; raziskave in prenos znanja; tretje poslanstvo in družbeni doseg; trajnostne prakse. Na podlagi tega kartiranja raziskava opredeli pet referenčnih dejavnosti z velikim vplivom na širjenje paradigem SI in CE: doktorski program krožnega gospodarstva, delovno skupino RUS Food, projekt ARETS Water, prilagodljivo ponovno rabo nekdanje vojaške bolnišnice (Ex-Ospedale Militare) in laboratorij Innovators Community Lab. Rezultati ponujajo pomembna izhodišča za oblikovalce politik in praktike ter izpostavljajo dejavnosti, ki bi jih bilo mogoče prenesti na visokošolske institucije po svetu.

Ključne besede: univerza, družbene inovacije, krožno gospodarstvo, trajnost, visoko šolstvo

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Introduction

Universities are increasingly recognised as pivotal actors in addressing societal challenges and shaping pathways toward sustainable and inclusive development. Beyond their traditional missions of teaching and research, universities contribute to the transformation of communities and societies by promoting social justice, reducing inequalities, and fostering inclusivity (Brundenius et al. 2016). Given their embedment in local and international communities, higher education institutions (HEIs) can act as precursors of change, also proposing solutions and good practices for organisations seeking to respond to global, environmental, and societal challenges. In this sense, universities can foster Social Innovation (SI), intended as the development and implementation of actions, services, or models that address social needs and reshape power relations (Benneworth and Cunha 2015). Past research has shown that universities can exercise this transformative role, suggesting actions impacting not only students, employees, and researchers, but also extending beyond organisational borders towards local, national, and international communities.

In the contemporary context, the European Union has stimulated the search and development of more sustainable ways and models to produce and consume in response to climate change pressures, waste management needs, and biodiversity loss. Intending to reduce the tonnes of waste produced every year, the European Union has spread the concept of circular economy (CE), a model based on resource efficiency, regeneration, and closed-loop systems. The CE paradigm requires organisational and cultural shifts to ensure long-term transitions, which is an aspect where universities can actively contribute through e.g., educational offerings and organisational practices.

While both SI and CE are gaining traction in the literature, the intersection between these two paradigms remains under-investigated. Extant studies have examined universities' contributions to social innovation (e.g., Bayuo et al. 2020; Menter 2024) and their involvement in sustainability transitions (e.g., Arocena and Sutz 2021), but few works have explicitly investigated how HEIs operationalize synergies between SI and CE. This constitutes a significant gap, given that universities not only educate future generations but also act as laboratories of experimentation where innovative practices can be tested, evaluated, and scaled up. Considering the University of Trieste as a case study, we explored its educational offerings, research projects, community engagement initiatives, and governance practices. By mapping sustainability initiatives implemented at the University of Trieste (UNITS), we identified and analysed five social innovations that also spread the CE paradigm.

Social Innovation in the University Context

Universities have long been recognised as key institutions for societal development, contributing not only to economic growth and technological progress but also to social transformation. Through their educational programs, research activities, and societal engagement, universities position themselves as central actors in promoting inclusive development (Brundenius et al. 2016). The concept of social innovation (SI) in the university context has increasingly become prominent, emphasizing its ability to develop and implement new ideas, services, and organisational models that meet social needs while challenging entrenched power relations (Benneworth and Cunha 2015). Besides the pure training and educational courses, universities are HEIs that offer curricula and extracurricular initiatives that can contribute to shaping new generations of socially engaged citizens (Bayuo et al. 2020). In terms of research and knowledge transfer, universities can favour activities that reduce power imbalances among categories in various contexts, whose results could be spread and disseminated in local and international contexts, both academic and open to citizens. Third mission activities typically engage a variety of stakeholders, also external ones, involving collaborations with public, private, and non-profit sectors. These collaborations often serve as experimental arenas for new models of participation, collective problem-solving, and capacity building, which could favour co-creation mechanisms of social value. In addition, universities are large organisations, which can introduce internal policies and governance mechanisms embracing social responsibility, able to influence their workforce and the community engaged with their activities daily. Menter (2024) encourages universities to increase their entrepreneurial approach towards social innovation missions, balancing their traditional focus on economic competitiveness with broader societal goals.

From Social Innovation to Circular Economy in Higher Education

As suggested by the Doughnut Economy perspective (Raworth 2018), aligning social and environ-

mental approaches is urgently needed to create economic models that can respect both the social foundations and the ecological ceiling, being sustainable in the long term. Thus, integrating SI and CE approaches could represent a good solution to favour systemic thinking to tackle complexities and address both social and ecological dimensions of sustainability (Arocena and Sutz 2021).

SI emphasizes equity, inclusivity, and favouring the reconfiguration or rebalancing of social relations, while the CE stresses environmental responsibility, regeneration, systemic efficiency, and minimum waste (Geisendorf and Pietrulla 2018). Universities are knowledge hubs that are better equipped to favour interdisciplinary research tackling sustainability societal challenges, which might require cutting across traditional academic boundaries and embracing perspectives and theories from diverse fields such as engineering, business, law, and social science. Universities can generate research that advances circular solutions in areas such as renewable energy, sustainable materials, systemic innovation for cities and regions. Also, universities can favour circular and sustainable transitions through internal practices, educational and dissemination activities (Mazzi and Battiston 2022). In higher education contexts, this integration could translate into opportunities to align their activities with the Sustainable Development Goals (SDGs). For instance, educational initiatives that combine SI and CE prepare students to think critically about how technological, organisational, and cultural changes intersect in sustainable transitions. Research that integrates SI-CE perspectives can foster more inclusive and impactful innovations, while university-community partnerships can test and implement practices that are both socially empowering and environmentally restorative. Although synergic efforts might lead to positive and high-impact returns, the research on this intersection is still limited, especially in the higher education context.

Methodology

We chose the case study design because it allows for an in-depth exploration of complex phenomena, which is particularly suitable for examining institutional practices that span across education, research, societal engagement, and governance (Eisenhardt 1989). We developed a mapping process to explore whether and how the University of Trieste (UNITS) has operationalized the integration of SI and CE in its activities. Through this screening process, we identified a selection of activities meeting both SI-CE approaches. Then, we adopted the qualitative approach to analyse in-depth an activity considered to have SI-CE related impacts (Eisenhardt 1989).

Following Bayuo et al. (2020), we identified four main fields of activities: (1) teaching and student engagement, (2) research projects, knowledge production and transfer, (3) third mission and societal outreach, and (4) sustainability practices and governance mechanisms. This framework guided the coding and categorization of initiatives' intersecting both SI and CE. Despite this, we acknowledge that lines among the categories are blurred.

We gathered data from multiple sources to ensure a comprehensive analysis and to enable data triangulation. As a key source, we used the integrated sustainability report of UNITS, which provides detailed information on the university's sustainability policies, projects, activities, and outcomes. To screen the educational offerings, we adopted a structured keyword-based screening of the course catalogue. We adopted two thematic keyword lists: the ones related to SI (e.g., *innovazione, inclusione, governance, co-design, engagement*) and the ones related CE (e.g., *economia circolare, sostenibilità, ambiente, lifecycle*). In addition, we also used keywords reflecting cross-cutting dimensions (*transition, resilience, adaptation, gender, eco-social change*) for control check. For each identified course, we extracted the course title, department/program code, type, impact (SI, CE, or SI+CE), and the keywords used for classification. As far as research projects are concerned, we contacted the central research office, which screened the comprehensive list of ongoing and completed projects by using keywords such as the ones indicated above. In addition, we also used the university's websites and project-specific portals to gather additional information on knowledge transfer, outreach initiatives, and partnerships with external stakeholders. As a result of this mapping activity, we identified five benchmark activities. To complement existing data, we also collected a semi-structured interview with a university employee working in the Innovators Community Lab to deepen its structure, objectives, activities, and impacts.

Results

UNITS contributes to SI-CE integration through diverse initiatives, including specialised courses and programs, interdisciplinary research pro-

jects, community engagement activities, and internal sustainability practices.

UNITS has embedded SI and CE principles within its educational offerings. Many CE-related courses refer to Architecture, Economics, and Engineering, while courses on management of innovation and sustainable agri-food systems in the Department of Economics, Business, Mathematics, and Statistics address both SI and CE. Gender and inclusivity topics are treated and discussed across several undergraduate and graduate programs in diverse fields such as law, literature, economics, and medicine. Examples include courses on gender violence, work–life balance, gender equality, and gender medicine, also addressing structural inequalities and promoting inclusivity. Besides, our analysis identified ten courses explicitly combining SI and CE paradigms, often linked to the United Nations Sustainable Development Goals (SDGs), in particular SDG 9 (Industry, Innovation, and Infrastructure), SDG 11 (Sustainable Cities and Communities), and SDG 12 (Responsible Consumption and Production). The interdisciplinary program *European Policies for Digital, Ecological and Social Transitions represents a relevant example*, as it encompasses courses on management of innovation, co-design of digital innovations for sustainability and inclusion, big data and open data for sustainability and social inclusion, stakeholder engagement for inclusive and sustainable communities, EU policies for sustainability and social cohesion, and law for sustainable technologies and innovation. Another notable example is *Sostenibilità e cambiamento sociale*, a course offered within the program *Scienze per l'ambiente marino e costiero*. There are also extracurricular learning opportunities fostering SI-CE competencies, such as open badge courses open to the entire student community and laboratories on topics related to e.g., ethics and science, entrepreneurship, workplace safety, and gender awareness. Summer schools, such as *Giacomo Ciamician's* interdisciplinary energy summer school and the *Blue Skills* summer school, promote knowledge exchange on sustainability transitions, renewable energy, and socio-economic innovation in coastal and marine sectors.

UNITS is strongly oriented to research activities with projects related to SI (e.g., Shaping Inclusive Tourist Experiences – SITE) or CE (e.g., sustainable paths to the holistic use of hemp – SPARE). Two research projects lie at the cross-border between SI and CE. WASTEREDUCE develops integrated waste reduction strategies in protected and natural areas in line with CE approaches, but also fosters social cooperation among institutions, communities, and stakeholders for this purpose. KRAS–CARSO II promotes sustainable development of the Carso area through cross-border collaboration, integrating tourism, cultural heritage, and sustainable mobility. Moreover, the university hosts interdisciplinary centres such as *Centro Interdipartimentale Migrazioni e Cooperazione Internazionale allo Sviluppo Sostenibile (CIMCS)*, the *Giacomo Ciamician Centre*, and the *Centro Interdipartimentale di Ricerca Studi di Genere (CIRSG)*, which support projects and dissemination activities in the fields of migration, sustainable development, circular solutions, and gender studies. In addition, the PhD Program in Circular Economy stands out as an interdisciplinary doctoral program training researchers in circular systems, sustainability, and innovation. This program promotes systemic thinking and public value creation by fostering a strong orientation toward addressing grand societal challenges through both SI and CE perspectives. In addition, UNITS has structured a variety of knowledge transfer activities, including patenting, licensing, and the creation of spin-offs and start-ups, which extend the research impacts beyond academia. These initiatives often support SI by addressing societal challenges such as health or environmental ones, e.g., by promoting sustainability-related technologies.

Through third mission activities, UNITS promotes value creation among its employees but also favours cooperation with external actors and local communities. For instance, the PROBENE-COMUNE project is strongly linked to SI, as it addresses the psychological and physical well-being of students and university staff. The university participates in the RUS Food Working Group, which integrates SI and CE by promoting sustainable food consumption and waste reduction, raising awareness about food justice and global inequalities.

UNITS invests in solar energy, energy-efficient buildings, waste separation systems, and the dematerialization of administrative processes, which align with CE principles of resource efficiency and long-term sustainability. In particular, the University invested in a consistent renovation project to restore the historical building Ex Ospedale Militare, a historic military hospital that was repurposed to host student dormitories, innovation labs, and open and collaborative spaces. The project embodies principles of adap-

Table 1. Benchmark Activities, Their Targets, and Impacts

Activity	Type	Target	SI-CE impact
PhD Program in Circular Economy	Education and research	PhD students, researchers, policy institutions, innovation-driven businesses	CE: stimulates systemic thinking and research on resource cycles, reuse, product life extension, and sustainable economic models (SDG8, SDG9, SDG11, SDG12). SI: promotes systemic thinking, public value creation, and long-term social innovation in sustainability governance (SDG13).
RUS Food Working Group	Community engagement, sustainable food systems	University staff, students, campus service providers, sustainability coordinators	CE: promotes waste reduction, sustainable procurement, and resource efficiency in food systems (SDG2, SDG3, SDG12, SDG13, SDG17). SI: promotes health and food equity principles (SDG2, SDG3, SDG12, SDG13, SDG17).
ARETS water project	Sustainability practices and governance	Students, academic and administrative staff, campus visitors	CE: reduces single-use plastic, promotes circular use of resources (tap water, reusable bottles), and fosters waste separation (SDG6, SDG12, SDG13). SI: encourages responsible behaviour within the academic community and across generations of students (SDG4, SDG6, SDG12, SDG13).
Renovation of Ex-Ospedale Militare	Corporate governance and practices	Students and PhD students	CE: applies circular principles through the adaptive reuse of existing building, reducing material and energy use (SDG11, SDG12, SDG13). SI: promotes social inclusion by providing accessible, affordable student housing — especially for economically or socially disadvantaged groups (SDG1, SDG4, SDG10, SDG11).
Innovators Community Lab	Higher education entrepreneurship and transfer	Students, venture capitalist, investors, PhD students	CE: stimulates innovative entrepreneurship, offers mentorship and prototyping labs that focus on minimizing environmental impact, by embedding CE principles within innovation practices (SDG9, SDG12). SI: gives power to students by favouring accessibility to funding, networking opportunities, collaborative practices and favouring entrepreneurship and venturing (SDG4, SDG8, SDG9, SDG10).

tive reuse and sustainable renovation, preserving architectural heritage, minimising environmental impacts, and expanding affordable accommodation for students. This building now also hosts the Innovators Community Lab (ICL), formerly known as the Contamination Lab, which serves as a co-creation space where students, researchers, and external stakeholders collaborate to address real-world challenges. The lab organises hackathons, mentoring programs, and training in entrepreneurship and business model design for students. It fosters inclusivity and collaboration while promoting innovation and entrepreneurship among students, also favouring networking with venture capitalists, companies, and institutions.

UNITS has also adopted several internal policies and practices integrating SI and CE principles into institutional governance. UNITS has implemented policies to foster inclusivity and prevent discrimination, such as the Code of Conduct for the Prevention of Harassment and the Single Guarantee Committee for Equal Opportunities (CUG), and the 'Trust Counselor'. These measures show the university's commitment to social justice, equity, and dignity at work, reducing power imbalances and promoting a safe, inclusive environment. As an outstanding activity at the SI-CE nexus, the ARETS water project aimed at reducing plastic waste and encouraging responsible water consumption through the installation of water dispensers in the university campuses and the distribution of reusable bottles. This high-impact project promotes resource efficiency while engaging the broad academic community in environmentally responsible behaviour, whose

influence can spread across generations of students, promoting long-lasting positive attitudes towards conscious water consumption also after their graduation.

As benchmark activities, we identified the PhD Program in Circular Economy, the RUS Food Working Group, the AReTS water project, the adaptive reuse of the Ex-Ospedale Militare, and the Innovators Community Lab, which exemplify the highest SI-CE impact activities in terms of variety and vastness of targets reached. Table 1 describes the types, targets, and impacts of each activity.

Our analysis has shown that UNITS has implemented activities that were initially conceived to foster only SI or CE, which then had broader and extended impacts towards the other paradigm. Although SI and CE were initially conceived as separate domains, we found they can intersect in meaningful ways, in line with studies emphasising the social dimension of CE (Mies and Gold 2021). For instance, the PhD Program in Circular Economy integrates scientific training and fosters research skills with a broader mission of creating public value by favouring circular business models and economic systems, while the RUS Food Working Group simultaneously addresses environmental sustainability and food justice. Similarly, the ICL, located in the renovated historical building Ex Ospedale Militare repurposed to student activities, demonstrates how entrepreneurial education can combine inclusivity, collaboration, and sustainability, while empowering and offering opportunities to students with innovative ideas, increasing accessibility to education, and creating networking opportunities. Our analysis suggests that the SI-CE distance can be reduced, emphasizing the role of universities as actors capable of bringing multidimensional contributions to sustainability transitions. This might be the result of the demanded convergence between societal and ecological needs when conceiving solutions to the grand challenges (Raworth 2018). Still, projects combining both paradigms are rare, showing that even though universities are well-positioned to link SI and CE, systematic integration requires purposeful strategies and interdisciplinary collaboration.

Conclusions and Limitations

From a theoretical standpoint, this study emphasises the role of universities in promoting and fostering SI-CE paradigms, also embracing mission-oriented innovation that balances economic, social, and ecological outcomes (Menter 2024). However, the coexistence of SI and CE initiatives within universities does not automatically guarantee integration, which instead requires a sense of purpose and a clear strategic orientation.

As practical and policy implications, we describe replicable initiatives and models for other universities and public institutions willing to contribute to the green and digital transitions. Initiatives such as the European Green Deal and the European Education Area emphasize the role of higher education in driving ecological sustainability, social inclusion, and innovation. By integrating SI and CE perspectives, universities can pursue their strategic objectives while strengthening their societal impact. From this view, regional and European policymakers might leverage universities as strategic partners and role models in the green and digital transitions.

This study has limitations related to the keyword-based approach used to select projects and courses, which may not be free from omissions, and the sustainability report used as a key source, which may reflect institutional priorities and self-reporting biases.

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References

Arocena, R., and J. Sutz. 2021. 'Universities and Social Innovation for Global Sustainable Development as Seen from the South.' *Technological Forecasting and Social Change* 162:120399.

Bayuo, B. B., C. Chaminade, and B. Göransson. 2020. 'Unpacking the Role of Universities in the Emergence, Development and Impact of Social Innovations – A Systematic Review of the Literature.' *Technological Forecasting and Social Change* 155:120030.

Benneworth, P., and J. Cunha. 2015. 'Universities' Contributions to Social Innovation: Reflections in Theory and Practice.' *European Journal of Innovation Management* 18 (4): 508–527.

Brundenius, C., B. Göransson, and J. M. C. de Mello, eds. 2016. *Universities, Inclusive Development and Social Innovation: An International Perspective*. Springer.

Eisenhardt, K. M. 1989. 'Building Theories from Case Study Research.' *Academy of Management Review* 14 (4): 532–550.

Geisendorf, S., and F. Pietrulla. 2018. 'The Circular Economy and Circular Economic Concepts – A Literature Analysis and Redefinition.' *Thunderbird International Business Review* 60 (5): 771–782.

Mazzi, A., and E. Battiston. 2022. 'Esperienze di Collaborazione tra Università e Imprese a Supporto dell'Economia Circolare nel Territorio Padovano.' *Regional Studies and Local Development* 3 (3): 187–210.

Menter, M. 2024. 'From Technological to Social Innovation: Toward a Mission-Reorientation of Entrepreneurial Universities.' *The Journal of Technology Transfer* 49 (1): 104–118.

Mies, A., and S. Gold. 2021. 'Mapping the Social Dimension of the Circular Economy.' *Journal of Cleaner Production* 321:128960.

Raworth, K. 2018. *Doughnut Economics: Seven Ways to Think Like a 21st Century Economist*. Chelsea Green.

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From Cinema to Knowledge Hub: Circular Economy and Social Innovation at the University of Primorska Library

This paper presents a transformative initiative undertaken by the University of Primorska to centralise and modernise its library services. Through the implementation of a user-centric approach, the initiative reimagines the library as an inclusive, 24/7 accessible space that meets legal, operational, and social innovation standards. The revitalisation of a historic cinema complex into a dynamic library hub exemplifies circular economy principles (reusing and repurposing instead of building something new), while the initiative's transdisciplinary methodology ensures scalability and replicability. A detailed SWOT analysis and impact analysis highlight the strengths, challenges, impact and long-term vision of the initiative, positioning it as a model for inclusive academic infrastructure.

Keywords: circular economy, social innovation, University of Primorska, University Library

Od kina do središča znanja: krožno gospodarstvo in družbene inovacije v knjižnici Univerze na Primorskem

Prispevek predstavlja preobrazbeno pobudo Univerze na Primorskem za centralizacijo in posodobitev knjižničnih storitev. Z uvedbo pristopa, usmerjenega k uporabniku, pobuda na novo zamišlja knjižnico kot vključujoč, dostopen prostor 24/7, ki izpolnjuje pravne in operativne standarde družbenih inovacij. Revitalizacija zgodovinskega kino kompleksa v dinamično knjižnično središče ponazarja načela krožnega gospodarstva (ponovna raba in preoblikovanje namesto nove gradnje), medtem ko transdisciplinarna metodologija zagotavlja razširljivost in prenosljivost. Podrobna SWOT-analiza in analiza učinkov izpostavljata prednosti, izzive, vpliv in dolgoročno vizijo pobude ter jo umeščata kot model vključujoče akademske infrastrukture.

Ključne besede: krožno gospodarstvo, družbene inovacije, Univerza na Primorskem Univerzitetna knjižnica (UP UK)

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Introduction

At the heart of this paper is the blended combination of social innovation and circular economy. As such, they seem that they are miles apart, however, in the presented case, we can see how in practice two commonly used and increasingly important concepts intertwine.

As aforementioned, this case is a living and vivid example of social innovation. Universities in their mission create and share knowledge, however, they do much more. 'Third mission' of universities, which complements the traditional missions of education and research, refers to the direct engagement of universities with society and the economy, encompassing knowledge transfer, innovation, and broader societal contributions (Laredo 2007). In the last years University of Primorska has emphasized the importance of social innovation and also organized several events to spur and encourage it to greater extent. Social innovation has numerous definitions; however, all point out that social innovation works as a response to unmet social needs (Moulaert et al. 2015) and bring greater well-being for

the individuals or communities (Cajaiba-Santana 2014). Ünlü and Rao-Nicholson (2026) pinpoint that social innovation in its various forms has existed for several decades, but its full potential has only emerged in recent times, especially in its ability to address several societal challenges. The recent incarnation of social innovation is geared to address the gaps in the fulfilment of societal human needs and act as the needs' satisfiers. The generally accepted premise is that social innovations are not profit-maximizing endeavours and increase social welfare. Furthermore, the idea of social innovations has evolved to different types of innovations where social innovations are derived and embedded in technological innovations, address a social cause, and are expected to generate profits. Likewise, The Organisation for Economic Co-operation and Development (OECD) has increasingly recognised the significance of social innovation in its policy frameworks and recommendations, emphasising its role in driving economic growth, social cohesion, and environmental sustainability (Slitine et al. 2024). Our case study actually demonstrates how social innovation also incorporates environmental sustainability, since it engages also sustainable approaches, including circular economy. Instead of building new spaces, this initiative reused and revitalized the neglected historic cinema. Researchers emphasize that the interest in the circular economy has increased in many parts of the world and is attributed to a change in awareness of dwindling resources and the recognition of the negative impacts of economic activities on the environment (Açıkalın 2020 in Bakır and Aral 2025). The concept of the circular economy supports economic growth in line with sustainable development while ensuring both environmental protection and social welfare (Bakır and Aral 2025). Moreover, this resonates also with what Laredo (2007) points out related to third mission of universities, where are universities increasingly involved in addressing societal challenges, participating in policy-making, fostering public understanding of science, and contributing to cultural and social life.

The magic appears when we combine both of them, and blend together responsibility towards the environment and society. A case that has been implemented in University of Primorska depicts in its vivid details how those two concepts can be mixed together and add value to the mission of university and integrate also broader community and its needs.

Methodology

As part of the international T4EU 2025 Seed funding project, we addressed social innovation and circular economy practices in universities through a study pertaining to the University of Primorska library as best practice, which encompasses both social innovation and circular economy in its essence. In addition, by its functioning, development and influence also addresses the third mission of universities, by adding an environmental and social value and bringing it to a local community.

With the purposes to describe the making of the selected university social innovation case, we have reviewed all the documents, acts, websites and conducted several in-depth semi-structured interviews with the main actors related to this initiative, especially and mainly with the head of the University Library, and the initiative's originator, strategist, and operational leader. The main questions that lead the conversation were focused on structure, objectives, activities, and impacts. In more detail, our semi-structured interview was composed of 14 questions, which are focusing on detailed description of initiative/activity that is considered as a good example of social innovation and circular economy, the goals that led to the creation of this initiative, the actors involved and their role, its contribution to social innovation and circular economy, SWOT analysis and impacts with its measuring.

Main Part

In the heart of Koper's historic centre, a remarkable transformation has breathed new life into a once-neglected architectural complex, demonstrating the profound potential of creative reuse and revitalisation. What was formerly a complex of abandoned cinema halls, left largely dormant and deteriorating after the cessation of their original function, has been reimagined as a thriving university library. This bold endeavour not only serves the academic community of the University of Primorska but also acts as a vital cultural and intellectual hub for the local and regional community. Through a blend of ingenuity and vision, the decaying relics of a bygone cinematic era have been reborn as a dynamic space that champions learning, inclusion, and community engagement.

This initiative ingeniously converts a previously decentralised library service at the University of Primorska into a fully functional 24/7 library, ensuring seamless and perpetual accessibility. Such a library must adhere rigorously

Figure 1 Photos Before and After Renovation

to Slovenian legislation governing public library services, while delivering its public mandate in a regular, constant, and predictable manner, free from interruptions or delays. It must operate with cost-efficiency, yet without resorting to staff redundancies, thereby optimising resources while safeguarding employment. Furthermore, it should possess the agility for dynamic and adaptive responses, bolstering the research, teaching, and lifelong learning endeavours at the University of Primorska. Above all, the library must guarantee a high-quality, holistic user experience and the fulfilment of individual needs, irrespective of the visitor's profile, through an inclusive lens that accords special attention to vulnerable groups, such as individuals with disabilities. Even in its cybernetic black-box mode – functioning autonomously without the physical presence of librarians – this system upholds these principles, fostering an environment where equity and user-centricity reign supreme.

Prior to the launch of this transformative initiative, library services at the University of Primorska were organised and delivered in a decentralised manner. Faculty-specific libraries operated independently, yet each grappled with significant challenges: inadequate facilities, insufficient collections of library materials, and/or a shortage of qualified staff to fully execute the spectrum of library functions mandated by the Republic of Slovenia's legislation on public library services. These constraints hindered the ability to provide a cohesive, high-quality service that could meet the diverse needs of the academic community and beyond.

In response, the initiative set forth an ambitious set of objectives to overhaul and elevate the library's role. First, it aimed to ensure the consistent and reliable provision of public library services – encompassing acquisition, processing, storage, lending, and information services – free from delays or disruptions. Second, it sought to achieve cost-effective management, with the goal of expanding the scope of public services without increasing labour costs. Third, it prioritised quality and efficiency in the delivery of these services. Fourth, it focused on aligning library operations with the developmental aspirations of the University of Primorska, ensuring adaptability to its evolving needs. Above all, the initiative placed a profound emphasis on inclusion, striving to address the needs of diverse user groups, including individuals with disabilities and non-university members, thereby fostering an equitable and accessible academic environment.

> This bold vision has not only centralised and streamlined library operations but also reimagined the library as a dynamic, inclusive hub, capable of meeting both institutional imperatives and the diverse demands of its community with creativity and precision. [Interview with Prof. Dr. Jonatan Vinkler]

The realisation of this transformative initiative, unfolding from 2019 to the present, has been made possible through sustained, con-

Figure 2 Photos Before and After Fenovation

flict-free collaboration, underpinned by mutual support and an unwavering belief in the project's ultimate success. This endeavour brought together a diverse coalition of contributors, organised within a hierarchical structure – ranging from the highest to the most foundational roles, though no less vital for their position. At the forefront stands the university leadership, embodied by the Rector, who serves as both the intellectual and administrative cornerstone of the University of Primorska. The Rector's steadfast commitment has been indispensable, providing the strategic vision and institutional backing critical to the triumph of such ambitious undertakings. At the heart of the initiative is the director of the University Library, the visionary architect, planner, and operational leader. This individual not only conceived the initiative but meticulously developed and executed it, orchestrating its every phase with precision and dedication. Supporting this leadership are the library staff, particularly the librarians, whose expertise in professional library matters ensures the institution's scholarly integrity. The University of Primorska's Public Procurement Service adeptly navigates the complexities of public acquisitions, while the architect addresses the intricacies of spatial design and ergonomic furnishings, crafting an environment that is both functional and inviting. Meanwhile, the technical support staff tackle the challenges of optimal technical equipping and spatial solutions, laying the foundation for a robust and innovative operation. Special recognition among the actors of this initiative, must be given to the masterful contributions of the then-head of the Investment Service, whose operational acumen, creativity, and deep knowledge across diverse domains – spanning construction, equipment, fire safety, and beyond – were pivotal. Without such expertise, executing a project of this complexity with the necessary speed and cost-efficiency would have been extraordinarily challenging.

The culmination of this collaborative vision is a university library that stands as a beacon of inclusivity in the Republic of Slovenia, operating on a 24/7 basis and welcoming all users without exception – students, professors, researchers, external visitors, and guests alike. This library is not merely a repository of knowledge but a dynamic space meticulously designed to cater to diverse learning styles through a variety of tailored study environments, such as distinct types of reading rooms. Beyond its role as an academic hub, it serves as a vital instrument in addressing social inequalities among the student population, compensating for the regional scarcity of high-quality study spaces and fostering equitable access to information resources for all. At the heart of this innovative enterprise lies an unwavering focus on the user and their needs. Every measure implemented is driven by the principle of inclusivity, ensuring the library is a space where all can engage fully and meaningfully. Particular attention has been devoted to individuals with disabilities, with thoughtful provisions enabling independent use of the library. From accessible entry points and seamless access to the library's collection to the autonomous use of books and study spaces, every detail has been crafted to empower these users. Equally, the library recognises the needs of its female population, particularly student mothers who may be breastfeeding, in-

Figure 3 Photos of the University of PrimorskaLibrary

tegrating considerations that reflect their unique requirements.

> This library is more than a physical space; it is a testament to the power of user-centric design, where diversity is not merely accommodated but celebrated. By prioritising universal access and addressing the specific needs of underrepresented groups, it not only elevates the academic experience but also sets a new standard for what a truly inclusive institution can achieve. [Interview with Prof. Dr. Jonatan Vinkler]

By offering a space that remains open to all members – day and night, weekends and holidays included – the library counters these pressures, fostering a sense of shared ownership and cultural continuity. Its doors welcome between 7,000 and 11,000 visitors each month, even during the quieter winter season, resulting in an impressive

Strengths

- Transdisciplinary scientific methodology integrating mathematics, information sciences, librarianship, reception theory, cognitive sciences, and ergonomics.
- User-centric algorithm: 'Nothing without the user, everything for the user, yet the user is not always right.'
- A scientific approach that is practical, versatile, and replicable.
- High-quality user experience and inclusive environment.

Weaknesses

- Systemic underfunding that hinders timely implementation of key measures.
- Delays in developing new study spaces, such as the envisioned large reading room.
- Limited staffing capacity to cover absences due to illness or departures.

Opportunities

- Compliance with Slovenian legislation and dynamic responsiveness to user needs.
- Potential for expansion and replication in other institutions.
- Support from university leadership, secured funding, and a highly skilled team.
- A model for academic institutions worldwide.

Threats

- Unstable public funding until the reform expected in 2029.
- Uncertainty regarding lease renewal or sale of the premises by the Municipality of Koper.
- Lack of reserve staffing capacity during personnel changes.
- Unpreparedness for potential relocation of the library.

Figure 4 SWOT tnalysis for the University of Primorska Library

annual footfall of 65,000 to 80,000 visits. This is particularly striking given that the University of Primorska serves a student body of approximately 5,600, underscoring the library's role as a magnet for a far broader audience. More than a mere repository of books, this library is a testament to the power of adaptive reuse, where creativity and wit transform forgotten spaces into vibrant centres of intellectual and social life. By preserving the historic fabric of Koper while meeting the diverse needs of its users, the library not only enriches the academic experience but also anchors the community in a space that is as enduring as it is inclusive. It stands as a model of how thoughtful reinvention can breathe vitality into the past, ensuring it remains a living, breathing part of the present and future. A SWOT analysis depicting the weaknesses, strengths, opportunities and threats for this case can be seen in figure 4.

Conclusions

The initiative's reach and success are vividly illustrated by key developmental milestones and meticulously recorded visitor data, which serve as a testament to its transformative power. In 2022, when library operations were still decentralised and the university library was under construction, the facility welcomed 9,487 visitors. The following year, 2023, marked a pivotal shift as operations were centralised in April, with reading rooms opened from Monday to Friday, 8:00 AM to 4:00 PM, resulting in a significant rise to 20,973 visitors. By 2024, the library's transition to a 24/7 operating model on January 1 led to an extraordinary surge, with 66,801 visitors recorded. The year 2025 yielded the full benefits of the new model, as the library recorded no fewer than 84,078 visitors, reflecting its sustained momentum. As a member of Slovenia's public library network, the University Library of the University of Primorska is obliged to conduct statistical measurements in accordance with a strictly prescribed methodology, uniform across all libraries of the same type. These statistics are reported annually to the National and University Library, which publishes them with an approximate one-year delay. Beyond this mandated reporting, the University Library independently employs multiple algorithms to measure 'hard data', ensuring precision in its quantitative assessments. Yet, in a distinctive and thoughtful approach, the library views these numbers not as an end in themselves but as a springboard for deeper inquiry: What do these figures signify? This question underscores a commitment to substantive interpretation. To this end, the University Library enriches its numerical data with regular qualitative interviews with users and insights gleaned from ongoing interactions with the leadership of the University of Primorska's Student Council. By combining formal and informal methods – machine-driven metrics with oral feedback – the library constructs a comprehensive understanding of its impact and user needs. This dual approach, blending rigorous statistical analysis with the nuanced perspectives of its community, ensures that the library remains not only a repository of knowledge but a responsive and inclusive institution, attuned to the diverse voices it serves.

In essence, the public library service at the University of Primorska is comprehensive, seamless, and cost-efficient, operating without delays or disruptions. Above all, it is profoundly inclusive, drawing not only students from the University of Primorska but also students from other Slovenian universities and residents of nearby coastal towns. This vibrant hub of learning and community engagement stands as a beacon of accessibility, inviting all to open its doors and discover the wealth of knowledge within. By the end of 2033, the initiative is poised to reach its full fruition, transforming the library into a vibrant, inclusive library-cultural centre. Beyond its core academic mission, this envisioned hub will host a rich array of activities, including cultural events, conferences, exhibitions, concerts, and the operations of a university bookshop.

True to its ethos, the centre's doors will remain open to all – students, faculty, local residents, and visitors alike – every day of the year, without exception. This enduring commitment to universal access will cement the library's role not only as a cornerstone of academic excellence but also as a dynamic cultural beacon, fostering community engagement and intellectual vitality in equal measure.

References

Açıkalın, N. 2020. 'Sürdürülebilir pazarlama bakiş açisi ile döngüsel ekonomi incelemesi.' *Sakarya İktisat Dergisi* 9 (3): 238–257.

Bakır, H., and N. Aral. 2025. 'Sustainable Development in the Context of Circular Economy.' *Journal of Environmental Management* 394:127366.

Cajaiba-Santana, G. 2014. 'Social Innovation: Moving the Field Forward. A Conceptual Framework.' *Technological Forecasting and Social Change* 82: 42–51.

Laredo, P. 2007. 'Revisiting the Third Mission of Universities: Toward a Renewed Categorisation of University Activities?' *Higher Education Policy* 20 (4): 441–456.

Moulaert, F., D. MacCallum, A. Mehmood, and A. Hamdouch. 2015. *The International Handbook on Social Innovation: Collective Action, Social Learning and Transdisciplinary Research*. Edward Elgar.

Slitine, R., D. Chabaud, and N. Richez-Battesti. 2024. 'Towards Local Sustainability: How Intermediation Fosters Social Innovation.' *Technological Forecasting and Social Change* 209:123790.

Ünlü, H., and R. Rao-Nicholson. 2026. 'Social Innovation.' In *International Encyclopedia of Business Management*, edited by V. Ratten. Academic Press.

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Teaching for Impact, Not Intention: How Course Design Converts Learning into Community Action

Teaching social entrepreneurship encourages students to consider societal challenges, yet course participation alone rarely leads to sustained engagement. This article presents a practice-based instructional model developed at the School of Economics and Business at the University of Ljubljana, which positions the course as an enabling environment for personal transformation and action. Through experiential learning, collaboration with social enterprises, and structured reflection, students strengthen their values, confidence, and sense of agency. Follow-up interviews with five alumni show that this pedagogical design contributed to continued involvement in volunteering, community initiatives, and social enterprise creation. The article offers transferable design principles and practical tools for educators aiming to foster real-world social impact beyond the classroom.

Keywords: teaching, learning, course design

Poučevanje za vpliv, ne za namero: kako zasnova predmeta pretvarja učenje v delovanje za skupnost

Poučevanje socialnega podjetništva študente spodbuja k razmisleku o družbenih izzivih, vendar sama udeležba pri predmetu le redko vodi v trajno vključevanje. Prispevek predstavlja na praksi temelječ pedagoški model, razvit na Ekonomski fakulteti Univerze v Ljubljani, ki predmet zasnuje kot spodbudno okolje za osebno preobrazbo in delovanje. S pomočjo izkustvenega učenja in sodelovanja s socialnimi podjetji ter strukturiranimi refleksijami študenti krepijo svoje vrednote, samozavest ter občutek lastne učinkovitosti. Intervjuji s petimi alumni kažejo, da je ta pedagoška zasnova prispevala k nadaljnjemu vključevanju v prostovoljstvo, pobudam v skupnostih in ustanavljanju socialnih podjetij. Prispevek ponuja prenosljiva načela oblikovanja pedagoškega procesa ter praktična orodja za pedagoge, ki želijo študente usmerjati k ustvarjanju družbenega vpliva v realnem okolju onkraj učilnice.

Ključne besede: poučevanje, učenje, zasnova predmeta

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Introduction

Universities are recognised as important sites of social innovation, where pedagogical practices can generate new ways of thinking and acting in response to societal challenges (Cajaiba-Santana 2014). When learning processes shift students from observers to active contributors, education itself becomes a mechanism of social innovation: it creates new practices, new relationships with communities, and new forms of societal contribution. A social entrepreneurship course is thus not merely an academic module but a space where socially innovative behaviours and longer-term effects begin to take shape.

Across higher education institutions, social entrepreneurship education has expanded rapidly over the past decade (Hockerts 2018; Pischetola and Martins 2024), and aim to equip students to address societal challenges and pursue socially responsible career paths (García-González and

Ramírez-Montoya 2021). While many courses offer strong conceptual foundations (e.g. from business models to financing) less is known about how such learning translates into sustained engagement beyond the course. Understanding how course design enables that transition is therefore essential.

Although many programmes assume that exposure to concepts and cases will motivate action, research shows that awareness alone rarely leads to behavioural change; individuals must also test new behaviours, build confidence, and experience social support (Mezirow 1991; Illeris 2014). Thus, social entrepreneurship education must help students see themselves as capable of contributing to solutions – not just understanding them. This shift in self-perception, i.e. from observer to participant, appears central to whether engagement continues beyond the course.

Guided by this idea, a Master-level course in Social Entrepreneurship was designed at the School of Economics and Business, University of Ljubljana. The assumption behind it was simple: students learn best when they see that their knowledge can create value for real people or organizations. Therefore key concepts alongside authentic encounters with social entrepreneurs and opportunities for application were introduced. In this way, theory and practice are intentionally intertwined from the very beginning allowing students to connect what they learn with what they can actually do.

Across three years of delivery, the course shows longer-term effects.

These observations lead to the central question of this article: *How can course design support students in moving from learning about social impact to engaging in social impact beyond the course?* To address this, we describe the course and methodology, then outline five pedagogical design principles that supported sustained engagement.

Methods and Approach in Designing Courses for Sustained Social Engagement

This article draws on: (1) the course's design and implementation, and (2) qualitative feedback from former students collected after they completed the course. All five alumni we interviewed were selected because they remained active in socially impactful roles, continued contributing to social enterprises, nonprofits, community projects, or volunteering, and stated that they would not have pursued these initiatives without the course.

Course Context and Pedagogical Approaches

The course integrates theory with experiential learning. Key elements include:

- collaboration with real social enterprises and NGOs (students work on authentic challenges),
- field visits and guest speakers,
- structured reflection assignments that connect learning with personal values and motivation,
- a solidarity project ('Do Something Good') in which each student carries out a small prosocial action during the course.

The design aligns with experiential learning research showing that learning deepens when students explore ambiguity, act, and reflect (Kickul et al. 2018; Mir Shahid and Alarifi 2021). Such approaches have been linked to increased creative self-efficacy (Heng and Khiam Jin 2025) and the development of key 21st-century skills such as communication, collaboration, creativity, and critical thinking (Gleason Rodríguez and Rubio 2020). The role of the educators shifts accordingly, i.e. from instructor to facilitator of meaningful experiences.

Data for Evaluating Impact

We conducted semi-structured interviews with five alumni who got involved or remained engaged in socially impactful activities after the course, which they completed in 2022 or 2023. Participants (aged 26–30; four women, one man) were Master's students in the Social Entrepreneurship course. Interviews lasted 20–35 minutes.

Thematic analysis (Clarke and Braun 2017) showed that course structure and learning design, rather than theoretical content alone, shaped students' willingness and confidence to act. Students emphasized that experiencing 'what changemaking feels like' was pivotal.

In this sense, the course design also functioned as a process of social innovation. Students experimented with new behaviours, tested small prototypes of prosocial action, and observed real-world effects, i.e. all practices characteristic of social innovation processes (Howaldt and Schwarz 2010). Within the university context, such experimentation represents a shift towards pedagogical practices that strengthen students' capacity to act in their communities. The course thus served as a testbed for social innovation, with students as its first carriers.

Five Pedagogical Design Principles that Lead to Real-World Social Impact

Principle 1: Start with the WHY to Anchor Learning in Personal Values and Meaning

In many courses, early sessions focus on definitions and frameworks. In our course, the first session focuses on students themselves. They explore personal values, past experiences that shaped their worldview, and social issues that evoke emotional reactions. Rather than asking, 'What social enterprise will you design?' or 'Do you know any social entrepreneur?', we begin with, 'What breaks your heart?' and 'Who do you want to serve?' These prompts help students articulate the deeper meaning behind their interest in social impact and explore the WHY?

Engaging the emotional system before the cognitive one strengthens motivation. The WHY-first approach aligns with research showing that prosocial motivation supports persistence and problem-solving (Grant 2008; Miller et al. 2012) and increases intention toward social entrepreneurship (Yamini et al. 2022). Students often described this as a turning point; as Student 2 explained, 'Profit is not the only thing that matters – you can also do something socially beneficial.'

Mini-Tool: Purpose Mapping

Educators can use a simple purpose-mapping worksheet that guides students to connect three elements: their personal values, the beneficiaries they care about, and possible actions that could create positive impact. The exercise can be done individually or interactively using sticky notes. Students write their answers on sticky notes and either present them briefly to classmates or place them on a wall. If a student initially claims that they are 'profit-oriented only', the educator can gently challenge this claim by asking them to recall a small past action that made someone else's day better, such as giving up a seat on a bus for an elderly person. This helps students recognize that they already have prosocial tendencies, even if they do not label themselves as socially oriented.

Principle 2: Make Students Collaborate with Real Social Enterprises

Collaboration with real social enterprises exposes students to the realities of creating social value and allows them to apply newly learned concepts in authentic contexts. At the beginning of the course, teams are assigned a social enterprise and a concrete challenge (e.g., business model refinement, marketing, volunteer engagement, or impact storytelling). Students research the organization, prepare focused questions, and engage in a guided field visit where they interview founders, speak with beneficiaries, and observe operations. Throughout the course, they prototype solutions, test ideas, and iterate with educator support – all with ongoing mentoring from educators.

Field immersion consistently produces two outcomes. First, students gain a realistic understanding of social entrepreneurship as a series of incremental steps taken by relatable individuals: 'You see firsthand, not just read about, how satisfied social entrepreneurs are with what they do' (Student 2). Second, their confidence grows as they see their ideas create value: 'Ideas can indeed be realized, even if they seem idealistic' (Student 5). This aligns with research showing that practitioner engagement enhances perspective transformation and lowers perceived barriers to action (Kickul et al. 2018; Mir Shahid and Alarifi 2021).

Mini-Tool: Field Visit Playbook (Before → During → After)

A one-page playbook structures this process. *Before* the visit, each team is assigned a challenge and researches the social enterprise to prepare focused questions. *During* the guided field excursion, students interview entrepreneurs and collect insights related to their challenge. *After* the visit, the following class session is used for debriefing and mentoring, where students compare their initial assumptions with what they observed and begin developing possible solutions. Subsequent sessions include dedicated consultation time, allowing teams to refine their ideas with continuous guidance from the teaching staff.

Principle 3: Require Action, Not Simulation – The 'Do Something Good' Assignment

A key element of the course is a small, real prosocial action that each student must plan and carry out during the course, without receiving a budget from the educators. The activity can take many forms – from a one-time volunteering effort to a micro-campaign that mobilizes others. One student described how her team organized an awareness and fundraising event in the faculty lobby: 'We organized an event to raise funds for a dog shelter. We baked cookies, which we distributed to students and staff at the event while raising awareness about social entrepreneurship' (Student 4). Another student recognised that he could influence tax donation flows and helped his youth organization secure additional funds: 'We active-

ly sought funds for our association and obtained several hundred euros' (Student 1). Students frequently referred to this assignment as a mental switch because it moved them from discussing social impact to acting on it: 'You had to really engage with the challenge – not just read something and write a summary' (Student 3).

This aligns with adult learning research showing that transformation occurs not through content alone, but when learners test new behaviours and reflect on their consequences (Mezirow 1991; Illeris 2014).

Mini-Tool: 'Do Something Good' Project Template

Students design a small solidarity or prosocial action that they can carry out within the duration of the course. They begin by selecting a beneficiary (a specific person, community, organization, natural environment, or animal-related case) and planning a meaningful action that creates value for that beneficiary. Before acting, students answer three planning questions: *Who do I want to help and why? What exactly will I do? How will I document that I carried out the activity?* After completing the action, they reflect on the experience and consider whether their initiative could develop into a social innovation or a social enterprise. Reflection prompts include: *Who are the stakeholders needed to continue this initiative? Could it be financed? Are there similar examples abroad?* The assignment builds agency by showing students that impact begins with a small, intentional step.

Principle 4: Use Reflection to Reinforce Identity and Confidence

Reflection assignments require students to articulate what has changed in their thinking and to acknowledge their capabilities. Students often wrote about new confidence, new sense of agency, and a shift in identity – from someone who learns to someone who makes things happen. Reflection is what transforms experience into personal meaning (Illeris 2014). Student 2 described the identity shift: 'I realized that this field aligns with my interests and offers opportunities for professional engagement.' Student 3 reflected that guest speakers helped her imagine herself as an entrepreneur: 'I came to understand that social entrepreneurship represents a legitimate career path.' Reflection deepens agency and reduces emotional barriers that previously prevented action.

Mini-Tool: Structured Reflection Prompts

Two reflection assignments can help students connect experience to personal meaning and identity. In the Reflection on a Guest Entrepreneur, students choose one guest speaker and examine why they were drawn to that particular entrepreneur: what resonated with them emotionally, personally, or professionally. They reflect on what makes the guest socially entrepreneurial, what values and motivations guide their work, and which qualities they personally relate to or aspire to develop. Students also identify the challenges the entrepreneur faces and consider how these insights influence their own views on creating social impact. In the Final Course Reflection, students look back on the entire course, highlighting which activities (project work, visits, teamwork, quizzes) contributed most to their learning and personal growth. They articulate whether and how the course shifted their motivation to engage in social entrepreneurship, e.g. as founders, volunteers, or supporters. The reflections help students recognize progress, clarify purpose, and see themselves as potential changemakers.

Principle 5: Create a Community, Not a Classroom

Students consistently emphasized the importance of the relational climate of the course. They felt seen as individuals, supported in vulnerability, and encouraged to explore uncertainty. A sense of psychological safety enables experimentation and willingness to try new approaches – conditions central to entrepreneurial learning (Kickul et al. 2018). Similarly, Senior and Howard (2014) emphasize that friendship groups in the learning environment create a trusted social context that enables open discussion, sharing of ideas, asking questions without fear of judgment, and deeper conceptual understanding through interpersonal interaction and real-life application.

The interviews illustrate this strongly. One student shared: 'The lecturers were genuinely dedicated and emotionally engaged' (Student 2). Another emphasized the sense of homeliness (a feeling of warmth and belonging): 'Although it may sound clichéd, the course was different because of the professors' (Student 4). A third added: 'My classmates and I became so close that we have remained friends to this day' (Student 5). Rather than encouraging competition, the course prioritizes cooperation. Students are encouraged to share contacts, ideas, and failures. They cele-

brate each other's progress, not grades.

Mini-Tool: Community-Building Checklist

Creating community does not require complex interventions – small relational practices matter: address students by name, give personal encouragement, respond promptly to questions, and acknowledge effort, not only outcomes. Community is strengthened through course design as well. Final project presentations take place in a real entrepreneurial support environment, the Impact Hub Ljubljana, where students present their solutions to the social enterprises that posed the challenges. Presenting in a professional business incubator helps students feel their work is meaningful and that they are part of a wider impact ecosystem. After the presentations, we host an informal standing lunch, creating space for unstructured conversations and networking. Many deeper relationships and collaborations start in this setting. We maintain connections after the course as well: alumni return as guest speakers, co-develop new challenges, and collaborate with us on impact-driven projects.

Tangible Social Impacts: What Happened After the Course

As professors, we hope that the knowledge students gain is not only retained but also translated into practice. The key question, therefore, was whether students remained active in this field after completing the course. Among the five interviewed graduates, some continued their engagement through volunteering, while others began to pursue socially entrepreneurial activities.

- One student volunteers at a municipal youth organization because he believes that young people need someone to set a positive example.
- Another student shares a similar view – that young people need someone who believes in them – and therefore volunteers as a mentor at free summer schools. She explained: 'When you praise them and tell them that you're genuinely proud of them, they open up more. They start to see you as a friend, an older brother or sister. You can make a real difference in their lives' (Student 2).
- One student integrates mental health advocacy into her work with a youth centre, while another helps organize charity events in her local community.

One of the students summarized her post-course philosophy: 'Every individual has the power to influence their community' (Student 5). These outcomes demonstrate that the course produced social innovation beyond university walls. It did not produce only business plans; it produced ongoing prosocial behaviour.

Discussion and Implications for Educators and Institutions

For Educators

The findings suggest that real social impact depends on designing learning as lived experience. Educators should move from the role of instructors to facilitators of transformation, creating environments where students can test ideas, take risks, and reflect on real outcomes. Embedding experiential projects, such as collaborations with social enterprises or community actions, helps students translate values into behaviour and sustain engagement beyond the classroom. Reflection assignments and peer discussions reinforce identity as changemakers, while trust and psychological safety enable experimentation and connection.

Viewed through this lens, the course represents a form of pedagogical social innovation, as it introduces new ways for students to learn, collaborate, and engage with communities. Instead of separating theory and practice, the course intertwines emotional engagement, experiential learning, prototyping solutions, and identity-focused reflection creating teaching practices that produce broader social effects (Westley et al. 2014).

Educators hold a powerful lever of social innovation not through content, but through course architecture. Successful practice requires three intentional decisions:

1) Design for action, not theory.
2) Integrate reflection to deepen identity formation.
3) Create a community that reinforces courage and belonging.

For Institutions

For institutions, these insights point to the importance of supportive infrastructure. Universities can strengthen social entrepreneurship education by partnering with social enterprises, providing incubation spaces like Impact Hub Ljubljana, and integrating reflection-based assessment into curricula. Institutional recognition

of students' impact projects as valid innovation outputs encourages long-term motivation and community contribution. Therefore, institutions can amplify impact by:

- establishing partnerships with social enterprises,
- tracking alumni impact,
- positioning courses as innovation labs rather than academic modules,
- recognizing that student impact projects constitute social innovation outputs.

Conclusion

When social entrepreneurship education creates emotional engagement, real-world experience, structured action, and reflective meaning-making, students do not merely complete a course, they also change. They shift from *learners of impact* to *creators of impact*. They carry their projects, values, and new sense of agency beyond the university.

These outcomes can be interpreted through the lens of social innovation emerging within universities. Students' continued volunteering, mentoring, and entrepreneurial activities represent new socially beneficial practices derived from the learning process. Universities thus operate as incubators of social innovation, shaping behaviours, relationships, and values that generate tangible social impact. Higher education does not need to wait for graduates to someday improve society. Social innovation can start in the classroom, one student and one small act at a time.

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References

Cajaiba-Santana, G. 2014. 'Social Innovation: Moving the Field Forward. A Conceptual Framework.' *Technolog ical Forecasting and Social Change* 82: 42–51.

Clarke, V., and V. Braun. 2017. 'Thematic Analysis.' *The Journal of Positive Psychology* 12 (3): 297–298.

García-González, A., and M. S. Ramírez-Montoya. 2021. 'Social Entrepreneurship Education: Changemaker Training at the University.' *Higher Education, Skills and Work-Based Learning* 11 (5): 1236–1251.

Gleason Rodríguez, M. A., and J. E. Rubio. 2020. 'Experiential Learning at Universities and Its Benefits for Students and Teaching Faculty.' *Revista Educación* 44 (2): 264–282.

Grant, A. M. 2008. 'Does Intrinsic Motivation Fuel the Prosocial Fire? Motivational Synergy in Predicting Persistence, Performance, and Productivity.' *Journal of Applied Psychology* 93 (1): 48–58.

Heng, Y., and L. Khiam Jin. 2025. 'Experiential Learning and Creative Self-Efficacy in Higher Education: A Systematic Literature Review.' *International Journal of Sciences: Basic and Applied Research* 76 (1): 1–13.

Hockerts, K. 2018. 'The Effect of Experiential Social Entrepreneurship Education on Intention Formation in Students.' *Journal of Social Entrepreneurship* 9 (3): 234–256.

Howaldt, J., and M. Schwarz. 2010. *Social Innovation: Concepts, Research Fields and International Trends*. IMA/ZLW.

Illeris, K. 2014. 'Transformative Learning and Identity.' *Journal of Transformative Education* 12 (2): 148–163.

Kickul, J., L. Gundry, P. Mitra, and L. Berçot. 2018. 'Designing with Purpose: Advocating Innovation, Impact, Sustainability, and Scale in Social Entrepreneurship Education.' *Entrepreneurship Education and Pedagogy* 1 (2): 205–221.

Mezirow, J. 1991. *Transformative Dimensions of Adult Learning*. Jossey-Bass.

Miller, T. L., M. G. Grimes, J. S. McMullen, and T. J. Vogus. 2012. 'Venturing for Others With Heart and Head: How Compassion Encourages Social Entrepreneurship.' *Academy of Management Review* 37 (4): 616–640.

Mir Shahid, S., and G. Alarifi. 2021. 'Social Entrepreneurship Education: A Conceptual Framework and Review.' *The International Journal of Management Education* 19 (3): 100533.

Pischetola, M., and L. d. S. e. S. Martins. 2024. 'Teaching Social Entrepreneurship in Higher Education: Active Pedagogy in a Deweyan Perspective.' *Journal of Social Entrepreneurship* 15 (2): 543–564.

Senior, C., and C. Howard. 2014. 'Learning in Friendship Groups: Developing Students' Conceptual Understanding Through Social Interaction.' *Frontiers in Psychology* 5:1031.

Westley, F., N. Antadze, D. J. Riddell, K. Robinson, and S. Geobey. 2014. 'Five Configurations for Scaling Up Social Innovation: Case Examples of Nonprofit Organizations from Canada.' *The Journal of Applied Behavioral Science* 50 (3): 234–260.

Yamini, R., D. Soloveva, and X. Peng. 2022. 'What Inspires Social Entrepreneurship? The Role of Prosocial Motivation, Intrinsic Motivation, and Gender in Forming Social Entrepreneurial Intention.' *Entrepreneurship Research Journal* 12 (2): 71–105.

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Supporting Knowledge Transfer and Social Impact: The SSHA Impact Fund of the University of Ljubljana

In recent years, the global research and higher education landscape has shifted from focusing solely on scientific excellence to demonstrating societal impact. Universities are now expected not only to generate knowledge but also to ensure that it contributes to social, cultural, environmental, and economic development. European and national strategies alike emphasise the role of research in addressing major societal challenges and shaping a sustainable, inclusive future. Within this context, the University of Ljubljana has recognised the importance of supporting researchers in achieving societal impact. Beyond its traditional missions, the University of Ljubljana has strengthened its efforts in knowledge transfer – the process of translating research results into societal benefits. This reflects a growing awareness that universities carry not only intellectual but also social responsibility to engage, co-create, and contribute to community wellbeing. The article examines how the University of Ljubljana supports researchers in enhancing societal impact, focusing on strategic frameworks, institutional mechanisms, and practical initiatives. It highlights the SSHA Impact Fund, established in 2024 as an innovative tool for promoting socially responsible research. The analysis draws on experience from the Knowledge Transfer Office within the Social Sciences, Humanities, and Arts (SSHA) and discusses key challenges and emerging best practices in this developing field.

Keywords: knowledge transfer, social impact, University of Ljubljana

Podpora prenosu znanja in družbenemu vplivu: HUD sklad Univerze v Ljubljani

V zadnjih letih je globalni raziskovalni in visokošolski prostor doživel izrazit premik od osredotočenosti izključno na znanstveno odličnost k poudarjanju družbenega vpliva raziskav. Od univerz se vse bolj pričakuje, da ne bodo zgolj proizvajale znanja, temveč tudi zagotavljale, da to znanje oprijemljivo prispeva k družbenemu, kulturnemu, okoljskemu in gospodarskemu razvoju. Evropski raziskovalni prostor, okvirni program Horizon Europe ter različne nacionalne strategije poudarjajo vlogo raziskav pri soočanju z velikimi družbenimi izzivi in pri oblikovanju trajnostne ter vključujoče prihodnosti. V tem širšem kontekstu je Univerza v Ljubljani prepoznala pomen podpore raziskovalcem pri doseganju družbenega vpliva. Poleg svojih tradicionalnih poslanstev izobraževanja in raziskovanja je UL v zadnjih letih okrepila prizadevanja na področju prenosa znanja – procesa, v okviru katerega se raziskovalni rezultati pretvarjajo v koristi za družbo. Ta razvoj odraža vse večje zavedanje, da univerze nosijo ne le intelektualno, temveč tudi družbeno odgovornost — da se vključujejo, soustvarjajo in aktivno prispevajo k blaginji skupnosti. Prispevek analizira, kako UL podpira raziskovalce pri doseganju večjega družbenega vpliva, pri čemer se osredotoča na strateške okvire, institucionalne mehanizme in praktične pobude. Posebna pozornost je namenjena Skladu

SSHA Impact Fund, ustanovljenemu leta 2024 kot inovativnemu mehanizmu za krepitev družbeno odgovornega raziskovanja in spodbujanje družbenega vpliva. Prispevek temelji na spoznanjih, pridobljenih pri delu na področju prenosa znanja v družboslovju, humanistiki in umetnosti (SSHA), ter obravnava izzive in dobre prakse, ki so lahko koristne tudi za druge strokovnjake, ki delujejo na tem nastajajočem področju

Ključne besede: prenos znanja, družbeni vpliv, Univerza v Ljubljani.

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Introduction

The University of Ljubljana is the largest and oldest university in Slovenia. In addition to research and teaching, over the past decade it has been increasingly developing the field of knowledge transfer, which it recognises as a strategic mission (Univerza v Ljubljani 2025). Knowledge transfer is a process through which research achievements move from the university into society. At the University of Ljubljana, this process is managed by the Knowledge Transfer Office (KTO), which is responsible for the disclosure and acquisition of inventions and other intellectual property, their legal protection, and the development and commercialisation of university-generated knowledge.

Knowledge transfer has increasingly gained prominence in the University of Ljubljana's strategic documents. The university's mission (University of Ljubljana n.d.) emphasises the commitment to sharing knowledge among students and other stakeholders, fostering collaboration with organisations in the business and service sectors, state authorities, local communities, and civil society. Through these activities, the university promotes the use of its research and educational achievements and contributes to societal development. University of Ljubljana's vision aspires to be an internationally recognised and open research university that continuously contributes creatively to improving quality of life, guided by values rooted in humanism, human rights, equality of opportunity, solidarity, and ethical responsibility.

As early as the University of Ljubljana Strategy 2012–2020 (Univerza v Ljubljani 2012, 13), the university identified the application of knowledge as one of its strategic priorities, recognising the transfer of knowledge into practice as a core dimension of its social responsibility. This was to be achieved by strengthening the KTO and defining the role of knowledge managers as promoters of transferring fundamental knowledge into practical application.

In the 'University of Ljubljana Strategy 2022–2027' (2022, 7), two of the five developmental areas are directly aimed at enhancing the societal impact of science: upgrading support for the transfer of knowledge and art into all spheres of social life, and strengthening University of Ljubljana's social role and position in national and global public dialogue. Among the five strategic objectives established to reach the overarching goal of becoming a recognised and established academic institution in Europe, two focus explicitly on societal impact: positioning the University of Ljubljana as a prestigious partner institution for knowledge transfer, innovation, and creativity, and promoting social effects – social prosperity and progress.

The university's materiality assessment (University of Ljubljana 2022, 3) further highlights active social responsibility and engagement in key national and global issues as a priority area, reflecting its influence on societal progress and well-being relative to stakeholder expectations. The *University of Ljubljana Sustainability Strategy 2025–2030* (University of Ljubljana 2025) articulates the university's mission in social engagement, aiming to foster respect for shared values within the organisational culture and, through cooperation and mutual exchange with stakeholders from business, politics, and civil society, co-create responses to pressing societal transformation challenges and contribute to a sustainable future (p. 5). To support the strategic goals, five sustainability area have been established. Of these the SA5 supports the engagement with external stakeholders and knowledge transfer aligned with sustainability principles (pp. 10–11). Strategic activity SA5.2, aimed at strengthening professional and scientific contributions to societal dialogues on sustainability, supports timely responses to societal challenges, proactive engagement of academic staff in policy and public discussions, and active participation in international sustainability networks (p. 23).

Methodology

I approached the writing of this article by reviewing all relevant University of Ljubljana documents from 2012 to 2025. The aim of this review is to show how the University of Ljubljana promotes the development and implementation of the third mission, which seeks to enhance support for the transfer of knowledge and the arts into all spheres of social life. In this context, I highlight the University of Ljubljana SSHA Impact Fund, which University of Ljubljana established not only to provide financial support to researchers in impact projects, but also to inform them about the importance of impact, train them to achieve and document it – thus fostering an impact culture – and to gain an overview of the impact-related activities emerging within University of Ljubljana's diverse and decentralised ecosystem.

To encourage socially responsible action and engagement in dialogue with stakeholders in shaping the future of Slovenian society, the University of Ljubljana established the SSHA Impact Fund in 2024. In the Slovenian language the SSHA Impact Fund is called 'HUD sklad UL' where the acronym HUD stands for Humanities, Arts and Social Sciences, while it also means 'great' or 'excellent'.

The fund provides opportunities for University of Ljubljana researchers who wish to increase the societal impact of their research or artistic work. It offers financial support for diverse activities aimed at increasing and measuring impact. According to the fund's website (Univerza v Ljubljani n.d.), contemporary social challenges such as justice, inclusion, sustainability, equality, democracy and the rule of law represent fundamental values for building a resilient society centred on human wellbeing. Increasingly, attention is being placed on people-centred approaches, social protection, respect for diversity, and equal opportunities for all.

The project application must demonstrate that it addresses pressing societal challenges, involves and engages diverse social groups, empowers communities, enhances civic participation, or has the potential to reduce social inequalities.

The call is open exclusively to University of Ljubljana employees who wish to enhance the social impact of research conducted at the university. Funding is prioritised for projects in the humanities, arts, and social sciences, and for interdisciplinary projects linking these with the natural and technical sciences.

Main Part

In the main part of this paper I will first present the history of the knowledge transfer at the University of Ljubljana, present the SSHA Impact Fund and its results. I will finish with description of the impact culture and challenges of impact in the academic environment.

History of Knowledge Transfer at the University of Ljubljana

Since February 2018, the Knowledge Transfer Office has been operating at the University of Ljubljana as an upgraded version of the former University Office for Research, Development and Intellectual Property. It performs as a bridge between the research and business sectors. It supports students and researchers to protect the intellectual property of their innovations, provide training on entrepreneurism and support collaboration with private sector.

In 2019, University of Ljubljana issued the knowledge transfer guide Along the path of innovation to market success (Jerše et al. 2021) in Slovene and English language. However, the guide did not address social impact or social innovation. A revised version is now in preparation, expanding the framework to include knowledge transfer in the SSHA, with particular attention to social innovation, impact entrepreneurship, and intellectual property protection in these fields.

In 2020, University of Ljubljana established the University of Ljubljana Innovation Fund, supporting researchers who have developed technologies or solutions addressing industry challenges and who require additional steps to bring their innovations closer to the market. The call primarily supports researchers from the natural and technical sciences (STEM) seeking to further commercialise the innovations developed at the University of Ljubljana.

To provide similar support to SSHA, in 2024 the University of Ljubljana established the SSHA Impact Fund, designed to enhance the social impact of research in these disciplines.

Impact Initiative Description: The SSHA Impact Fund at the University of Ljubljana

The SSHA Impact Fund is managed by the KTO UL. In cooperation with the Vice-Rector for Knowledge Transfer the KTO UL publishes an internal call for SSHA Impact Fund projects each year. The accompanying documentation includes a notable guidance paper titled Recommendations for

Monitoring Impact and Results, which provides examples of potential evidence demonstrating project success. It assists researchers in reflecting on how their activities may generate measurable outcomes. The document lists practical examples of impact evidence from areas such as:

- public outreach and media visibility,
- knowledge transfer and dissemination,
- artistic activities,
- intellectual property,
- professional outputs and application in practice, and
- national and international awards.

The KTO actively supports researchers throughout the project cycle – from proposal writing and activity planning to impact measurement and reporting. Grantees also receive additional training opportunities on impact-related topics. The office encourages them to go one step further in their projects – what that step entails depends on the specific context and desired impact. Follow-up continues even after the funding period, as researchers are urged to report on longer-term outcomes and impact. Projects demonstrating significant knowledge transfer to society are promoted as examples of best practice.

First Results

The University of Ljubljana has implemented the SSHA Impact Fund twice so far, in 2024 and 2025. A review of the funded projects reveals five recurring categories of activities most commonly employed to enhance social impact:

Public Communication and Dissemination

Teams produced accessible materials such as guidelines, manuals, information packs, infographics and brochures, made available online. They organised online campaigns summarising results, cooperated with the media, and used social networks to share outcomes. Online platforms were also developed as tools for stakeholder to network and share best practices.

Engagement with Decision-Makers and Stakeholders

Projects teams organised roundtables, expert discussions, regional meetings and consultations with local authorities to present research-based solutions and promote their implementation. In several cases, best practices were incorporated into policy proposals.

Figure 1 HUD Sklad Logo

Education and Capacity-Building

Teams conducted workshops for various target groups, provided counselling and empowerment activities, and trained university staff to better address specific challenges in their work. Some aim at integrating the project outcomes into interdisciplinary summer schools and finally to the curricula.

Artistic and Cultural Interventions

Some interpreted their findings through theatre performances, concerts, exhibitions, and creative collaborations with communities. Others worked with sports clubs on upcycling projects or organised intergenerational and intercultural events where they used art to support social participation.

Participatory and Community-Based Activities

Various social groups – youth, refugees, prisoners, migrants, older adults – were invited to co-create project activities. Workshops, field walks, and site visits were organised to foster exchange of experience and applied learning among stakeholders.

The initial results and activities undertaken to enhance and achieve impact represent first steps in the direction of active participation and co-creation of responses to societal challenges, contribution to societal dialogue and proactive engagement of academic staff in policy formation processes. However, this should not be isolated efforts or individual projects. Rather, these activities must evolve into an integral part of a broader impact culture at the university. The meaning of this culture, and its particular importance within the academic sphere, is discussed in the following section.

Impact Culture

In the documents cited in the Introduction, various aspects of knowledge transfer are used that can be summarised into four categories:

- the transfer and use of knowledge beyond the academic environment,
- contribution to social development and quality of life,
- social responsibility and ethical conduct, and
- dialogue, cooperation, and co-creation with stakeholders toward a shared future.

These concepts correspond well to the definition of social impact as described by Mark Reed in his book *Impact Culture* (2022), where impact is defined in short as 'benefit' or 'the good that researchers do in the world.' More precisely, he defines it as 'perceived and/or demonstrable benefits to individuals, groups, organisations and society (including human and non-human entities in the present and future) that are causally linked (necessarily or sufficiently) to research' (Reed 2022).

Similarly, Nora Milotay notes in her briefing Measuring Social Impact in the EU that there is no universally accepted definition of the term. It is often used interchangeably with 'social value creation' or 'social return' and is closely related to the theory of change. Social impact is experienced at the level of individuals, households, groups, or communities, whereas social change refers to the processes that generate those impacts (Milotay 2017, 1).

A positive social impact may arise from various activities such as social innovation, entrepreneurship with social impact, social enterprises, civil initiatives, knowledge-sharing for and among people, public programmes addressing societal challenges, or policy and legislative activities.

We want to see more positive social impact that researchers at public universities can generate. Yet, as Mark Reed notes, universities and research institutes worldwide are traditionally structured around producing knowledge rather than ensuring that this knowledge is put to use. Consequently, much of their research remains unread and unused. To address this gap, universities need to foster a culture of impact – an environment that motivates people to apply their expertise in ways that engage diverse ideas and communities. Reed describes such a culture as one in which groups share a common purpose and possess the capabilities needed to translate their research into societal benefits (Reed 2022).

According to Reed (2022), a healthy impact culture rests on four pillars:

- It arises from a clear individual and collective purpose.
- It generates impact based on rigorous, ethical, and action-oriented research.
- It is embodied in communities of people who interact with both academic and non-academic audiences.
- It builds internal capacity and leadership that sustain research, community, and purpose that underpins impact.

He further stresses that each researcher is driven by intrinsic motivations. Therefore, reflection on one's purpose and why one chose a research career is essential (Reed 2022).

A recent study on the career paths of Slovenian researchers (Udovič 2025, 18) found that roughly one-third entered the profession with a desire to contribute to solutions for major societal challenges and to promote human well-being. This indicates a strong inherent motivation for socially relevant research.

Despite this, until recently such aspirations were not reflected in criteria for research career advancement. Scientific productivity – typically measured through publications and citations – was considered sufficient, while efforts to generate broader societal impact or to transfer knowledge beyond academia were largely unrewarded.

At the UL, this approach is now gradually evolving. In line with its strategic priorities, the university is working to shift attention from purely academic metrics toward the creation of positive social impact. It actively supports the transfer and practical application of knowledge generated within the institution to enhance social development and quality of life.

Challenges of Impact

Despite significant progress, several challenges remain in establishing a sustainable and effective culture of social impact within the university environment.

Conceptual and Terminological Clarity

The term impact is used inconsistently across disciplines. For some, it refers primarily to the economic or technological value of research, while for others it means social and cultural contribution. Universities need a shared conceptual framework that recognises the diversity of impact pathways and supports researchers in articulating their specific contributions. The transla-

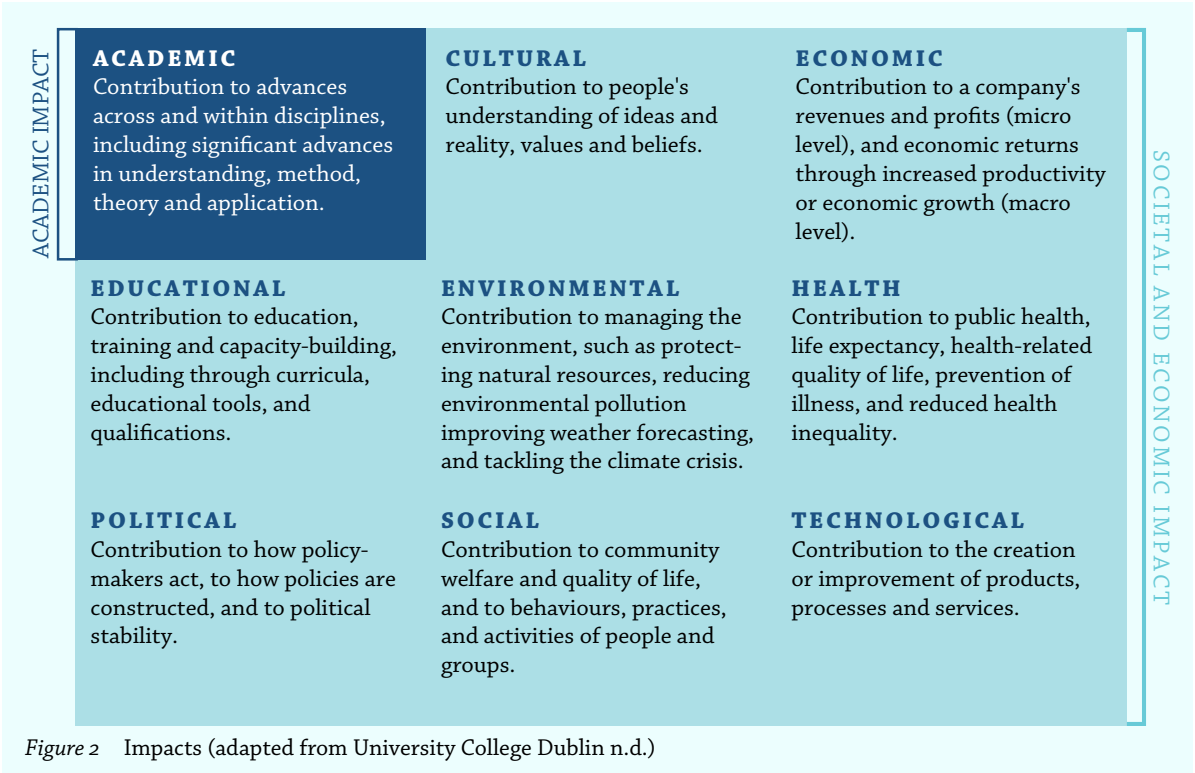

Figure 2 Impacts (adapted from University College Dublin n.d.)

tions of the word 'Impact' to Slovenian language can be diverse and is not used coherently.

Evaluation and Reward Systems

Current academic evaluation structures still prioritise scientific impact – publications, citations, project funding – over societal impact. As a result, researchers often perceive engagement impact activities as additional, voluntary work rather than as an integral part of their professional development. To change this, impact-related achievements should be recognised in career advancement, performance reviews, and funding allocations.

Capacity Building and Support

Many researchers, particularly in the humanities and social sciences, are unfamiliar with impact planning, stakeholder engagement, or communication strategies. Systematic training, mentoring, and institutional support are therefore essential. The KTO plays a key role here, but stronger faculty-level structures and cross-disciplinary collaboration are also needed.

Long-Term Funding and Sustainability

Projects funded by the SSHA Impact Fund are relatively short-term. While they successfully initiate impact-oriented activities, sustained change requires continuity and follow-up financing. Developing long-term mechanisms – such as impact-oriented fellowships, framework programmes, or multi-year partnerships with communities – would strengthen the durability of outcomes.

Recognition and Visibility

Finally, there is a need to enhance the visibility of socially impactful projects both within and outside the university. Good practices should be systematically collected, showcased, and communicated to national and international audiences. Such recognition not only motivates researchers but also strengthens the university's reputation as a socially responsible institution.

Conclusion

The SSHA Impact Fund represents a significant step in translating University of Ljubljana's strategic commitments into practice. It shows that social impact emerges not only from technology but also from research, artistic creation, and community engagement in the humanities and social sciences. By supporting researchers in increasing the relevance and societal value of their work, the fund contributes to a cultural shift from output-driven research toward social responsibility.

Impact thus extends beyond final results to include capacity-building, empowerment, and new collaborations or social innovations that

continue beyond the project. Evaluating social impact is inherently complex: effects are often indirect, delayed, and vary across contexts. While technological impacts may be easily measured, outcomes in the humanities and social sciences – such as shifts in civic participation or public discourse – are more subtle and long-term, making attribution difficult. Quantitative metrics may be used, but qualitative evidence – testimonials, case studies, stakeholder behaviour, policy uptake – is often more meaningful.

Addressing the challenges of impact requires institutional commitment and a broader cultural shift from viewing impact as an external demand to embracing it as part of the university's mission. Ultimately, achieving social impact means ensuring that university knowledge contributes to improving lives, fostering justice and inclusion, and empowering communities. University of Ljubljana's experience offers insight into how a university can build such an impact culture, connecting knowledge, creativity, and social responsibility for the common good.

References

Jerše, U., M. Leban, N. Smerdu, M. Rajh, and T. Stamać. 2021. *Along the Path of Innovation to Market Success: Guide to Knowledge Transfer at the University of Ljubljana*. University of Ljubljana.

Milotay, N. 2017. *Measuring Social Impact in the EU*. Accessed 14 November 2025.

Reed, M. S. 2022. *Impact Culture*. Fast Track Impact.

Udovič, B. 2025. 'Predstavitev 2. poročila o izzivih kariernih poti raziskovalk in raziskovalcev na slovenskem.' https://www.fdv.uni-lj.si/docs/default-source/cppr-doc/ppt_06112025zadnja.pptx?sfvrsn=0.

University College Dublin. N.d. 'What is Impact?' https://www.ucd.ie/impacttoolkit/whatisimpact/.

University of Ljubljana. 2022. 'University of Ljubljana Strategy 2022–2027.' https://www.uni-lj.si/assets/Sluzba-za-spremljanje-kakovosti-analize-in-porocanje/ANG/The-University-of-Ljubljana-Strategy-20222027.pdf

University of Ljubljana. 2025. *University of Ljubljana Sustainability Strategy 2025–2030*. University of Ljubljana.

University of Ljubljana. n.d. 'Mission and Vision.' https://www.uni-lj.si/en/university/about-us/mission-and-vision.

Univerza v Ljubljani. 2012. 'Strategija Univerze v Ljubljani 2012–2020.' https://www.uni-lj.si/assets/Sluzba-za-spremljanje-kakovosti-analize-in-porocanje/Strategija-UL-2012-2020.pdf.

Univerza v Ljubljani. 2025. 'Pravilnik o upravljanju z intelektualno lastnino na Univerzi v Ljubljani.' https://www.uni-lj.si/assets/Pravni-akti/Raziskovalno-razvojno-delo-in-intelektualna-lastnina/Trenutno-veljavni-akti-UL/Intelektualna-lastnina/Pravilnik-o-upravljanju-z-intelektualno-lastnino-na-Univerzi-v-Ljubljani-velja-od-9.-5.-2025.pdf

Univerza v Ljubljani. N.d. 'HUD Sklad UL.' https://www.uni-lj.si/raziskovanje/inovacije-in-prenos-znanja/raziskovalci/hud-sklad.

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Student Upskilling and Industry Value in the INDUSAC Project: Evidence from Quick, Challenge-Driven Co-Creation Mechanism

The INDUSAC project, launched in 2022 under Horizon Europe, connected industry and academia by involving students in solving real-world problems. Coordinated by the Jožef Stefan Institute, INDUSAC paired companies with international, interdisciplinary teams of students for co-creation projects lasting 4–8 weeks, based on multiple calls for applications. This article evaluates student engagement across three call periods – February to May 2024, June to October 2024, and November 2024 to July 2025 – using surveys before and after the projects. Results showed high initial student confidence and measurable improvements in skills such as negotiation and international teamwork. Satisfaction with the process and online platform increased among both students and companies, indicating effective adaptation based on feedback. While companies appreciated student creativity, they expressed a need for greater market viability. These findings validate INDUSAC's co-creation mechanism, enhancing knowledge transfer while fostering an environment that prepares students for successful global careers.

Keywords: student upskilling, industry value, INDUSAC project

Izpopolnjevanje študentov in vrednost za industrijo v projektu INDUSAC: dokazi iz hitrega, izzivno usmerjenega mehanizma soustvarjanja

Projekt INDUSAC, vzpostavljen leta 2022 v okviru programa Obzorje Evropa, je povezoval industrijo in akademsko sfero z vključevanjem študentov v reševanje realnih problemov. Projekt, ki ga koordinira Institut »Jožef Stefan«, je podjetja povezoval z mednarodnimi, interdisciplinarnimi ekipami študentov za projekte soustvarjanja, ki so trajali 4–8 tednov in so temeljili na več razpisih za prijave. Prispevek preko analize anketnih odgovorov pred in po izvedbi projekta vrednoti. vključenost študentov v treh razpisnih obdobjih od februarja do maja 2024, od junija do oktobra 2024 ter od novembra 2024 do julija 2025. Rezultati kažejo visoko začetno samozavest študentov ter merljive izboljšave veščin, kot sta pogajanje in mednarodno timsko delo. Zadovoljstvo s procesom in spletno platformo se je povečalo tako med študenti kot podjetji, kar kaže na učinkovito prilagajanje na podlagi povratnih informacij. Čeprav so podjetja cenila ustvarjalnost študentov, so izrazila potrebo po večji tržni izvedljivosti rešitev. Ugotovitve potrjujejo učinkovitost mehanizma soustvarjanja INDUSAC, ki krepi prenos znanja in hkrati vzpostavlja okolje, ki študente pripravlja na uspešne globalne kariere.

Ključne besede: izpopolnjevanje študentov, vrednost za industrijo, projekt INDUSAC

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Introduction

The collaboration between industry and academia is widely acknowledged as a key factor driving innovation, knowledge transfer, and competitiveness across Europe. Initiatives such as the EIT Knowledge and Innovation Communities (KICs) and Erasmus+ illustrate the benefits of integrating academic knowledge with practical industrial applications. Research highlights the importance of student involvement and persistent organisational challenges (Kempf et al. 2023; Bastian et al. 2024). Traditional collaboration models are time-consuming, resource-intensive, and less accessible to EU-widening countries. Evidence on short, challenge-driven projects and their evaluation remains limited, despite recognition that transversal skills (communication, negotiation, conflict management, analytical/critical thinking, teamwork, creativity, time management, international collaboration) are vital for employability and difficult to cultivate in classroom environments (Ejubovic et al. 2019). Furthermore, the evaluation of these short-term collaborations is not sufficiently developed, especially in measuring engagement and response rates (Rossoni et al. 2024). In addition to skill development, collaboration also promotes knowledge transfer through knowledge sharing, problem-solving, and cross-border learning. Prior research indicates that while both universities and industries value collaboration, students often participate only indirectly through workshops or mediated research initiatives, limiting their exposure to real-world industrial challenges (Morrison and Pattinson 2020; Ratten 2016). INDUSAC specifically addresses this issue by directly involving students in co-creation processes with industry, fostering not only skill development but also significant knowledge transfer (Cunningham and Link 2014).

In this context, research institutes and universities serve as key mediators of knowledge transfer and innovation, particularly through collaboration with industry on student-driven projects. Students serve as flexible carriers of emerging knowledge and methods, while institutions provide the structures and networks needed to translate their work into scalable solutions. Co-creation frameworks increasingly show how student participation helps transform disciplinary knowledge into applied, socially relevant outcomes, highlighting their central role in academia–industry collaboration.

This study assesses INDUSAC, a Horizon Europe project (2022–2025), arguing that brief, human-centered projects not only bolster students' skills but also yield innovative solutions for companies. By focusing on students' participation in these collaborations, the study contributes to theoretical and practical debates on how universities and research institutes promote knowledge transfer and social innovation. Our analysis contributes in two ways: first, by evaluating student skill development and company satisfaction with solutions through pre- and post-project surveys; and second, by placing INDUSAC within broader discussions of effective collaboration and knowledge transfer.

Project Context

Funded by Horizon Europe (Grant Agreement No. 101070297), INDUSAC fostered rapid, challenge-driven collaboration between academia and industry (Odić et al. 2023a; 2023b; 2024; Kunej et al. 2025). Coordinated by the Jožef Stefan Institute, the INDUSAC project consortium included universities, research institutes, clusters, and companies. International, interdisciplinary teams of 3–6 students and researchers addressed company challenges over 4–8 weeks, gaining practical experience while promoting cross-border cooperation. Attention was given to inclusiveness, gender balance, and the participation of both EU member states and associated countries, with a focus on EU widening countries. Financial support was provided by the Horizon Europe programme for students who successfully completed projects.

Throughout the three periods, companies published 251 challenges. Student and researcher teams submitted 232 motivation letters, and 159 projects were completed. This combination of student development and industrial collaboration highlights INDUSAC's dual contribution to employability and knowledge transfer.

Methods

The evaluation of the INDUSAC project utilized surveys administered to students and researchers before and after each co-creation project, as well as to companies after each project. The aim was to capture changes in skills, satisfaction with the process, and company evaluations of the solutions produced.

Survey design. In a single questionnaire administered pre- and post- co-creation projects, participants rated their soft skills (communication, negotiation, conflict management, analyt-

ical/critical thinking, teamwork, creativity, time management, international collaboration) on a 1–5 Likert scale and completed a method-proficiency checklist (SWOT, Personas, Trend/Scenario, Cost–Benefit, Product-Portfolio/BCG, White-Spot, Value Proposition, Marketing Strategy, Business Model Canvas, Business Plan, PSS design, idea detection, Empathy/Kano, and prototyping), recorded as Yes/No familiarity. After the co-creation project completion, participants filled the post-project questionnaire covering the INDUSAC process and platform (usability, clarity of instructions, and available support). In parallel, companies completed a post-solution survey assessing the delivered work on creativity/innovativeness, relevance and market potential, quality of work and teamwork, and their own satisfaction with the process and platform.

Participation and evaluability rate. Across the three INDUSAC call periods – February to May 2024, June to October 2024, and November 2024 to July 2025, more than 500 students and researchers participated. Students and researchers came from across the EU. We received 71, 61, and 430 valid pre-project responses, and 56, 44, and 431 valid post-project responses in the first, second, and third period, respectively. This corresponds to 86% pre-project and 67% post-project response rates in the first and second period, and 93% pre-project and 76% post-project in the third period, showing strong engagement at the outset and some attrition due to survey fatigue. Companies provided 9 valid responses in the first, 8 in the second, and 81 in the third period.

Data analysis. Survey responses were analysed with descriptive statistics. Improvements in competencies were calculated as percentage differences between average pre- and post-scores on a five-point Likert scale.

The mixed-survey methodology utilized in this study allowed for comparisons between student self-assessments and companies' feedback. This approach offers a comprehensive perspective on INDUSAC's effectiveness in promoting skill development and achieving beneficial outcomes.

Results

The analysis of the INDUSAC project involved examining survey data collected from participating students, researchers, and companies. This section presents results related to participant engagement, skill enhancement, proficiency with methods, satisfaction with the INDUSAC platform and process, and company evaluations of delivered solutions. These factors collectively provide an assessment of the INDUSAC project's effectiveness in achieving its objectives of enhancing student capabilities, developing innovative solutions to industry challenges, and fostering collaborative relationships between academia and industry.

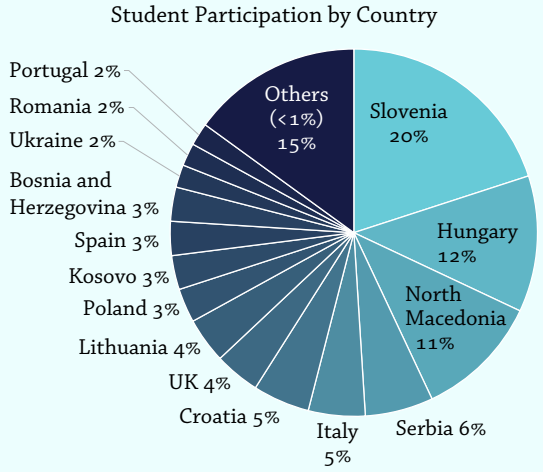

Figure 1 Student Participation by Country

Participant engagement. Students from a broad range of countries participated in the project (fig. 1), with participation measured as the share of total participants by country of residence. The analysis reflects overall representation rather than the absolute number of students, as individuals could participate in up to three co-creation teams. The largest shares came from Slovenia (≈ 20%), Hungary (≈ 12%), North Macedonia (≈ 11%), and Serbia (≈ 6%), followed by contributions from Croatia, Italy, Lithuania, the UK, Bosnia and Herzegovina, Spain, Kosovo, and Poland. Countries with ≤1% participation each – including Morocco, Albania, Cyprus, Georgia, Israel, Malta, Finland, France, Slovakia, the Netherlands, Austria, Belgium, Moldova, Tunisia, Greece, Ireland, Türkiye, Bulgaria, Czechia, Germany, and Montenegro – are grouped under 'Others'. Most participation originated from widening and associated countries, indicating that the mechanism's inclusivity criterion was effectively met.

Skill development. A core goal of the INDUSAC project was to strengthen transversal skills relevant to employability and collaborative innovation. Students and researchers assessed their own competencies in 17 areas, including communication, planning, analytical and critical thinking, teamwork, negotiation, conflict man-

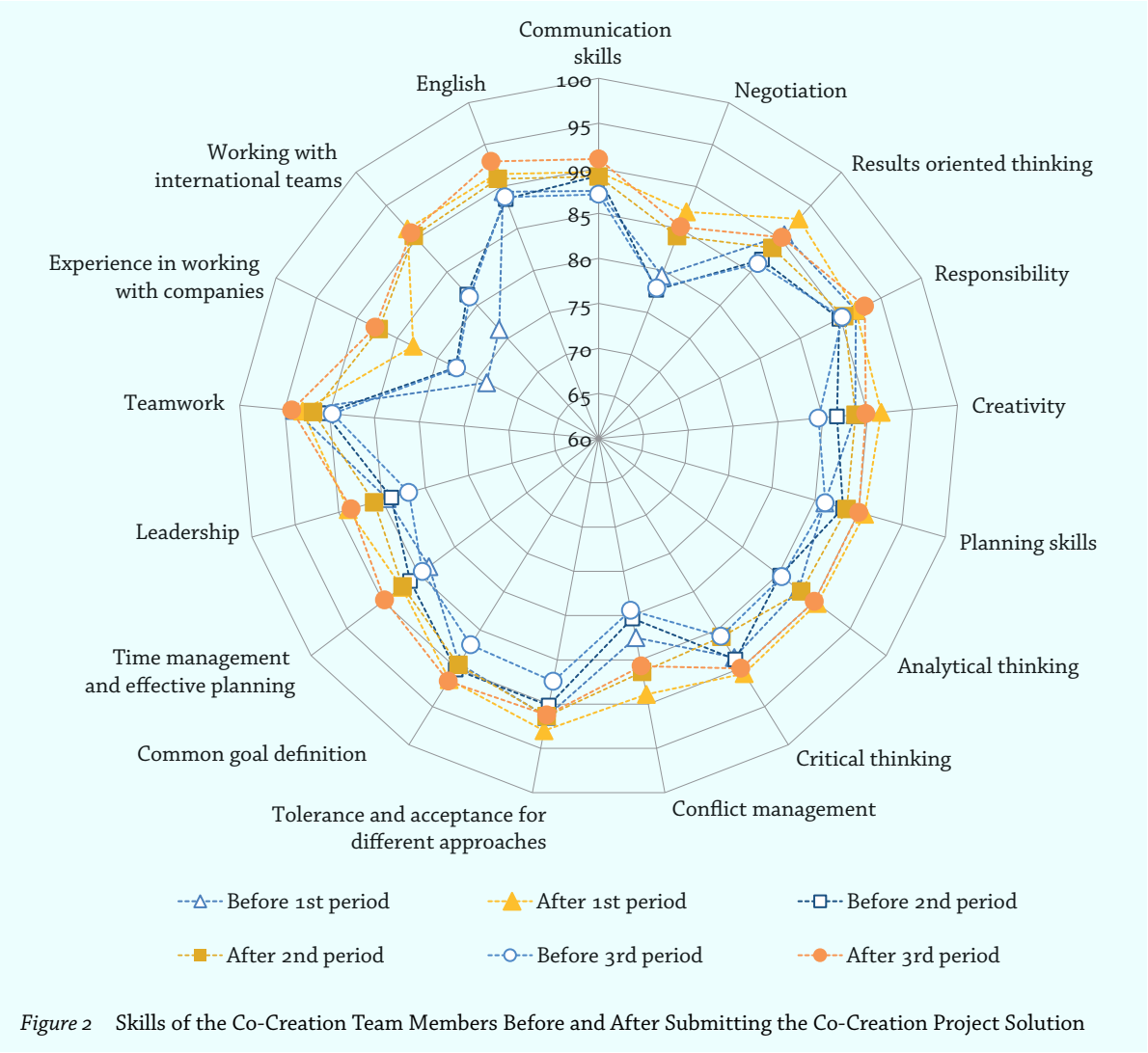

Figure 2 Skills of the Co-Creation Team Members Before and After Submitting the Co-Creation Project Solution

agement, leadership, time management, responsibility, international teamwork, and experience working with companies. Before participating in the co-creation projects, participants already rated themselves highly across most skills – typically around 85–90%, reflecting strong initial self-confidence. After completing the projects, self-assessed skill levels increased further across almost all areas in all three periods, with an overall average improvement of approximately 4%, as shown in figure 2. The most pronounced improvements were observed in negotiation (7 percentage points), conflict management (6 percentage points), experience in working with companies (9-10 percentage points), and working with international teams (up to 15 percentage points). These areas consistently showed visible gains from 'Before' to 'After' in each period (fig. 2). Such gains are directly aligned with INDUSAC's design, which places participants in short (4–8-week) real-company challenges in international, gender-balanced teams. Smaller increases were also observed in communication, time management, and leadership, indicating that participants not only contributed to the final solution but also practiced coordination, accountability, and planning under time pressure.

The radar chart shows self-assessed competence before and after participation across three periods. Skills are arranged around the rim; the axes indicate average values on a 1–5 scale expressed as percentages. Separating 'Before' and 'After' lines allows comparison of the change.

Proficiency with innovation and business methods. Beyond transversal skills, participants reported clear improvements in their proficiency in the methods used for innovation and business design, shown in figure 3. Baselines were typically ~50–70%, with some techniques lower (~20–45%). After participation, proficiency in most methods increased by ~10–20 percentage points, while proficiency in tools introduced through

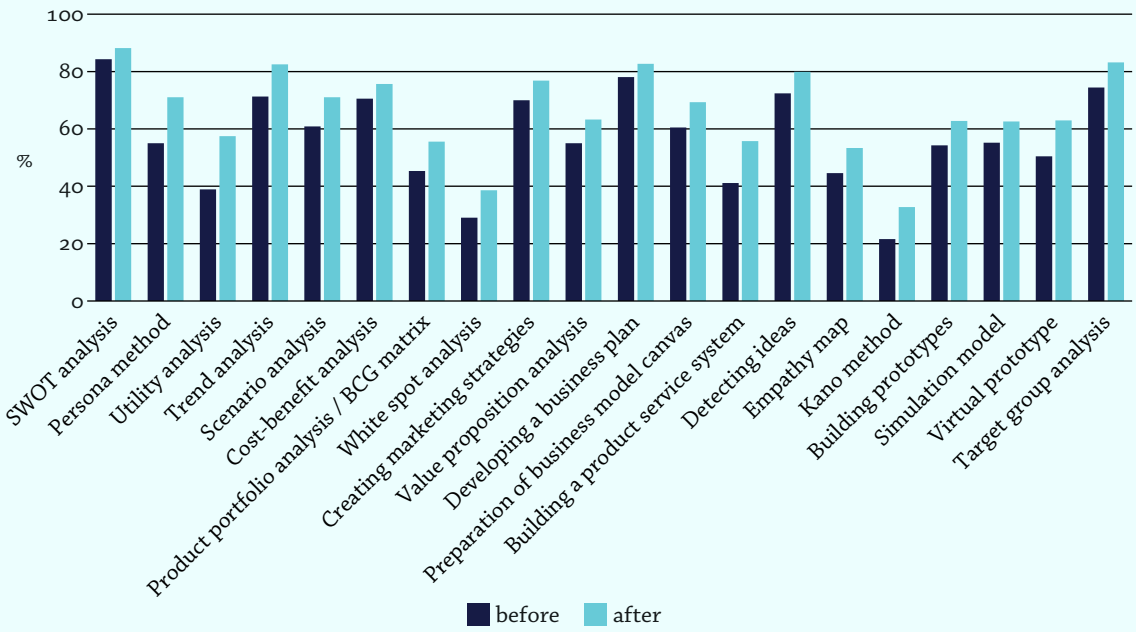

Figure 3 Proficiency with Innovation and Business Methods (Before vs. After)
Note The x-axis lists the methods and the y-axis shows average scores as a percentage (1–5 scale, normalized to 0–100%).

hands-on project work – such as white-spot analysis, Kano method, idea detection, and prototyping (physical/simulation/virtual), rose by ~20–35 percentage points. Proficiency in strategic and planning methods (SWOT, Scenario analysis, Value Proposition, Business Plan, Business Model Canvas) reached post-levels of 75–90%, and marketing/portfolio methods (Persona, Trend analysis, Creating marketing strategies, Product-portfolio/BCG) typically improved by 10–20 percentage points. These patterns indicate that INDUSAC strengthens both collaboration capabilities and the practical toolset needed to deliver company-valued outcomes within short project phases.

In a few skills, post-project scores were slightly lower than pre-project scores. Rather than indicating a loss of competence, this can reflect recalibration: participants may reassess themselves more realistically after exposure to real industrial expectations and multi-national teamwork. Overall, these results show that even in a short co-creation format, participants report meaningful development in company-facing and collaboration-facing skills, which are critical for transition into professional environments.

These results address a gap often noted in the literature (Kempf et al. 2023; Bastian et al. 2024; Ejubovic et al. 2019). Many industry–academia formats claim learning benefits, but few provide systematic pre- and post-evidence for short-term interventions. Here, even compact 4–8-week projects yielded tangible, quantifiable improvements, most prominently in international teamwork and direct company interaction. These gains are not only educational outcomes; they are foundational to knowledge transfer, because negotiation, conflict resolution, and cross-cultural collaboration are the skills that enable students and researchers to translate academic insight into solutions organisations can adopt in practice.

Satisfaction with process and platform. Post-project results show a steady rise in satisfaction across three periods for both co-creation teams and companies (fig. 4). In the 1st period, teams reported ~78% (process) and ~81% (platform), while companies reported ~72% and ~75%, respectively. By the 2nd period, satisfaction increased to ~85–87% for teams and ~80–84% for companies. In the 3rd period, teams reached ~92% (process) and ~91% (platform), and companies reached ~87% and ~86%. Teams consistently rated satisfaction higher than companies, with gaps of about 5–7 percentage points, narrowing to ~5 percentage points by the final period. The upward trend indicates effective iterative improvements to both the process and the platform, particularly around usability, guidance, and overall support. These outcomes reinforce the importance of iterative refinement (Bastian et al. 2024). They also underline how digital platforms can serve as ena-

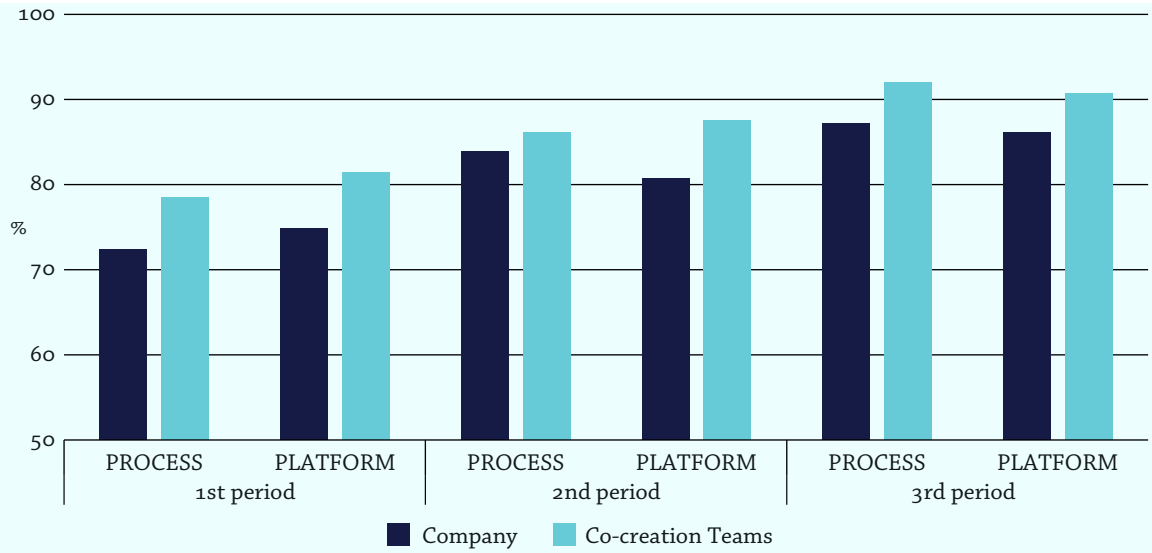

Figure 4 Satisfaction with the INDUSAC Process and Platform (Co-Creation Teams vs. Companies, Across Three Periods)

blers of knowledge transfer by keeping collaboration materials, feedback, and ideas accessible for later development.

In figure 4, the x-axis groups Process and Platform ratings for the 1st, 2nd, and 3rd periods; the y-axis shows the percentage of satisfied respondents. For each category, paired bars compare Co-creation Teams and Companies. Satisfaction rises from period 1 to period 3 for both participant groups, highlighting overall improvements.

Company evaluations. Company ratings of the co-creation team's solutions and work improved consistently across the three periods (fig. 5). In the 1st period, scores ranged 67–78%. The strongest items were relevance and quality of work (both 78%), indicating acceptable fit-to-brief and delivery quality at baseline, while innovativeness and market potential (both 67%) lagged, suggesting uneven novelty and limited commercial readiness. Overall satisfaction was 78%. In the 2nd period, a broad uplift moved most criteria into the mid- to upper-80s: innovativeness, creativity, soundness, quality of work, and satisfaction were 88%; improvement and market potential were 83%; and relevance was 80%. These gains point to clearer deliverables and closer alignment with company expectations, with notable jumps in novelty, methodological soundness, and execution quality. Overall satisfaction increased to 88%. By the 3rd period, ratings stabilized near 90% across most items: quality of work at 91%, satisfaction at 92%, relevance at 90%, and soundness at 89%. Innovativeness (87%) and creativity (88%) remained high, while market potential (85%) improved further but continued to lag execution-focused criteria. Overall, the trajectory from period 1 → 2 shows a step-change improvement (≈ +8–21 percentage points vs. period 1), followed by incremental gains from period 2 → 3 (≈ +3–10 percentage points vs. period 2), consistent with a maturing mechanism. Market potential remains the most conservative dimension, indicating that earlier market testing and more robust feasibility framing are the primary levers for further progress.

Of the categories surveyed, Innovativeness, Creativity, Improvement over existing solutions, Market Potential, and Relevance refer to the solution delivered by the co-creation team, whereas Soundness, Quality of Work, and Satisfaction refer to the work done by the co-creation team. The x-axis shows company evaluations from the first, second, and third periods, while the y-axis shows the percentage of company representatives who expressed satisfaction.

These observations confirm earlier feasibility analyses (Odić et al. 2024; Kunej et al. 2025), which reported that while companies were enthusiastic about student creativity, they sought clearer communication and stronger connections to practical outcomes. The trend observed here – increased satisfaction after methodological refinements – indicates that INDUSAC has matured and better aligns with company expectations. Importantly, by providing innovative but not always fully market-ready solutions, INDUSAC lays the groundwork for knowledge transfer: student ideas and prototypes can be refined with compa-

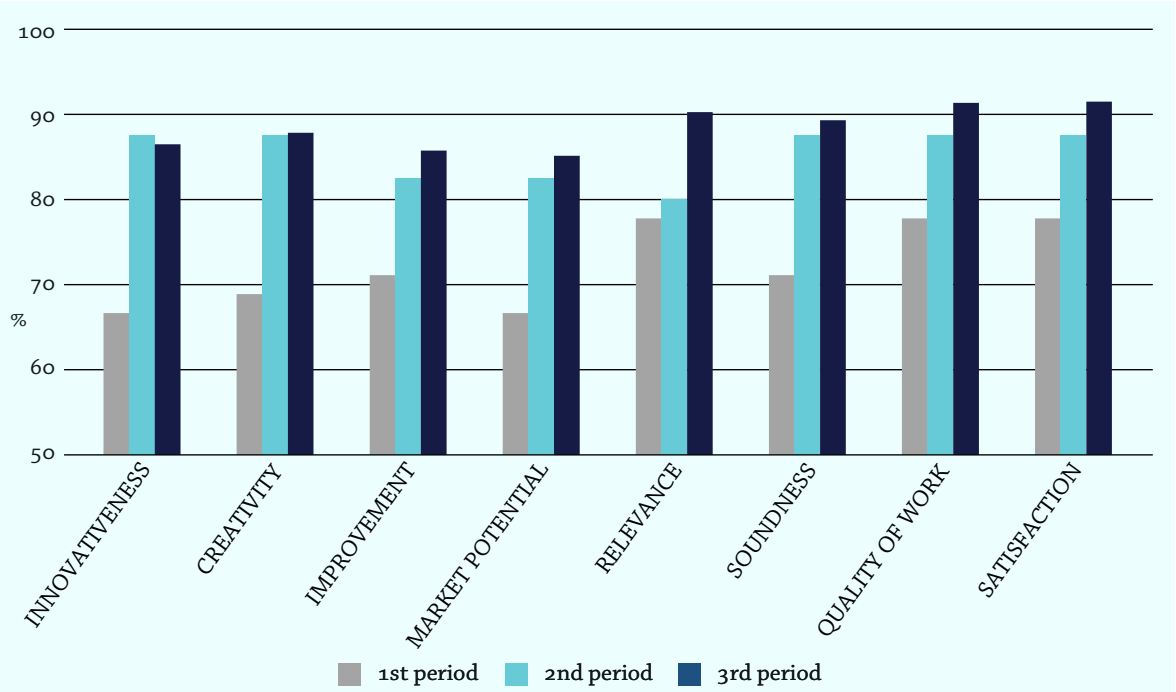

Figure 5 Companies' Evaluation of Solutions and the Work of the Co-Creation Teams

ny support into sustainable industrial outcomes.

Discussion

The findings of the INDUSAC project show that short, challenge-driven co-creation formats can effectively benefit both academic teams and companies. Although participants entered with high self-assessed competencies (86%), they still demonstrated meaningful gains – particularly in negotiation, conflict management, international teamwork, and experience working with companies – skills that typically require real-world engagement. These improvements confirm the value of experiential learning and show that the format supports development regardless of initial skill level.

Method proficiency advanced similarly. Most tools increased by 10–20 percentage points, while less familiar methods such as white-spot analysis, Kano, and prototyping rose by 20–35 points. This shows that short project phases can rapidly introduce and consolidate analytical and design-oriented methods, enabling students and early-career researchers to act as dynamic knowledge intermediaries capable of applying new tools in industrial contexts.

Company evaluations reinforce the effectiveness of the mechanism. Satisfaction rose steadily from Period 1 (67–78%) to the mid-80s in Period 2 and then stabilized around 90% in Period 3 for the relevance, soundness, and quality of work. Companies repeatedly highlighted the clarity and usability of deliverables, analyses, canvases, prototypes, and business rationales, which served as actionable knowledge carriers beyond the project itself. Regular checkpoints and clear criteria supported insight absorption, ownership assignment, and next-step planning, helping transform co-creation from a one-off activity into a structured knowledge-transfer pipeline.

Interpersonal skill development also shaped project success. Improved negotiation, conflict resolution, and cross-cultural collaboration enabled teams to communicate constraints, justify trade-offs, and refine solutions jointly, behaviours that support the adoption of new ideas in organisational settings. These behaviours show that students contribute not only technical content but also the relational work needed for effective knowledge transfer.

While market potential improved into the mid-80% range, it remained the most conservative dimension. Companies pointed to the value of early validation activities, problem–solution fit interviews, quick competitor scans, and basic market sizing, to advance promising concepts toward implementable solutions. This gap reflects the complementary roles of universities/research institutes and industry partners: students provide creativity and analytical rigor, while companies contribute contextual feasibility and market insight.

Taken together, these observations show that the INDUSAC project strengthens not only student competencies but also the knowledge-transfer mission of universities and research institutes. Students' performance in real company challenges demonstrates the project's potential to teach new skills beyond university education and support structures, preparing them for applied innovation work. By enabling students to apply academic tools, methods, and theoretical knowledge in practice, universities contribute directly to socially and economically valuable outcomes.

Overall, rapid, human-centered co-creation provides a scalable and inclusive model for university–industry collaboration. By involving students directly in real-world challenges, the mechanism supports innovation, enhances professional readiness, and advances the broader societal mission of universities and research institutes within contemporary innovation ecosystems.

Conclusions

This study shows that the INDUSAC project effectively engaged students in rapid, challenge-driven collaboration with companies, positioning them as key contributors to knowledge transfer and innovation. These outcomes also reflect the important role of universities and research institutes, whose educational and support structures enable students to apply emerging knowledge and methods in real industrial contexts.

Students demonstrated notable gains in negotiation, conflict management, and international teamwork, confirming the value of experiential, real-world collaboration for developing skills essential to innovation processes. Companies' increasingly positive evaluations further show that student teams, supported by university-based training and frameworks, can deliver creative, relevant, and analytically robust outputs.

Strong participation and high performance across the EU widening and associated countries highlight the model's inclusiveness and scalability. At the same time, iterative improvements to the process strengthened the translation of academic insights into usable industrial or social outcomes.

Overall, the INDUSAC project offers a replicable approach in which short, student-centered collaboration strengthens both employability and the knowledge-transfer mission of universities and research institutes. By preparing students to address real-world company challenges, universities expand their impact within European innovation ecosystems and contribute directly to innovation and the creation of industry-relevant knowledge.

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References

Bastian, A., C. Kempf, P. Rudolph, and A. Albers. 2024. 'Breaking Cultural Barriers: An Integrated Methodology for Challenge-Driven Co-Creation Projects.' *Proceedings of the Design Society* 4:885–894.

Cunningham, J. A., and A. Link. 2014. 'Fostering University – Industry R&D Collaboration in European Contexts.' *Research Policy* 43 (6): 1239–1249.

Ejubovic, A., G. Cerinsek, T. Davey, A. Meerman, V. Galan-Muros, and B. Orazbayeva. 2019. 'State of Slovenia University Business-Cooperation Report (University Perspective).' https://www.researchgate.net/publication/336875059_State_of_Slovenia_University_Business-Cooperation_Report_University_Perspective.

Kempf, C., A. Albers, I. Hellwig, A. Bastian, and K. Ritzer. 2023. 'Success Factors and Barriers in Industry–Academia Collaborations – A Descriptive Model.' In *Proceedings of the ASME 2023 International Mechanical Engineering Congress and Exposition,* Volume 2, *Advanced Design and Information Technologies*. American Society of Mechanical Engineers.

Kunej, Š., D. Odić, U. Mrgole, and M. Trobec. 2025. 'Evaluating Skill Development and Collaboration Outcomes in the INDUSAC Project.' In *Proceedings of the 28th International Technology Transfer Conference, Information Society – IS 2025,* edited by D. Odić, T. Poženel Kovačič, and R. Blatnik, Volume E. Institut »Jožef Stefan«.

Morrison, A., and P. Pattinson. 2020. 'University–Industry Collaboration in Practice: Patterns and Pathways.' *Journal of Technology Transfer* 45 (5): 1234–1248.

Ratten, V. 2016. 'Knowledge Transfer, Entrepreneurship, and International Collaboration: A Framework for Competitiveness.' *International Journal of Technology Management* 72 (4): 217–229.

Rossoni, A. L., E. P. G. de Vasconcellos, and R. L. de Castilho Rossoni. 2024. 'Barriers and Facilitators of University-Industry Collaboration for Research, Development and Innovation: A Systematic Review.' *Management Review Quarterly* 74 (3): 1841–1877.

Odić, D., U. Mrgole, and M. Trobec. 2023a. 'New Initiatives for Knowledge Transfer between Industry and Academia: The INDUSAC Project.' In *Proceedings of the 26th International Multiconference Information Society – IS 2023,* edited by T. Mlinar and Š. Stres, Volume E. Institut »Jožef Stefan«.

Odić, D., U. Mrgole, and M. Trobec. 2023b. 'Nove poti pridobivanja veščin in delovnih izkušenj v medna-

rodnem sodelovanju z industrijo pri študentih.' In *Zbornik 26. mednarodne multikonference informacijska družba – IS 2023,* edited by U. Rajkovič and B. Batagelj, Volume G Institut »Jožef Stefan«.

Odić, D., U. Mrgole, and M. Trobec. 2024. 'Feasibility Analysis for the New Mechanism of Knowledge Transfer within the INDUSAC Project.' In *Proceedings of the 27th International Multiconference Information Society – IS 2024,* edited by U. Florjančič, R. Blatnik, and Š. Stres, Volume E. Institut »Jožef Stefan«.