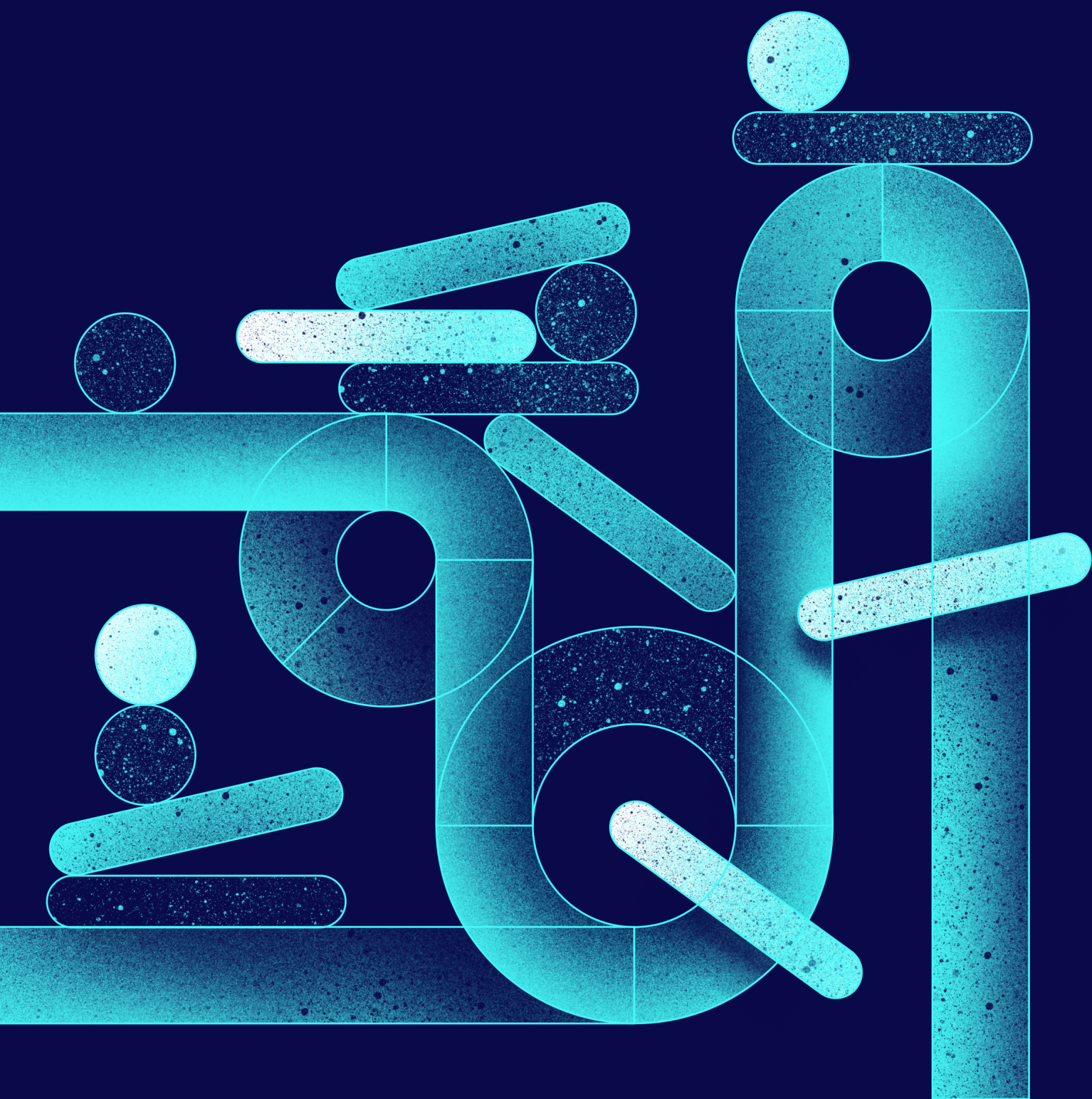


management

LETNIK 21 (2026) ŠTEVILKA 1

ISSN 1854-4231



management

LETNIK 21 (2026) ŠTEVILKA 1 ISSN 1854-4231

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https://doi.org/10.26493/1854-4231.21_1

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The Success of the Social Impact of Innovation: From Connecting Diversity to Building Shared Trust

In recent years, interest in social innovation and its broader societal impact has grown substantially, both in professional discourse and in academic research. The contributions published in the previous special issue of *Management* (2025, no. 2) already confirmed this trend, particularly from the perspective of the role of universities in fostering social innovation. As noted at that time, the strong response and the high number of submissions led – thanks to the thoughtful support of the Editor-in-Chief – to the expansion of the thematic issue into two increasingly comprehensive parts. The present volume represents the second instalment.

This issue approaches social innovation and its effects through a broader and, in some respects, more indirect lens. It begins by further highlighting the evolving role of universities as designers and providers of specialised curricula on innovation and related themes, aimed at raising awareness among academic and professional staff, as well as students (Čalušić and Kustec). In recent years, programmes of this kind have benefited from significant support through national funding schemes and European Commission project calls. At the same time, such initiatives are extending beyond universities into the educational activities of research institutes (Odič et al.) and into innovative mentoring schemes within the non-governmental sector (Kolenc and Golja, available in the Slovene language only).

The importance of this broad perspective is further demonstrated by Košir et al., who show – through the example of successful technological innovation – that genuine breakthroughs depend not only on technical excellence but also, ultimately, on broader non-technological knowledge and skills, including business expertise and effective market approaches that stimulate user interest, most commonly reflected in customer acquisition. Likewise, as Zirnstien and Zirnstien argue in their contribution (available in the Slovene language only), innovation is shaped not only by

individual interest, motivation, and skills, but also by broader social, legal, and market support required for its successful implementation. It is precisely this wider readiness that ultimately determines whether innovation can generate meaningful and lasting benefits for society as a whole.

Similarly, broader implications are explored in the contribution by Konečnik Ruzzier et al. (also available in the Slovene language only), who examine the introduction of artificial intelligence as an innovative tool in marketing. Like other contributors to this issue, they identify both the direct and numerous indirect changes brought about by the use of new tools and services. Importantly, they also draw attention to the long-term societal implications of such innovations, particularly the risks and challenges associated with ethical use and the need to preserve the active role of human beings in an increasingly complex and demanding innovation environment. If such concerns are neglected, innovations may quickly become drivers of failure, leading to the so-called ‘valley of death.’

Taken together, the twelve contributions across both parts of this extensive special issue on social innovation and its impact in *Management* (2025, no. 2, and 2026, no. 1) reveal a strong interdependence between seemingly diverse domains. This interconnection can be observed across several dimensions: (1) the relationship between technological and social innovation; (2) the interaction among various actors within the innovation ecosystem – including innovators, public authorities, academic and research institutions, the business sector, markets, civil society, and the media – and the diverse forms of knowledge, interests, and responsibilities they bring; and (3) the systematic approaches to assessing innovation, encompassing its inputs, processes, practices, outcomes, and long-term effects on both technological advancement and broader social progress.

Through approaches that not only describe but also actively implement collaboration across these diverse domains, it becomes possible to build relationships grounded in trust – relationships that are essential for supporting the future development of societies and human civilisation as a whole.

I wish you an engaging and thought-provoking reading experience, and I hope that these contributions will inspire new ideas and reflections.

Simona Kustec
Editor of the thematic issue



<https://doi.org/10.26493/1854-4231.21.3-4>

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University Employees' Perceptions of Innovation: Evidence from the BIKE-HEI Project First Training Programme

Universities are increasingly recognised as proactive actors in fostering innovation, contributing to regional growth, driving economic development, and enhancing social welfare. This paper explores perceptions of innovation and related knowledge among academic and non-academic university employees, based on data collected through an online questionnaire administered during a training course on innovation ecosystems offered within the BIKE-HEI project. The findings indicate that university employees generally perceive their innovation-related knowledge as relatively strong, with both academic and non-academic staff reporting high levels of intrinsic motivation to engage in innovation, as well as a clear aspiration to create meaningful impact. Among the barriers to acquiring additional knowledge and engaging in innovation-related work, respondents emphasise work-related constraints, including limited time, administrative and financial burdens, insufficient specialised knowledge of innovation, and a perceived general resistance to change within universities. These findings are consistent with existing theoretical and empirical research supporting the innovation and entrepreneurial orientation of universities, and they highlight the need to strengthen institutional support and create conditions that foster employees' engagement in innovation-related activities.

Key words: innovation, university employees, governance, survey, BIKE-HEI project

Razumevanje inovacij med zaposlenimi na univerzah: ugotovitve prvega izobraževalnega programa v okviru projekta BIKE-HEI

Univerze so vse bolj prepoznane kot proaktivni akterji pri spodbujanju razvoja inovacij, regionalnega razvoja, gospodarske rasti in družbene blaginje. V prispevku smo se osredotočili na zaznave akademskega in strokovnega osebja na univerzah o inovacijah ter z njimi povezanega znanja. Podatke smo pridobili s pomočjo anketnega vprašalnika, ki so ga izpolnili udeleženci usposabljanja o inovacijskih ekosistemih, ponujenega v okviru projekta BIKE-HEI. Ugotovitve kažejo, da zaposleni na univerzah svoje znanje o inovacijah na splošno ocenjujejo kot pozitivno, pri čemer tako akademski kot strokovni kader izraža močno notranjo motivacijo za vključevanje v inovacije ter željo po ustvarjanju vidnega prispevka. Med ključnimi ovirami pri pridobivanju dodatnega znanja in uvajanju inovacij v delovne procese udeleženci navajajo pomanjkanje časa, administrativna in finančna bremena, omejeno strokovno znanje s področja inovacij ter splošen organizacijski odpor univerz do sprememb. Rezultati so skladni z obstoječimi teoretičnimi in empiričnimi raziskavami o inovacijski ter t. i. »podjetniški« usmerjenosti univerz in poudarjajo pomen institucionalne podpore pri ustvarjanju pogojev, ki spodbujajo vključenost zaposlenih v z inovacijami povezane delovne aktivnosti.

Ključne besede: inovacije, zaposleni na univerzi, politike in management, anketa, projekt BIKE-HEI



<https://doi.org/10.26493/1854-4231.21.5-11>

Introduction

Innovation has far-reaching effects on both the business sector and society. The concept of innovation has been firmly established and extensively discussed in the field of business management for over four decades (Jekabsone and Anohina-Naumeca 2024). As a result, numerous studies on innovation can be found in economics and management, with authors approaching the phenomenon from diverse perspectives.

Due to the widespread recognition of innovation as a driving force of progress, and knowledge transfer as essential for the development of new solutions, the need for closer cooperation among universities, research institutions, the business sector, and, importantly, systemic political support has become increasingly evident since the 1990s (Clark 1998; Etzkowitz 2001; 2003). With the development of the triple helix model (Etzkowitz and Leydesdorff 1997), the central role of academia in innovation and entrepreneurship has been more clearly defined and has expanded significantly, leading to the advancement of the concept of the so-called entrepreneurial university (Etzkowitz 2008).

To effectively contribute to the development of an innovative and entrepreneurial society, the academic community is expected not only to transfer disciplinary and research-specific knowledge but also to integrate innovation and entrepreneurship into the everyday work practices of various groups of university employees (Fernández-Nogueira et al. 2018). Innovation is thus understood as a collective, system-wide process that requires the coordinated engagement of multiple groups of employees with complementary roles. Academic staff members are expected to act as generators of innovation and facilitators of knowledge transfer, professional staff are expected to provide digitally and operationally skilled administrative support, and university leadership is expected to assume responsibility for the strategic planning, promotion, and management of innovation, as well as for the broader entrepreneurial mission of the university (Clark 1998; Etzkowitz 2003; Link and Siegel 2005; Benneworth and Jongbloed 2010).

Over time, addressing key questions – such as who requires innovation-related skills, why these

skills are necessary, and how they should be acquired and applied – has contributed to identifying effective ways to support the innovation and entrepreneurial mission of universities.

An additional dimension of these considerations is placed at the centre of this paper through a case study of an EU-funded project aimed at fostering the entrepreneurial orientation of universities. In alignment with EU priorities and strategic frameworks, including the Green Deal and the European Digital Decade Policy Programme, as well as the ERA Policy Agenda, the European Commission supported the development of the project entitled Boosting Innovative and Knowledge-based Entrepreneurship of HEIs (BIKE-HEI) within the EIT Higher Education Initiative.

The project aims to strengthen opportunities for developing an innovative and knowledge-based entrepreneurial mindset among academic and non-academic university staff, as well as students. It represents a collaborative initiative connecting four partner universities: the University of Alicante (Spain), Saarland University (Germany), the University of Primorska (Slovenia), and Mariupol State University (Ukraine). Within this framework, a range of project activities was implemented, including an extensive training and mentoring programme focused on innovation and entrepreneurship in the university context.

The first implementation of the training programme, conducted under the overarching theme of Sustainable Innovation and Entrepreneurship (<https://bike-hub.eu/training-first-edition/>), was successfully completed by 54 out of 128 registered academic staff members, 53 out of 130 registered non-academic staff members, and 385 out of 724 registered students.

Drawing on preliminary reflections from academic and non-academic staff who participated in the training module on the innovation ecosystem, this paper provides a contemporary assessment of university employees' perceptions of innovation and entrepreneurship, as captured prior to the start of the training implementation.

Innovation and Innovation Ecosystem

Rather than being a recent phenomenon, innovation has been present throughout history as a

primary engine of change and development, although its forms, pace, and impact have varied across different historical periods. According to Singh and Aggarwal (2022), innovation remains insufficiently understood due to the absence of a single, widely accepted definition. Nevertheless, the authors conceptualise innovation as the implementation of creative potential, driven by social or commercial motives, through new or adapted solutions that generate value and contribute to social, organisational, or economic development.

Accordingly, innovation can be understood as a complex process in which multiple actors, activities, and institutions must interact. This network of interconnected actors that collectively support and shape the innovation process is commonly referred to as the innovation ecosystem (Granstrand and Holgersson 2020). When innovation is conceptualised as a process, a key initial consideration for any institution is the willingness of its members to proactively engage in innovation activities. This willingness has important implications for both current and future institutional development, influencing the capacity of universities to adapt, enhance quality, and respond effectively to evolving societal needs (Martínez-Azúa and Sama-Berrocá 2022).

In line with these developments, a growing body of recent research has (re)focused attention on the innovative missions of universities, particularly emphasising the roles that different groups within the university – such as academic staff, non-academic staff, and students – can assume as key drivers within broader innovation systems (Kochetkov 2023).

Universities in the Innovation Ecosystem

More than ever before, higher education institutions, including university researchers, teachers, and professional staff, collaborate with industry, often through joint projects aimed at integrating academic knowledge with practical expertise that holds the potential for broader economic and societal benefits (Snellman 2015; Mascarenhas et al. 2024).

Such interactions found their theoretical and conceptual grounding more than two decades ago in the now well-established triple helix model, which defines the collaborative dynamics among universities, industry, and government in fostering innovation processes (Etzkowitz and Leydesdorff 1997; Etzkowitz 2003). This form of university–industry collaboration has led many

contemporary universities to establish centres for development and knowledge transfer, science parks, and even business incubators (Good et al. 2019).

In practice, collaboration and knowledge exchange between universities and external stakeholders also take place through educational activities, including organised workshops and training programmes dedicated to innovation (Mochnacs et al. 2024). Within this context, universities have assumed a more active role in supporting innovation and facilitating knowledge transfer beyond the traditional academic environment (Fahy 2015; Münch 2014; Heymann 2018). At the same time, employees require relevant competencies and institutional support in order to effectively engage in innovation-based activities (Annamalah et al. 2022; Fernández-Cruz and Rodríguez-Legendre 2021).

Universities operate within complex institutional environments that require strategic decision-making in order to differentiate their organisational identity from that of their peers (Cinar and Coenen 2023). Although they possess the capacity to adopt a proactive role across a range of innovation-related strategies, the extent and direction of their engagement are shaped by multiple factors, including employees' attitudes towards innovation and the strategic vision of institutional leadership (Veiga Ávila et al. 2019).

Research Goals and Expectations

Within the framework of the theoretical considerations outlined above, the aim of this paper is to deepen the understanding of how different groups of university employees perceive innovation in a broader sense, particularly in relation to their everyday work and the opportunities available to them for acquiring additional knowledge on these topics within their institutions.

Based on these premises, the following research questions guided the study:

RQ1: How do university staff perceive innovation and the innovation ecosystem in general?

RQ2: How do university staff perceive their engagement in innovation-related activities through their work?

RQ3: How do respondents perceive their institution's role in innovation within the higher education context?

RQ4: What barriers and motivations shape university staff's engagement in innovation-related activities?

Research Design

As outlined in the introduction, this paper aims to examine the discourse on innovation in higher education institutions by analysing university staff's perceptions of the related topics. To conduct the study and collect the data, an online survey questionnaire was developed as part of the training module on the innovation ecosystem implemented for registered academic and non-academic staff participants within the BIKE-HEI project.

Participation in the survey was voluntary and open to academic staff (128 registered participants) and non-academic staff (130 registered participants) from four partner universities: the University of Alicante (Spain), Saarland University (Germany), the University of Primorska (Slovenia), and Mariupol State University (Ukraine), as well as participants from other higher education institutions. The authors relied on the willingness of training participants to complete the questionnaire, which limited the number of responses obtained.

In total, 43 respondents completed the questionnaire, with academic staff accounting for 33% of the sample and non-academic staff for 67%. Given the project-based nature of the training, the sample constitutes a convenience sample rather than a representative population; therefore, the findings should be interpreted with caution. Due to the relatively small sample size, the analysis focuses primarily on identifying patterns in the data through descriptive statistics rather than conducting inferential statistical analyses.

Results

Both academic and non-academic staff reported perceiving innovation as the creation of something new or as a process leading to novelty, commonly associated with new ideas, technologies, and change. Respondents strongly linked innovation to improvement, describing it as a means of enhancing existing practices, advancing processes, and making things more effective.

Despite these shared understandings, differences emerged in how innovation is conceptualised across the two groups. Academic staff tended to frame innovation in broader developmental and conceptual terms, whereas responses from non-academic staff more frequently reflected a practical orientation, emphasising efficiency, the application of new technologies, and solutions aimed at improving everyday work processes and services.

When asked what comes to mind in relation to the innovation ecosystem, respondents described it as a dynamic and interconnected network of diverse actors collaborating within and beyond the university to drive innovation and create value. Academic staff more often associated the innovation ecosystem with entrepreneurship and broader institutional or societal development. In contrast, non-academic staff more frequently perceived it as complex, less familiar, and somewhat distant from their everyday work experience.

Participants were also asked to assess their level of general knowledge about innovation on a scale from 1 (very poor) to 5 (excellent). The results indicate that university staff generally perceive their knowledge of innovation as moderate, with mean scores of 3.1 among academic staff and 2.7 among non-academic staff. Similarly, respondents evaluated their knowledge of innovation within the academic context, which received slightly lower ratings overall. Academic staff reported a mean score of 2.9, while non-academic expert staff reported a mean score of 2.4, suggesting that innovation in the academic environment is perceived as relatively less familiar. These findings address RQ1.

To address RQ2, table 1 presents university employees' perceptions of personal readiness and the conditions supporting innovation. Both academic and non-academic staff reported feeling encouraged to develop innovative ideas and expressed confidence in their ability to participate in innovation-related projects. Engagement in such activities was also associated with a strong sense of personal satisfaction across both groups.

At the same time, respondents indicated that their engagement in innovation is influenced by the availability of time, funding, and institutional support, underscoring the importance of organisational conditions in enabling innovation.

Additionally, respondents reflected on the broader role of innovation within their home university environment. Overall, respondents perceived innovation as being present; however, it is not yet strongly embedded in institutional core values and strategic priorities ($\bar{x} = 3.4$).

A similar pattern emerged with regard to respondents' personal connection to innovation-related activities. Most participants described themselves as moderately involved in innovation initiatives, such as projects, partnerships, or the development of new services. Perceptions of personal involvement were largely

Table 1. Perceived Institutional Support, Confidence, and Satisfaction Related to Innovation by the Academic and Non-Academic Employees

	Academic staff	Non-academic staff	Total
	$\bar{x}$	$\bar{x}$	$\bar{x}$
My university encourages staff to develop innovative ideas.	3.6	3.5	3.5
I feel confident in my ability to participate in innovation projects.	3.8	3.3	3.5
I have access to the necessary resources (time, funding, institutional support) for innovation activities.	3	2.7	2.8
I know where to find support or advice within the university when developing innovative ideas.	3.4	3.1	3.2
Engaging in innovation activities gives me personal satisfaction.	4.1	3.8	3.9

comparable across both staff groups (academic staff: ($\bar{x}$ = 3.1; non-academic staff: ($\bar{x}$ = 3.0). These findings provide further insight into RQ3.

Finally, respondents were asked to identify key barriers to innovation. The lack of adequate financial resources, qualified personnel, and time allocated to innovation activities were among the most significant obstacles to innovation and organisational change. The responses also point to limited institutional support as an additional and important constraint on innovation.

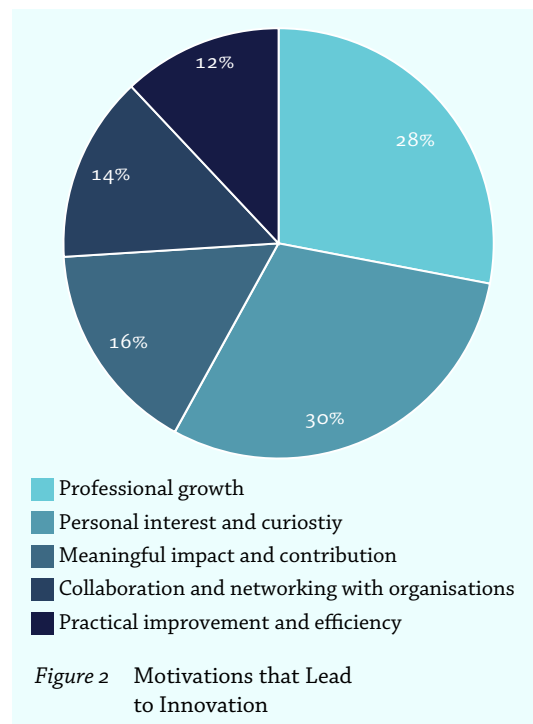
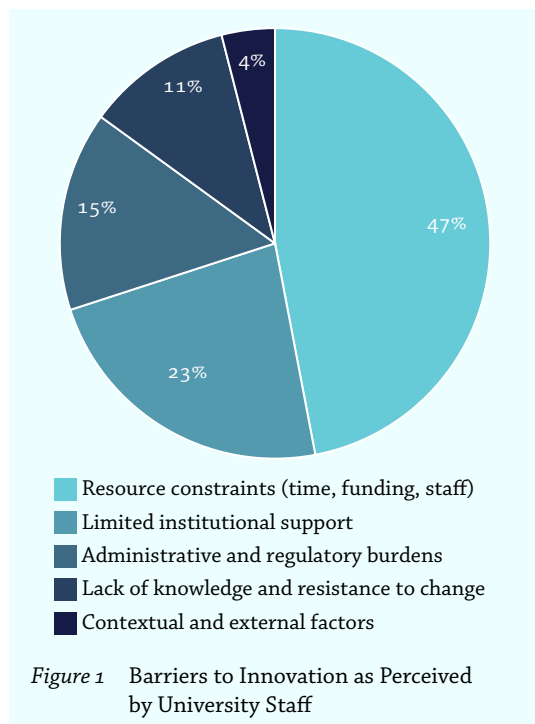
Furthermore, administrative and regulatory procedures, together with unclear policies, were identified as factors that influence both innovation processes and organisational readiness for change. Concerns related to failure, insufficient knowledge, and resistance to change were also

reported as barriers that discourage university staff from actively engaging in innovation.

A smaller subset of responses highlighted contextual and external factors that may constrain innovation efforts. For example, one participant referred to a lack of stability caused by war in their country (figure 1).

Despite the barriers identified above, respondents expressed strong motivation to engage in innovation-related activities. As illustrated in figure 2, the factors motivating university staff to engage in innovation are diverse. Motivation is most frequently driven by opportunities for personal and professional development, followed by intrinsic motivation and personal satisfaction.

Respondents also identified the opportunity to create meaningful impact, collaborate with



others, and improve practical work processes as important motivating factors. Interest in innovation-related content and new technologies emerged as an additional, although less prominent, source of motivation. These findings provide a clear response to RQ4.

Discussion

This study provides valuable insights into how academic and non-academic university staff perceive innovation, as well as the factors that shape their engagement in innovation-related activities. First, the findings reveal notable gaps in respondents' general knowledge of innovation and its relevance within the academic context. At the same time, both groups demonstrate similar understandings of innovation and report comparable levels of motivation to engage in innovation-related activities.

The findings are consistent across both staff groups and across all three levels of analysis, indicating generally positive perceptions of the importance of innovation in respondents' professional roles at the university, as well as at the personal level. Overall, these results support the theoretical and empirical insights presented in the introduction, reinforcing the importance and relevance of the concept of the entrepreneurial university and the associated roles and responsibilities of university employees.

However, not all perceptions were entirely positive. A clear set of barriers was identified, again consistently across all three levels of analysis and within both groups of university employees. The results indicate that one of the primary challenges faced by university staff when considering engagement in innovation activities relates to economic factors, particularly the high costs associated with innovation.

More broadly, the findings suggest that barriers to innovation are predominantly structural and organisational in nature, rather than stemming from a lack of individual motivation. Although respondents express a willingness to engage in innovation, their motivation is constrained by limited time and other practical limitations. As such, a systematic and fully integrated incorporation of innovation-related activities into the everyday work practices of different groups of university employees remains limited.

Overall, it can be observed that university employees, regardless of whether they belong to academic or non-academic staff, approach innovation in a generally positive but pragmatic man-

ner. They perceive innovation as a collaborative process that must deliver clear practical benefits and be supported by strong institutional frameworks in order to translate individual motivation into sustained and effective innovative practice.

Conclusion and Future Research

This study highlights a coherent and interrelated set of attitudes that shape how innovation is understood, supported, and enacted among university staff, while also demonstrating that the diffusion of innovation-related competencies within higher education environments remains uneven.

Taken together, the findings confirm the relevance of the entrepreneurial university paradigm, in which innovation is conceptualised as a shared responsibility across different staff profiles. Although universities increasingly promote innovation as a strategic priority, its practical integration into everyday activities remains limited, reflecting ongoing tensions between institutional ambitions and organisational realities. Furthermore, the depth of innovation-related knowledge remains moderate, particularly within the academic context, indicating a need for more systematic and tailored training initiatives.

A stronger alignment between strategic rhetoric and operational support is therefore required. This includes: (1) the development of supportive environments that reduce administrative complexity; (2) improved access to resources and the creation of clear pathways for staff seeking to engage in innovation; and (3) investment in structured capacity-building programmes, such as pre- and post-training assessments, personalised learning modules, and cross-functional collaboration platforms, which could substantially enhance university employees' innovation readiness.

Fostering innovation within universities thus requires a comprehensive approach that combines system-wide support, strong institutional commitment, and strategic coordination, supported by well-designed mechanisms, alongside individual employee motivation and engagement.

Finally, it is important to acknowledge the limitations of the research design. The study is based on a relatively small sample of respondents drawn from a project-based training programme, which limits the generalisability of the findings. Future research should therefore be based on broader and more representative samples across institutions, as well as on longitudinal designs

that examine the development of innovation competencies over time. In particular, the use of pre- and post-training measurements would be valuable for assessing the impact of training interventions and for providing more robust evidence of learning outcomes and alternative approaches.

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Impact of the INDUSAC Project Through Co-Creation Between Students and Industry

The Horizon Europe INDUSAC project, coordinated by the Jožef Stefan Institute in Ljubljana, Slovenia, introduced an innovative mechanism for facilitating knowledge transfer between companies and students from diverse disciplinary backgrounds. During the project, students and researchers across Europe were given the opportunity to address company-defined challenges through short-term co-creation projects lasting between four and eight weeks.

In total, 303 individuals, organised into 159 international teams, successfully completed their projects, with students receiving financial compensation for their contributions. This paper provides an overview of the addressed company challenges, which spanned a wide range of domains, including health, education and nutrition; modern living; products and accessories; energy and environment; industrial processes and engineering; and business solutions.

This diversity demonstrates the breadth of the project's impact, with approximately half of the participating companies being small enterprises with up to 10 employees, and with strong participation from EU Widening countries. By presenting 159 successful collaborations that generated valuable outputs for companies and enabled students to acquire practical skills, the INDUSAC project demonstrates: (i) tangible social impact; (ii) the feasibility of an effective and attractive mechanism that provides companies with innovative ideas while offering students meaningful incentives to gain experience and strengthen their professional networks; and (iii) the critical role of a public research organisation in facilitating such exchanges.

Keywords: INDUSAC project, co-creation, students, industry, knowledge transfer

Vpliv projekta INDUSAC skozi soustvarjanje med študenti in industrijo

Projekt INDUSAC v okviru programa Obzorje Evropa, ki ga koordinira Institut »Jožef Stefan« v Ljubljani, Slovenija, je predstavil inovativni mehanizem za spodbujanje prenosa znanja med podjetji in študenti iz različnih disciplin. V času projekta so imeli študenti in raziskovalci po vsej Evropi priložnost reševati izzive, ki so jih opredelila podjetja, v okviru kratkih, od štiri do osem tednov trajajočih soustvarjalnih projektov.

Skupno 303 posamezniki, organizirani v 159 mednarodnih ekip, so uspešno zaključili svoje projekte, pri čemer so študenti za svoje prispevke prejeli finančno nagrado. V članku povzemamo obravnavane izzive podjetij, ki so zajemali širok spekter področij, vključno z zdravjem, izobraževanjem in s prehrano, sodobnim načinom življenja, z izdelki in dodatki, energijo in okoljem, industrijskimi procesi in inženirstvom ter s poslovnimi rešitvami.

Ta pestrost kaže na širino vpliva projekta, pri čemer je bila približno polovica sodelujočih podjetij malih (z do desetimi zaposlenimi), v sodelujočih ekipah pa je bil poudarek na udeležbi t. i. držav širitve EU (angl. *EU Widening countries*). S predstavitevijo 159 uspešnih sodelovanj, ki so

podjetjem prinesla uporabne rezultate ter študentom omogočila pridobivanje praktičnih znanj, projekt INDUSAC izkazuje: (i) oprijemljiv družbeni vpliv; (ii) izvedljivost učinkovitega in privlačnega mehanizma, ki podjetjem zagotavlja inovativne ideje, študentom pa smiselne spodbude za pridobivanje izkušenj in krepitev profesionalnih mrež; ter (iii) ključno vlogo javne raziskovalne organizacije pri omogočanju takšnih izmenjav.

Ključne besede: projekt INDUSAC, soustvarjanje, študenti, industrija, prenos znanja

 <https://doi.org/10.26493/1854-4231.21.13-19>

Introduction

The transition from the educational system to the labour market poses significant challenges for students (Wells and Florea 2015; Simões 2022), despite the fact that companies often benefit from the influx of creative and highly motivated young individuals. At the same time, one of the key success factors for companies lies in their ability to generate innovative and unconventional ideas that differentiate them from competitors and create added value for customers. Such outcomes can be effectively supported through collaboration with students (Ferrandez-Berruoco and Sánchez-Tarazaga 2020).

The success of this bidirectional knowledge transfer can be further enhanced by promoting gender balance and fostering the international dimension of collaboration (Cavero-Rubio et al. 2019; Ratten 2016). In this context, public research organisations can play a critical role in facilitating connections between students and companies, particularly when supported by funding mechanisms such as the Horizon Europe programme.

One such mechanism was developed within the INDUSAC project, coordinated by the Jožef Stefan Institute in Ljubljana, Slovenia (JSI), in which students and researchers across Europe – with strong participation from Widening countries – collaborated to address company challenges through four- to eight-week co-creation projects (Odić et al. 2023).

This paper presents the outcomes of this knowledge transfer process, both quantitatively and qualitatively, by providing an overview of the number of collaborations achieved and brief descriptions of the diverse solutions delivered to participating companies.

Results

During the project, companies published a total of 251 challenges, of which 179 originated from companies based in Slovenia, Poland, and Hun-

gary. Additional challenges were submitted by companies from a wide range of countries, including the United Kingdom, Spain, Cyprus, Austria, Greece, Germany, North Macedonia, Bosnia and Herzegovina, the Netherlands, Serbia, Italy, Belgium, Lithuania, Romania, Slovakia, Türkiye, and Ukraine.

Out of the total number of challenges, 102 attracted interest from a combined total of 303 students and researchers. In several cases, more than one team engaged with the same challenge, resulting in the successful completion of 159 co-creation projects (see table 1).

The impact of the project across multiple areas of society is reflected in the 159 solutions de-

Table 1 Number of Student and Researcher Teams Working on an Individual Challenge

No. of challenges	No. of student/ researcher teams
71	1
19	2
7	3
1	4
1	5
2	6
1	8

Table 2 Number of Co-Creation Projects per Field of Challenge

Field of challenge	No. of co-creation projects
Health, education and nutrition	49
Modern living	25
Products and accessories	9
Energy and environment	20
Industrial processes and engineering	29
Business solutions	27

veloped in response to company challenges spanning a diverse range of fields (see table 2).

Health, Education, and Nutrition

In the field of health and medicine, one project explored the bioprinting of diseased tissues, offering a safer, faster, and more ethical alternative to animal testing. In parallel, the same team investigated the use of ultra-thin microneedles to improve drug delivery efficiency and enhance patient comfort. Another project addressed advancements in orthopaedic and dental implant manufacturing and surface treatments from a marketing perspective.

In education, several projects focused on digital and innovative learning solutions. One initiative connected a publishing company with the next generation of learners through an inclusive online platform designed to enhance accessibility and engagement. Another project developed a functional prototype of an AI-driven educational platform for children and adolescents, enabling real-time interactive learning experiences. A further project introduced a virtual global gaming tournament model tailored for cardiovascular perfusion students, combining educational simulation with competitive gameplay.

In the area of financial literacy, one team designed a digital investment solution aimed at making investing simple, accessible, and appealing to Generation Z users. In sports education, a project developed a business model for a system that uses video analysis of tennis players to generate performance statistics by linking ball movement with body dynamics. In music education, a team created marketing strategies for promoting an interactive digital classical music education platform for children aged 6–14.

Within the food and beverage sector, several projects focused on market-oriented solutions. One team developed a marketing strategy for a wine production company, while another conducted a market analysis of healthy ice creams and related frozen desserts. Bridging animal nutrition and education, teams designed a marketing strategy for a company specialising in probiotic-based solutions, alongside the development of an interactive educational programme for its newly established educational centre.

Modern Living

In the domain of modern living, two projects addressed the energy efficiency of office buildings by conducting SWOT analyses that considered

sustainability, infrastructure, vacancy rates, environmental, social, and governance (ESG) compliance, as well as evolving remote work trends. Additionally, marketing campaigns were developed to attract businesses to these office spaces.

Two further projects explored how small and medium-sized enterprises (SMEs) perceive the “office of the future,” examining the types of technological equipment they plan to adopt and the motivations behind these investments.

In the furniture sector, one manufacturer investigated customer expectations regarding product quality, sustainability, and the integration of online and offline shopping experiences. Complementary market analyses identified new opportunities for enhancing the company’s market positioning and promoting sustainable consumption. Another furniture manufacturer improved its digital visibility through updates to its website structure and content, as well as through the strategic use of social media platforms.

Focusing on specific interior solutions, one company specialising in custom-made hardwood flooring developed a marketing strategy for product launch, including real-time 3D customisation features. The teams also contributed to the development of a premium line of engineered wood flooring. Another project delivered a marketing campaign for a company specialising in kitchen sinks, while two projects explored the use of innovative sustainable materials, such as industrial hemp fibres, for interior furniture and decorative applications.

The projects also addressed transport-related innovations. One company implemented a marketing campaign for an environmentally friendly children’s scooter, combined with a digital self-guided scooter tour connecting major museums and galleries, thereby linking eco-friendly mobility with cultural exploration. Another initiative resulted in the development of a platform and mobile application for safe child transportation, enabling parents to easily book, pay for, and track rides.

Finally, eight teams collaborated with a consulting company specialising in ethics and responsible innovation for sustainable development. These projects focused on promoting sustainable living among low-income populations, particularly children and young people. Initiatives included social media campaigns promoting access to quality education via digital platforms connecting students with volunteer tutors, the development of features enabling parents to track student pro-

gress, and activities designed to amplify youth voices in policymaking and encourage long-term civic engagement.

Products and Accessories

In the manufacturing sector, one company specialising in protective workwear addressed challenges in stock management through the implementation of digital tools enabling accurate, real-time inventory tracking. A company producing gardening tools developed a comprehensive database of industry stakeholders and implemented a B2B customer segmentation system.

Another project conducted an in-depth analysis of the liquid detergent market, examining consumer habits, preferences, price sensitivity, and purchasing behaviour. In the luxury goods sector, two teams designed marketing campaigns for handmade bags, knitwear, and accessories, leveraging influencer collaborations to engage diverse consumer groups.

Additional marketing campaigns were developed for a company producing ergonomically designed pillows and for a business specialising in gift card sales within shopping centres.

Energy and Environment

In the field of environmental sustainability, one company involved in land restoration and soil decontamination redesigned its website into a user-friendly platform providing detailed information on technologies such as on-site soil treatment and remediation of polluted environments. The platform also included an interactive contamination map and emphasised the protection of populations from exposure to heavy metals.

Another initiative focused on redesigning a sustainable innovation competition for climate-focused startups, improving participant engagement and overall user experience.

In water treatment and waste management, projects included a review of existing water disinfection technologies and the proposal of chlorine-free alternatives, as well as the development of a hybrid bioaugmentation–UV water purification system. Another study identified advanced membrane bioreactor systems as offering an optimal balance between efficiency and cost-effectiveness for removing pollutants from municipal wastewater.

Waste management projects included the development of educational campaigns promoting effective recycling practices, the exploration of recycling solutions for safety equipment such as

harnesses, and the repurposing of waste from abrasive belt production through aluminium oxide extraction for use in 3D printing filaments. Additional projects addressed recycling failed 3D prints into high-quality filament, the recovery of copper from printed circuit boards, and the design of reusable food containers made from recycled plastics.

In the area of resource efficiency, one project optimised water and energy consumption in an aquatic centre, achieving significant projected reductions. At a strategic level, another team analysed future market trends, emerging technologies, and policy developments across the European energy sector, developing an innovation strategy aligned with EU energy and digitalisation policies up to 2030.

Finally, in the context of healthy urban planning, one project developed a business plan for a digital tool designed to support policymakers, urban planners, and community stakeholders in creating healthier cities by providing data-driven insights into health and economic impacts.

Industrial Processes and Engineering

Within the domain of industrial processes and engineering, several projects addressed challenges in chemical production. In one case, a team explored the modification of aluminium oxide for its application as a catalyst in chemical processes. In another, an approach was developed to activate cellulose using fly ash – an industrial by-product – thus embracing circular economy principles by transforming waste into a high-value product. Additionally, one project identified potential markets and applications for high-purity nanoparticles derived from precious metals, applicable in pastes and inks for 3D printing, as well as in remediation, coatings, and agriculture.

In the field of construction materials, one team evaluated the potential of pyrophyllite, an aluminosilicate ore, for use in modern eco-friendly facades as a substitute for conventional materials. This solution offered additional benefits, including pollutant degradation, air purification, and mould prevention. Another project conducted a market analysis for a company specialising in concrete-based products.

A number of projects focused on improving machine performance and process efficiency. One company developed an approach to enhance overall equipment effectiveness (OEE) by optimising machine performance and energy consumption in industrial environments. Another team designed a scalable digital platform concept

for real-time OEE monitoring, predictive maintenance, and AI-driven performance optimisation tailored to manufacturing SMEs, while additional teams contributed marketing strategies.

Further projects explored the integration of artificial intelligence in industrial applications. One company focused on implementing AI systems in metal processing to improve productivity and sustainability. Another challenge involved the development of custom AI assistants using retrieval-augmented generation technologies to streamline engineering workflows in the automotive sector.

Engineering solutions ranged from general strategic challenges to highly specialised applications. One company investigated the technical properties and commercial potential of thermoregulating conductive yarns for use in technical textiles. Another developed advanced smart moulds equipped with sensors, heat exchange circuits, and integrated AI and IoT capabilities to enhance real-time monitoring, predictive maintenance, and efficiency in die-casting processes.

Additional projects included the development of a cost-effective IoT-enabled temperature monitoring system for cold-chain logistics, marketing strategies for metal-forming defect sensors targeting the automotive and household appliance sectors, and the design of applications for translating sensor data from harsh industrial environments into user-friendly formats. One project also developed a smart colour identification application capable of recognising colour codes from images or live camera input.

In the automotive sector, two teams conducted market analyses of automotive lighting products. Another company specialising in electric vehicles identified innovative, manufacturable vehicle components and developed a strategy for market entry.

In packaging and labelling, projects included the design of virtual prototypes for durable and reusable packaging solutions, such as recycled plastic crates and bioplastic-based boxes. Additional work focused on marketing strategies for high-quality cosmetic packaging, sustainable labelling practices – including direct-to-packaging printing – and compliance with new EU labelling regulations. One project explored the use of invisible (UV-visible) barcodes on recycled paper.

In advanced manufacturing, one company developed an automated, AI-driven system to streamline the post-processing phase of 3D

printing. Another unique challenge involved the design of a modular medical unit concept for rapid deployment in disaster zones, enabling the creation of scalable field hospitals.

In robotics and automation, one team developed a warehouse robot fleet management system enabling coordinated communication and task allocation, while another focused on the safe and efficient operation of an autonomous drone hub roof system for landing and take-off operations.

Business Solutions

Companies operating in service-oriented sectors also benefited significantly from the INDUSAC project. For example, a logistics company developed a go-to-market strategy for its drone fleet management services and explored the potential of drone-based delivery solutions.

In the financial sector, one consultancy developed a business model incorporating financial and behavioural scoring to predict customer payment behaviour and identify high-risk clients. Another company designed technical concepts to improve financial literacy among adults aged 50 and above. A further initiative resulted in the development of a platform generating monthly and annual financial health reports for businesses, aimed at improving financial awareness and decision-making. Additionally, a marketing strategy was developed for a fiscal legal firm, including multilingual blog content addressing complex legal and administrative issues.

Several projects focused on digital transformation and platform development. One retail company transitioned from physical to digital sales by developing a comprehensive digital marketing strategy. Another organisation created an AI-driven B2B platform to enhance resource efficiency and sustainability. A separate project developed an AI-powered recommendation system to assist researchers in identifying suitable EU funding opportunities, resulting in a fully functional advisory platform. Additional work included the development of an intelligent platform for research competitions, delivering personalised newsletters to users.

In the hospitality sector, one company developed an innovative digital social hub – a virtual bar café – designed to connect users globally through immersive online experiences. The platform was further optimised through marketing and search engine optimisation strategies. Another company, operating a restaurant, addressed challenges related to business development, ser-

vice modernisation, and audience expansion, particularly targeting the 27–33 age group by combining traditional culinary practices with modern dining experiences and digital tools.

Beyond Short-Term Assignments

In several cases, INDUSAC collaborations extended beyond the initial project scope. For example, one co-creation project evolved into plans for a joint venture startup, while another led to an internship opportunity for a participating student.

In one particularly notable case, a company specialising in natural skincare products and cosmetic services engaged in long-term collaboration by completing no less than 30 co-creation projects over a period of 15 months. These projects addressed three main areas: (i) enhancing the company's skincare brand and supporting international expansion (14 projects); (ii) developing optimised bioactive skincare formulations with improved efficacy, stability, and absorption (8 projects); and (iii) expanding marketing and promotional activities to strengthen the brand's eco-luxury identity and position it as a heritage wellness destination (8 projects).

Collectively, these outcomes demonstrate that the INDUSAC project generated sustained value beyond short-term engagements, significantly contributing to companies' long-term market positioning and innovation capacity.

Discussion

The INDUSAC project has delivered impact across multiple levels. At the most immediate level, knowledge transfer to and among students was demonstrated through: (i) the development of teamwork skills; (ii) the expansion of international networks; (iii) the acquisition of new competencies and skills (see Kunej, Odić, Mrgole, and Trobec 2025; Kunej, Odić, Mrgole, Premk et al. 2025); and (iv) exposure to real-world collaboration with companies. The attractiveness of this model is reflected in participation patterns, with 29.3% of students joining two teams and 26.4% participating in three teams to address company challenges (data not shown).

Knowledge transfer to companies was equally evident, as organisations received concrete solutions – often accompanied by innovative ideas for future development – to their defined challenges. In addition, companies benefited from direct interaction with young talent, identifying potential future employees. In some cases, repeated collaboration facilitated smoother transitions from

education to employment, as observed in at least two instances (see above). The strong engagement of companies is further reflected in the high number of published challenges and their willingness to collaborate with multiple teams (table 1).

At the societal level, INDUSAC delivered 159 successfully completed co-creation projects addressing key areas of contemporary societal development, many of which align with priority domains for building a resilient European Union by 2040 (European Commission 2025). The project's methodological framework (Odić et al. 2023) ensured gender-balanced participation and enabled substantial involvement of students and researchers from Widening countries (61.5%). On the company side, the project proved particularly attractive to micro-enterprises, which accounted for 51.4% of participating organisations (data not shown).

Taken together, these findings demonstrate that an initiative facilitated by a public research organisation can generate not only individual-level benefits but also broader societal value.

Conclusion

The INDUSAC project demonstrates tangible societal impact and confirms the important role of public research organisations as mediators of collaboration between academia and industry. The Jožef Stefan Institute played a key role in introducing this mechanism into the existing landscape of knowledge transfer practices, enabling the exchange of knowledge and experience among individuals from diverse backgrounds.

Moreover, by indirectly providing financial support to participating students – addressing a common barrier in student–industry collaboration – JSI enhanced accessibility and participation. The 159 successfully delivered solutions to industrial challenges serve as strong evidence of the effectiveness of the INDUSAC model and position it as a valuable incentive for the development of similar initiatives in the future.

Acknowledgements

The work described in this manuscript has received funding from the European Union's Horizon Europe Programme under grant agreement No. 101070297.

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Inovativne skupnosti kot nosilke družbenih inovacij: primer Skupnosti srčnega mentorstva in platforme Go & Grow

Družbene inovacije, katerih bistvo so zadovoljitev potreb, odnosi in opolnomočenje, ustvarjajo ljudje za ljudi. Osredotočajo se na potrebe in razvoj posameznikov ter spodbujajo spremembe v njihovem razmišljanju, delovanju in medosebnih odnosih. Namesto odzivanja krepijo proaktivnost ter sposobnost aktivnega reševanja lastnih in skupnostnih izzivov. Posamezniki, kot vir inovacij, so pobudniki nastajanja inovativnih skupnosti, katerih moč temelji na inovacijskem potencialu njihovih članov in vključujočem soustvarjanju, ki presega generacijske, kulturne in druge raznolikosti. To so skupnosti, ki so sposobne uvajati spremembe, ki gradijo prostor zaupanja ter z lastnim zgledom in vplivom spodbujajo povezovanje ter sodelovanje v širšem okolju. Prispevek predstavi Skupnost srčnega mentorstva in platformo Go & Grow kot primera inovativnih skupnosti, katerih cilj so ozavešeni posamezniki, zavestno prenašanje znanja in izkušenj, razvoj kompetenc, pridobivanje novih in nadgradnja obstoječih spretnosti ter negovanje temeljnih človekovih vrednot in pristnih odnosov. Oba primera kažeta, kako je mogoče graditi na skupni rasti in sodelovanju, ki presega deklarativno raven.

Ključne besede: družbene inovacije, inovativne skupnosti, opolnomočenje posameznikov, soustvarjanje, prenos znanja

Innovative Communities as Carriers of Social Innovation: The Case of the Heart Mentoring Community and the Go & Grow Platform

Social innovations, whose essence are meeting the needs, relationships and empowerment, are created by people for people. They focus on the needs and development of individuals and promote changes in their thinking, actions and interpersonal relationships. Instead of reacting, they strengthen proactivity and the ability to actively solve their own and community challenges. Individuals, as a source of innovation, are the initiators of the creation of innovative communities, whose strength is based on the innovation potential of their members and inclusive co-creation that transcends generational, cultural and other diversities. These are communities that are capable of introducing changes, building a space of trust and, through their own example and influence, promoting connectivity and cooperation in the wider environment. The article presents the Heart Mentoring Community and the Go & Grow Platform, as examples of innovative communities aimed at raising awareness among individuals, consciously transferring knowledge and experience, developing competencies, acquiring new and upgrading existing skills, and nurturing fundamental human values and authentic relationships. Both examples show how it is possible to build on mutual growth and collaboration that goes beyond the declarative level.

Key words: social innovation, innovative communities, individuals empowerment, co-creation, knowledge transfer



<https://doi.org/10.26493/1854-4231.21.21-29>

Uvod

Inovacije so na splošno opredeljene kot proces razvijanja in implementiranja novih idej ter inovativnih rešitev za reševanje izzivov in doseganje boljših rezultatov. Družbene inovacije so nove ideje (produkti, storitve, procesi, modeli), ki hkrati učinkovito odgovarjajo na potrebe družbe in ustvarjajo nove družbene odnose ter sodelovanja. So inovacije, ki ob splošnih koristih za družbo povečujejo zmogljivost slednje za ukrepanje (Murray idr. 2010).

V praksi družbene inovacije pomenijo uporabo svežih idej, konceptov in strategij za razvoj skupnosti ter izboljšanje življenja ljudi (Cerar 2020). Gre za izrazito proaktiven proces, katerega cilj je uveljavljanje pozitivnih sprememb za doseganje dolgoročnih trajnostnih rezultatov. Družbene inovacije temeljijo na dobrem poznavanju in razumevanju potreb in izzivov ljudi. S svojimi rešitvami ustvarjajo nove odnose in oblike sodelovanja v družbi, pri čemer upoštevajo tudi potrebe prihodnjih generacij (TEPSIE 2014). Za razliko od drugih inovacij, ki jih lahko ustvarjajo posamezniki ali majhne skupine, družbene inovacije zahtevajo sodelovanje in povezovanje med različnimi deležniki. Prinašajo spremembe v razmišljanju. Spodbujajo vključujočo rast, temelječo na soustvarjanju ter opolnomočenju posameznikov za avtonomno in odgovorno delovanje (Bureau of European Policy Advisers 2011).

Raziskovalni namen in izhodišča prispevka

Namen prispevka je analizirati vlogo inovativnih skupnosti kot nosilk družbenih inovacij ter na primeru Skupnosti srčnega mentorstva in platforme Go & Grow pokazati, kako sodelovanje, opolnomočenje in vzajemno učenje prispevajo k pozitivnim spremembam tako na ravni posameznika kot širše skupnosti. Poseben poudarek je dan prenosu znanja, medgeneracijskemu sodelovanju in ustvarjanju varnega prostora, ki omogoča učenje iz napak in prost pretok idej ter krepi inovativnost. Pri pripravi prispevka so nas vodila naslednja raziskovalna vprašanja: (1) Kako se vzpostavljajo in delujejo inovativne skupnosti? (2) Kateri so ključni elementi za razvoj skupnosti? (3) Kako študiji primera prispevata k širšemu razumevanju pomena in vpliva družbenih inovacij?

Prispevek temelji na kvalitativni analizi dveh študij primerov in uporabi naslednjih raziskovalnih pristopov: (1) študije primera, ki omogoča poglobljen vpogled v razvoj in delovanje skupnosti; (2) interpretacije lastnih izkušenj avtoric kot soustvarjalk predstavljenih skupnosti; (3)

analize dostopnih dokumentov, spletnih vsebin in različnih raziskav, povezanih z družbenimi inovacijami; (4) refleksije teorije in prakse v kontekstu vpliva inovativnih skupnosti na posameznika in družbo.

Vpliv družbenih inovacij na posameznike in družbo

Tri ključne dimenzije družbenih inovacij so zadovoljevanje potreb, grajenje odnosov in opolnomočenje (Moulaert idr. 2013). Gre za transformativne procese, ki prispevajo k spremembam v kognitivnih, vedenjskih in relacijskih vzorcih ter spodbujajo proaktivne pristope k reševanju individualnih in skupnostnih izzivov. Temu pritrjuje tudi ena najpogostejše citiranih definicij družbene inovacije Phillipsa idr. (2008, 39), ki jo povzemajo v Standfordskem centru za inovacije: družbena inovacija je izvirna rešitev družbenega problema, ki je učinkovitejša, zmogljivejša in trajnostnejša od obstoječih rešitev, ustvarjena vrednost pa gre pretežno v roke družbe kot celote in ne v roke zasebnikov.

Razvoj inovativnih rešitev za družbene izzive je ustvarjalni proces, katerega cilj je uveljavljanje pozitivnih sprememb, kot so ozaveščanje, sprememba vedenja, izboljšanje spretnosti, gradnja zaupanja, spreminjanje in krepitev temeljnih vrednot. Najvišji cilj družbene inovacije je sistemska sprememba (Podgoršek 2016).

Vpliv družbenih inovacij na posameznike

Družbene inovacije ozaveščajo posameznike in jim pomagajo pri razumevanju družbenih vprašanj, uvajanju pozitivnih sprememb in spremembi ravnanja, od sprejemanja trajnostnejšega načina življenja do prostovoljnega dela v skupnostih in drugih oblik prispevanja. Družbene inovacije posameznikom omogočajo priložnosti za razvoj spretnosti prihodnosti, kot so reševanje problemov, kritično razmišljanje in timsko delo. Usmerjajo jih v proaktivno delovanje in jih opolnomočajo za prevzemanje odgovornosti za lasten razvoj ter sprejemanje odgovornih odločitev.

Vpliv družbenih inovacij na širšo skupnost

Družbene inovacije spodbujajo razvoj kulture inovacij, saj ljudje postajajo odprtejši za nove ideje in pripravljeni preizkusiti nove rešitve. Vzpostavljajo in podpirajo sodelovanje med različnimi deležniki v družbi, od posameznikov, organizacij, različnih skupnosti do nosilcev oblasti, ter krepijo socialno povezanost in pozitivno dojetje skupnosti.

Trendi in teoretični okvir za študijo primera

Prihodnost je v učečih se, vključujočih, sodelovalnih, samovodenih, medsebojno povezanih in vzajemno koristnih skupnostih opolnomočenih posameznikov, pripravljenih na vseživljenjsko učenje ter vzajemno delitev znanja in izkušenj (Kolenc 2023). Cilj tovrstnih skupnosti je krepitev medsebojnih odnosov in brisanje meja med različnimi deležniki, s čimer postajajo spodbujevalke prehoda v vključujočo družbo. Njihov vpliv je v celoti odvisen od posameznikov, ki skupnosti sestavljajo, od njihove povezanosti, zanesljivosti, medsebojnega zaupanja in delovanja v dobro članov skupnosti ter okolja, v katerem ta deluje. Skupnosti so ključne za socialno povezanost in občutek pripadnosti. Vključevanje v skupnosti, ki jih povezujejo iskreni odnosi, vrednote in skupni cilji, je ključna sestavina izpolnjenega življenja posameznika in družbe kot celote.

Vsako delujočo skupnost zaznamujejo tri med seboj odvisne značilnosti: skrb drug za drugega, sodelovanje in odgovornost (Kolenc 2024a). Velikina skupnosti se meri po dejanjih njenih članov, njena moč pa po tem, kako se člani vzajemno podpirajo.

Koristi povezovanja v skupnosti so večplastne, od strokovnega in osebnega razvoja do osebne in družbene blaginje. Posebej oprijemljive so učenje, izmenjava znanj, dostop do različnih virov in usposabljanj, karijerne priložnosti, inovativnost in ustvarjalnost preko navzkrižnega opraševanja, profesionalna ter osebna prepoznavnost posameznika in podjetniška podpora. Pri izbiri skupnosti, v katere se bomo vključili, nas lahko vodi želja po spremembah, novem znanju, sledenju novosti na polju našega interesa in lastnem prispevanju.

Poleg zavzetih članov imajo vplivne, delujoče skupnosti v svojih vrstah posameznike, ki skrbijo, da se stvari zgodijo. To so katalizatorji, naravno intuitivni, komunikativni, strastni, talentirani posamezniki, ki prevzamejo pobudo, so visoko odgovorni in vztrajni. Ključno je, da vsi člani

skupnosti prispevajo po svojih najboljših močeh in da se lahko zanesejo drug na drugega. Etika in integriteta posameznika ne smeta biti nikoli pod vprašajem.

Družbene inovacije in inovativne skupnosti Družbene inovacije

Družbene inovacije so več kot izum, saj gre za proces od ugotavljanja potreb do sistemskih sprememb (Lužar Šajt 2022). Zanje je značilno spodbujanje sodelovanja in opolnomočenja znotraj skupnosti. Z vključujočimi procesi mobilizirajo posameznike, da aktivno sodelujejo pri reševanju lastnih izzivov. Odprte so za vse, ki želijo aktivno participirati. Ideje, ki nastajajo v procesu družbenih inovacij, so dostopne vsem. Prav tako so zaželeni odzivi na prispevek inovacije s strani različnih javnosti, interesnih in ekspertnih skupin ter posameznikov (Podgoršek 2016). Tak pristop povečuje učinkovitost inovativnih rešitev, krepi družbeno tkivo in ustvarja trdne temelje za razvoj skupnosti. Močne skupnosti z visoko stopnjo zaupanja in zavezanostjo skupnim ciljem pa so bistvene za razvoj in ohranjanje družbenih inovacij.

Inovativne skupnosti

Pomen skupnosti je zaradi spremenjenih in vse kompleksnejših zahtev vedno večji. S svojo raznolikostjo in z vključevanjem vseh skupnosti na spremenjene izzive odgovarjajo veliko uspešneje in hitreje kot posamezniki. Nekatere raziskave kažejo, da se kreativnost posameznikov v skupnostih s pozitivno skupinsko dinamiko in odkrito, učinkovito komunikacijo, v kateri si posamezniki medsebojno zaupajo in se počutijo soodgovorne za uresničitev skupnih ciljev, skorajda podvoji v primerjavi s posamezniki, ki ustvarjajo samostojno.

Inovativni potencial posameznikov se kaže v oblikovanju skupnosti, katerih razvoj temelji na kolektivni ustvarjalnosti, soustvarjanju in vključujočem sodelovanju onkraj generacijskih, kulturnih in drugih raznolikosti. Takšne skupnosti



Slika 1 Osnovna shema razvoja inovativne skupnosti

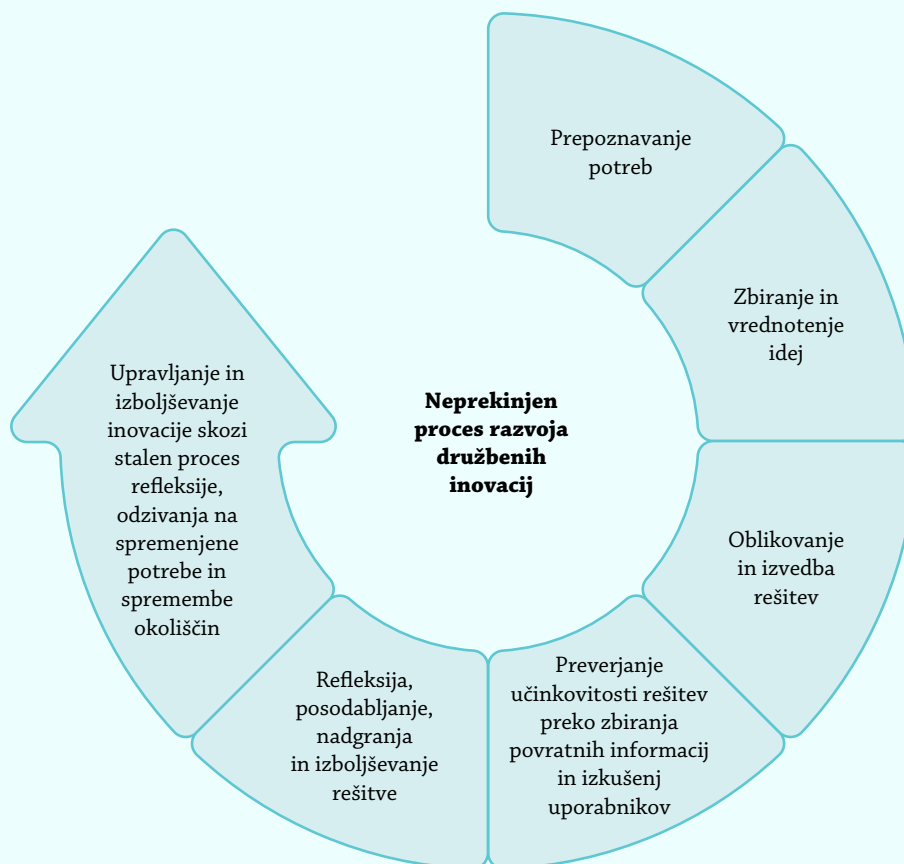
gradijo socialni kapital, krepijo zaupanje in s svojim pristopom generirajo nadaljnje povezovalne procese. To so skupnosti, ki delujejo kot platforme za udejanjanje družbenih inovacij.

Inovativne skupnosti, kot skupnosti posameznikov, ki imajo potencial in sposobnost uvajanja sprememb ter stalnega inoviranja, vplivajo na oblikovanje prihodnosti sedanjih in prihodnjih članov ter širše družbe. Njihova moč je v odnosnem kapitalu, kolektivni modrosti, sodelovanju, skupnih vrednotah in zavezanosti skupnim ciljem. Njihova rast je organska. Svoj vpliv v družbi krepijo z odprtostjo za sodelovanje in delitvijo znanja, izkušenj ter dobrih praks. Ne bojijo se posnemanja, temveč ga spodbujajo, ker ga razumejo kot dokaz, da je njihova inovacija koristna. Praviloma temeljijo na prostovoljstvu. Partnerstva in različne oblike finančnih virov so pogojeni z delitvijo skupnih vrednot ter ciljev.

Pristopi in metode

Razvoj inovativnih rešitev za družbene izzive je ustvarjalen proces, katerega cilj je uveljavljanje

pozitivnih sprememb. Za razliko od procesov produktivnih in podobnih inovacij, ki so običajno linearni, z vnaprej določenimi fazami, se družbene inovacije razvijajo z eksperimentiranjem, refleksijo in s prilagajanjem. Gre za neprekinjen cikel ustvarjanja, preizkušanja, refleksije in izpopolnjevanja. Vključuje oblikovanje in izvajanje idej, zbiranje povratnih informacij in izkušenj od uporabnikov inovacije ter njihovo upoštevanje pri izboljševanju inovativne rešitve. Gre za stalno spremljanje rezultatov, čemur sledijo ocena primernosti in učinkovitosti rešitve ter morebitna posodobitev, nadgradnja ali izboljšanje slednje. Pri tem gre lahko za znatne spremembe ali za manjše prilagoditve s ciljem povečanja učinkovitosti. To je nikoli dokončan proces, ki upošteva spreminjanje okoliščin in pojav novih izzivov ter terja ponavljanje cikla spremljanja izvajanja, refleksije in izpopolnjevanja inovacije, ki s tem ves čas ostaja relevantna in učinkovita. Ključna značilnost tega procesa je prilagodljivost, ki omogoča prilagajanje rešitve novim pogojem, vključno s spremembami v tehnologiji, okolju ali družbenih odnosih.



Slika 2 Proces nastajanja in razvoja družbenih inovacij

Študija primera Skupnosti srčnega mentorstva in platforme Go & Grow

Skupnost srčnega mentorstva (SSM) in platforma Go & Grow z gradnjo odnosov, s sodelovanjem in z opolnomočenjem posameznikov v praksi dokazujeta, da družbene inovacije nastajajo med ljudmi, ne v svetu tehnologije. Delujeta kot varno okolje, ki ustvarja pogoje za rast in učenje. Dokazujeta, da člani skupnosti, s stalnim opazovanjem in inoviranjem, gradijo nove skupnosti, ki tvorijo širok ekosistem za zadovoljevanje različnih potreb posameznikov, organizacij in širše družbe. Obe sta se razvili in se še naprej razvijata skozi prepoznavanje potreb, soustvarjanje in refleksijo, kar je bistvo procesa družbenih inovacij.

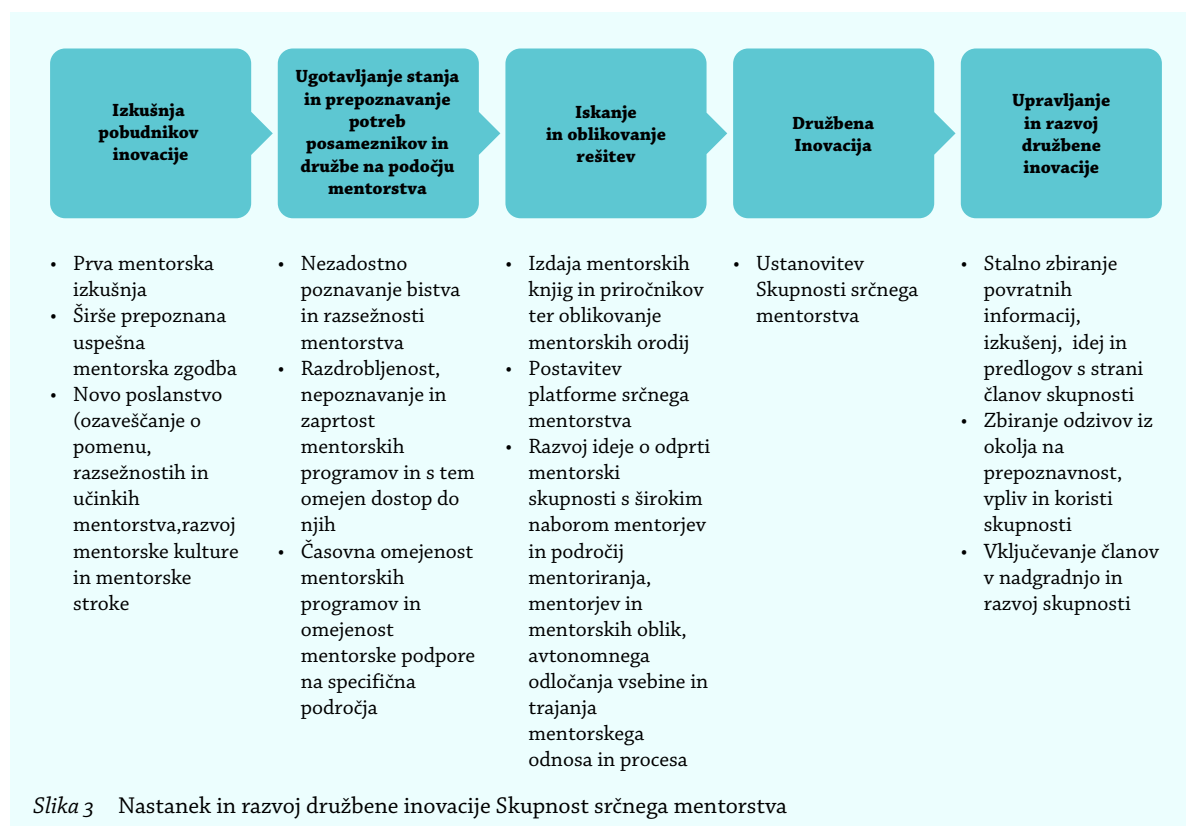
Skupnost srčnega mentorstva¹

Družbena inovacija SSM je plod opazovanja, sodelovanja, ustvarjalnosti in zavezanosti povezovalni, učeči se družbi, v kateri lahko vsak prispeva v skladu s svojimi potenciali. Je prva mentorska skupnost v Sloveniji. Temelji na v človeka usmerjenem pristopu. Njeno poslanstvo je omogočiti dostop do mentorstva vsem, ki potrebujejo to obliko podpore pri osebni in strokovni rasti, ter vsem, ki to podporo nudijo. Člane SSM povezuje

zavedanje odgovornosti za lasten razvoj, zavezanost vseživljenjskemu učenju, vzajemno predajanje in sprejemanje znanj ter izkušenj, želja po razvoju mentorskih in voditeljskih spretnosti, sprejemanje kodeksa SSM in upoštevanje vodilnih načel ter sestavin srčnega mentorstva.

V Sloveniji v različnih skupnostih, stanovskih in interesnih združenjih deluje vrsta mentorskih programov, za katere je značilno, da je dostop do njih omejen na formalno članstvo pri izvajalcu programa, da nagovarjajo izzive, povezane z vsebino delovanja izvajalca programa, da so običajno časovno omejeni in se odvijajo v vnaprej določenih ciklih (sezonah) ter oblikah, da je njihova izvedba odvisna od razpoložljive baze mentorjev in da so širši populaciji praviloma nepoznani. To otežuje dostop zainteresiranim posameznikom do mentorjev oz. do priložnosti za nudenje podpore v vlogi mentorjev.

Rešitev je v približevanju oz. odpiranju mentorskih programov širši javnosti (Kolenc in Javornik 2022). SSM je edina odprta in povezovalna mentorska skupnost, do katere lahko dostopajo vsi in znotraj katere si udeleženci samostojno izbirajo obliko, vsebino in trajanje mentorskega procesa glede na lastne potrebe ter cilje. Pokriva



¹ Spletna stran Skupnosti srčnega mentorstva je na povezavi <https://www.srcnomentorstvo.com/>.

področje celotne Slovenije in nudi najširši nabor oblik ter vsebin mentorske podpore pri osebni in profesionalni rasti posameznikov. SSM ni omejena samo na mentoriranje, temveč je namenjena tudi delitvi dobrih praks in skupnemu reševanju izzivov na področju mentorstva. Člani drug drugemu proaktivno predajajo znanje in s tem ustvarjajo zakladnico znanja, dostopno vsem, tudi širši javnosti.

Poslanstvo SSM zajema spodbujanje medsebojnega sodelovanja in povezovanja; spodbujanje vseživljenjskega učenja drug ob drugem ter drug od drugega; grajenje odnosov, temelječih na zaupanju in iskrenosti; krepitev zavedanja pomena mentorstva pri celostnem razvoju posameznika in s tem družbe kot celote ter promoviranje temeljnih načel, ključnih sestavin in koristi mentorstva s ciljem razvoja te edinstvene metode vzajemnega učenja ter osebne in profesionalne rasti posameznika; navdihovanje posameznikov, da postanejo mentorji in mentoriranci, ter podpiranje pri vzpostavljanju mentorskih odnosov in vodenju mentorskih procesov s ciljem doseganja maksimalnih koristi za vse udeležence; promoviranje mentorstva s ciljem širjenja mentorstva v širšem prostoru.

SSM predstavlja disruptivno inovacijo, ki širi in spreminja pogled na mentorstvo in njegove razsežnosti ter nenehno uvaža spremembe na tem področju. Inovacija, v primerjavi z alternativnimi možnostmi, z enostavnim dostopom zapolnjuje potrebe posameznikov, ki do sedaj niso bile ustrezno naslovljene. Gre za inovativno idejo, ki je mentorstvo približala širši populaciji in ki s svojim pristopom spodbuja spremembe v širši družbi. S svojim delovanjem SSM pojmovanje mentorstva kot podpore osebni in profesionalni rasti širi na področje duševnega zdravja ter splošnega blagostanja posameznikov s tem, ko mentorstvo opredeljuje kot odnos človeka do človeka, v katerem so vsi vidni in slišani. V SSM udeleženci krepijo zavedanje pomena ustvarjanja okolja, ki jih spodbuja k ohranjanju njihove edinstvenosti in pristnosti, kjer se lahko iskreno pogovorijo o svojih osebnih in poklicnih izzivih ter računajo na razumevanje in podporo. Inovacija zapolnjuje prazen prostor, ki ga ne pokrivajo mentorski programi v organizacijah ter interesnih in stanovskih združenjih. Povezuje, izobražuje in rešuje raznovrstne izzive, s katerimi se soočajo člani SSM v mentorskih procesih in svojem osebnem ter profesionalnem življenju.

SSM soustvarjajo vsi člani, ki so istočasno njeni ambasadorji, zagovorniki, uresničevalci in pro-

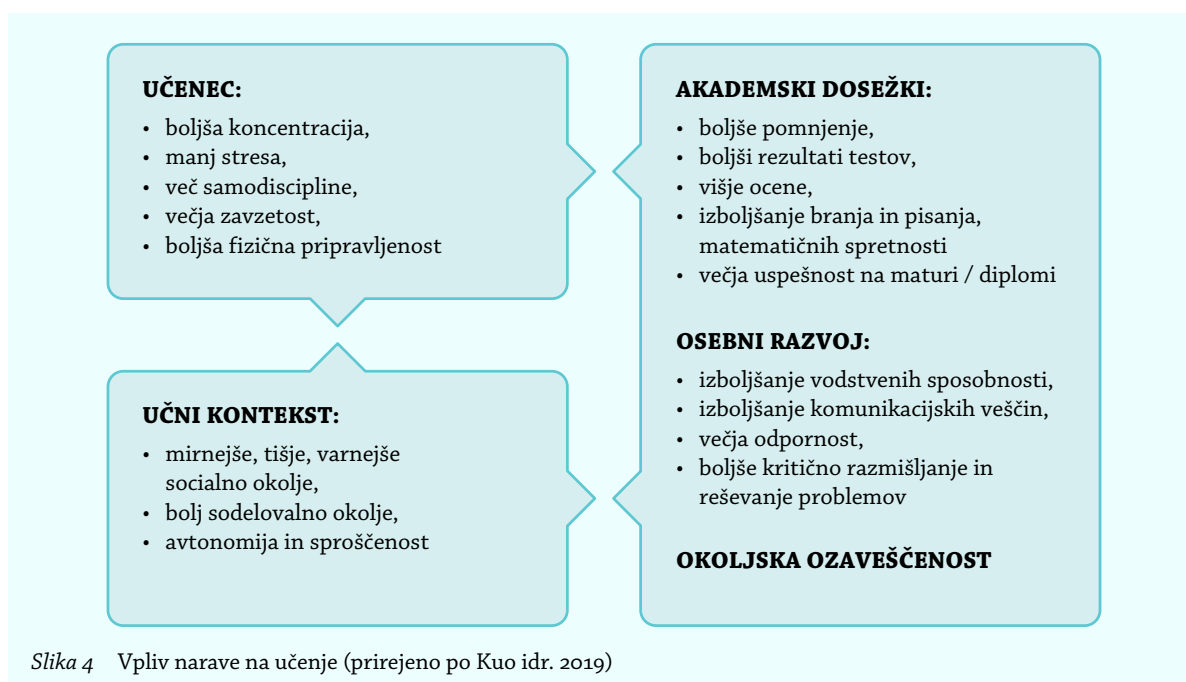
motorji. Je stičišče najsosodobnejših mentorskih pristopov in prostor, kjer posamezniki odkrivajo svoje potencialne, krepijo zavedanje lastne vrednosti, mentorske in voditeljske veščine ter s tem (p)ostajajo opolnomočeni in aktivni člani družbe, ki vse naštetu prenašajo v delovna in ostala okolja, v katerih uresničujejo svoje poslanstvo. SSM predstavlja tudi stično točko, kjer lahko posamezniki, organizacije in druge skupnosti spoznajo ter izmenjujejo različne mentorske prakse. S tem prihajajo do dragocenih znanj in informacij pri uvajanju, posodabljanju ter nadgradnji mentorskih programov in ustvarjanju baze kompetentnih mentorjev.

SSM se povezuje z različnimi interesnimi in stanovskimi združenji, platformami, mrežami alumnijev ter drugimi skupnostmi z namenom vključevanja čim širšega kroga raznolikih posameznikov vseh generacij, ki s svojim znanjem, izkušnjami, spretnostmi, odnosom, dosežki in življenjskimi zgodbami prispevajo k raznovrstnosti podpore, ki jo nudi SSM. Poleg mentorske podpore odpira tudi prostor za vzajemno učenje na izobraževalnih srečanjih, na katerih njeni člani ter zunanji izvajalci delijo ekspertna znanja in izkušnje iz svoje dejavnosti, preizkušajo njihovo koristnost in tržni potencial, širijo svoje strokovne kompetence, se izboljšujejo na osebni in strokovni ravni ter širšo skupnost ozaveščajo o pomenu sodelovanja in povezovanja. Posebna pozornost je posvečena izobraževanju s področja odnosnih kompetenc in zavestnega ter trajnostnega voditeljstva in finančni, digitalni, etični ter medkulturni pismenosti. S svojo povezovalno vlogo SSM počasi in zanesljivo oblikuje mentorski zemljevid Slovenije oz. širšo mentorsko skupnost. S svojo odprtostjo za partnerstva z vsemi, ki mentorstvo cenijo in razumejo kot metodo neomejenih možnosti rasti ter razvoja posameznika, SSM spodbuja nastanek novih skupnosti ter njihovo sodelovanje in povezovanje, kar je ključno za razvoj družbe, kjer se vsak lahko razvija in prispeva v skladu s svojimi potenciali.

Platforma Go & Grow²

S ciljem ohranjanja in krepitve fizične ter psihične vitalnosti posameznikov in s tem njihovega dobrega počutja smo v okviru SSM uvedli tudi t. i. mentorstvo med hojo. V sodobnih delovnih okoljih, kljub vse večji ozaveščenosti, še vedno prevladuje pretežno sedeče delo, ki povečuje tveganje za

² Spletna stran platforme Go & Grow je na povezavi <https://goandgrow.si/>.



kronične bolezni ter zmanjšuje učinkovitost in kreativnost. To je podkrepila tudi raziskava na Stanfordski univerzi iz leta 2014. Raziskovalci so med drugim odkrili, da je hoja, z vidika generiranja novih, inovativnih idej, bistveno učinkovitejša kot sedenje. Pri posameznikih sproži divergentno razmišljanje, ki s kreativnostjo in z odprtostjo odpira nove poglede ter ustvarja nove rešitve. Zaradi tesnejše vezi z naravo so posamezniki proaktivnejši pri okoljskem pristopu in obnašanju. Redno sodelujejo "v trajnostnih pobudah in aktivnostih, prevzemajo trajnostne navade ter s svojim zgledom opozarjajo na dobre trajnostne prakse.

Mentorstvo med hojo je preprosto, a učinkovit način za podporo osebni in profesionalni rasti. Povezuje moč in modrost narave, gibanja in medsebojnih odnosov (Kolenc 2024b). V SSM, ki je pobudnica te oblike, je mentorstvo med hojo postalo redni sestavni del aktivnosti njenih članov. Ob gibanju v naravi potekajo tako mentorski procesi ena na ena kot tudi skupinska mentorstva. Na mentorstva med hojo vabimo tudi nečlane in na ta način širimo našo skupnost ter zavedanje pomena in koristi gibanja. Udeleženci svojo izkušnjo prenašajo v delovna in ostala okolja, v katerih ustvarjajo in živijo. Prakse, s katerimi se srečajo pri mentorstvu med hojo, aplicirajo na področja delovnih, poslovnih in strateških sestankov, različnih oblik usposabljanj, viharjenja možganov in druga področja delovanja v organizacijah ter skupnostih.

Iz te pobude se je razvila platforma Go & Grow, ki pripravlja programe, ki povezujejo giba-

nje v naravi z razvojem osebnih in socialnih kompetenc. Namen programov je krepitev razvojne miselnosti, osnovnih spretnosti in čustvene inteligence z izkušnjami v naravnem okolju. Takšen način učenja učinkovito spodbuja razvoj posameznikov, timov in organizacij ter krepi inovativni potencial skupnosti. Aktivnosti temeljijo na prepričanju, da stik z naravo in telesna aktivnost ne vplivata le na telesno zdravje, temveč tudi na duševno in čustveno ravnovesje ter medosebne odnose, kar ustvarja pogoje za rast posameznika in skupnosti.

Gibanje in narava sta močan katalizator kognitivnega, čustvenega in socialnega razvoja. Aktivnosti v naravi spodbujajo kognitivno obnovo, zmanjšujejo stres, izboljšujejo čustveno inteligenco, ustvarjajo okolje, v katerem posamezniki in skupine razvijajo ustvarjalnost, sodelovanje ter trajnostne rešitve. V hitro spreminjajočem se (poslovnem) svetu so nekognitivni dejavniki, kot so vztrajnost, samozavest, odpornost, socialne veščine, vodenje in komunikacijske veščine ključni za dobro delovanje.

Z vprašanjem, kakšen je vpliv narave na učenje, se ukvarjajo številne raziskave, vse več je dokazov, da izkušnje v naravi spodbujajo akademsko učenje in osebni razvoj ter hkrati krepijo skrb za okolje. Poročila neodvisnih opazovalcev in udeležencev raziskav kažejo na razvoj na področjih vztrajnosti, reševanja problemov, kritičnega mišljenja, vodenja, timskega dela in odpornosti. Narava spodbuja učenje z izboljšanjem pozornosti in radovednosti, znižanjem ravni stresa, s

samodisciplino, z uživanjem v učenju in s fizično aktivnostjo. Zagotavlja mirnejše, varnejše in sodelovalnejše okolje za učenje.

V svetu, kjer vlada hitrost in preobremenjenost ter sedenje v zaprtih prostorih, sta gibanje in preživljanje časa v naravi še kako pomembna. Marsikdo obiskuje telovadnico pred ali po delu, morda med odmorom za kosilo, mnogo bolje pa bi bilo, če bi ljudje preprosto odšli ven. Kratek sprehod na prostem bolj izboljša kognitivne funkcije kot gibanje v zaprtih prostorih (Boere idr. 2023).

Eksperimentalna raziskava (Haluza idr. 2025) je preučevala vpliv 20-minutnega obiska gozda. Zdravi udeleženci so bili naključno razporejeni v dve skupini, ena je preživela čas v gozdu, druga v urbanem prostoru. Spremljali so psihološke podatke ter merili raven kortizola v slini pred in po intervenciji. Raziskava je pokazala, da že 20 minut, preživetih v gozdu, izboljša razpoloženje in zniža raven kortizola. Kratki obiski gozda torej lahko pomembno prispevajo k izboljšanju duševnega zdravja in splošnega počutja.

V raziskavi, ki so jo izvedli v okviru programa Hoja za zdravje (Walking for Health) (Marselle idr. 2019) v Angliji, so opazovali, kako skupinski sprehodi vplivajo na duševno, čustveno in socialno blagostanje posameznikov. Primerjali so posameznike, ki so se udeleževali skupinskih sprehodov v naravi, s tistimi, ki se teh pohodov niso udeleževali. Rezultati so pokazali, da so skupinski sprehodi v naravi povezani z nižjo stopnjo depresije in stresa ter višjo ravno duševnega blagostanja. Raziskava je pomembno prispevala k razumevanju koristi, ki jih ima redna udeležba v skupinskih sprehodih v naravi za duševno in čustveno zdravje, ter opozorila na potencial tovrstnih programov kot javnih zdravstvenih ukrepov za spodbujanje dobrega počutja v populaciji.

Hoja spodbuja kreativno mišljenje med samo aktivnostjo in kratek čas po njej, so dokazali v štirih poskusih, v katerih so ocenjevali ustvarjalnost med sedenjem in med hojo, v zaprtem prostoru in na prostem (Oppezzo in Schwartz 2014). Ljudje so bili najustvarjalnejši ob hoji na prostem. Hoja je enostavna in učinkovita metoda, ki združuje ustvarjalnost in telesno aktivnost. Redna telesna aktivnost pomaga telesu in možganom obvladovati stres, zmanjšuje tveganje za anksioznost in depresijo ter spodbuja pozitivno razpoloženje. Pogosto sproži kaskadni učinek zdravih navad: uravnotežene prehrane, boljše socialne povezanosti in kakovostnega spanca. Vadba povečuje prekrvavitev možganov, spodbuja nastaja-

nje novih nevronov v hipokampusu in izboljšuje spomin, učenje ter pozornost. Telesna dejavnost krepi odpornost, duševno zdravje in kognitivne sposobnosti, kar podpira dolgoročno mentalno vitalnost in kakovost življenja (American Psychological Association 2020).

Delavnice, individualno, skupinsko ali timsko mentorstvo in coaching ob hoji v naravi prinašajo različne koristi, ki podpirajo učenje in povezujejo udeležence. Sproščeno okolje omogoča odprt pogovor in skupno reševanje problemov. V naravi ni strukture in hierarhije, običajne za delovna okolja. Ljudje so sproščeni in enakovredni. Komunikacija je pristna, iskrena, konstruktivna, umirjena. Skupne aktivnosti in pogovori izven delovnega okolja krepijo odnose, povezanost ter enotnost med člani tima.

Go & Grow z integracijo gibanja, narave in različnih načinov učenja razvija ter krepi osnovne človeške veščine, čustveno inteligenco in razvojno miselnost. Spodbuja reflektivno učenje, sodelovanje in ustvarjalnost. Razvija skupnost, ki zna sodelovati, razmišljati sistemsko in soustvarjati trajnostne rešitve.

Zaključek

Predstavljeni študiji primera potrjujeta, da inovativne skupnosti, ki temeljijo na odnosih, zupanju, proaktivnosti in medsebojni podpori, nastajajo tam, kjer obstajajo pogoji za rast posameznikov in kjer povezovanje presega formalne strukture. V takih skupnostih so posamezniki spodbujeni, da postanejo soustvarjalci sprememb in s tem nosilci družbenih inovacij, ki gradijo mostove in krepijo skupnostno kulturo sodelovanja.

SSM dokazuje, da je lahko mentorstvo, kot učinkovita metoda osebne in profesionalne rasti, opolnomočenja, prenosa in kroženja znanja ter medgeneracijskega sodelovanja, dostopno vsem. Platforma Go & Grow pa ponazarja, kako lahko povezovanje gibanja in narave z učenjem omogoči razvoj ključnih kompetenc za prihodnost ter ustvarja prostor za inovativne rešitve. Prispevek pokaže, da se inovacije ne uresničujejo le skozi formalne projekte, temveč preko skupnosti, v katerih so ključne vrednote odnosi, sodelovanje in odprtost za učenje. Prav tako prispevek potrjuje, da inovativne skupnosti ustvarjajo učinke, skladne z definicijami družbenih inovacij, saj krepijo kompetence posameznikov, omogočajo transformacijo vedenjskih in miselnih vzorcev ter prispevajo k razvoju širše družbe.

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Technology Transfer in Practice: Evidence from EIT RawMaterials Innovation Ecosystems

This paper examines technology transfer within the EIT RawMaterials framework, with a particular focus on innovation projects operating at Technology Readiness Levels (TRL) 4–7. Drawing on a sample of 18 completed projects spanning technology, product, and service development, the study analyses how ecosystem-based mechanisms facilitate the transition from research to market. The findings reveal heterogeneous innovation trajectories and a weak correlation between initial TRL levels and commercialisation outcomes. Successful technology transfer is strongly associated with early involvement of industry partners, the integration of business planning, and clearly defined intellectual property strategies. Furthermore, the results highlight the importance of co-ordinated ecosystem support – encompassing funding, networking, and performance-based incentives – in addressing the so-called innovation ‘valley of death.’ The paper contributes to the innovation management literature by providing empirical insights into ecosystem-driven technology transfer within a capital-intensive sector.

Keywords: technology transfer, innovation ecosystems, EIT RawMaterials, TRL, research–industry collaboration

Prenos tehnologije v praksi: spoznanja iz inovacijskih ekosistemov EIT RawMaterials

Pričujoči članek preučuje prenos tehnologije v okviru EIT RawMaterials, s posebnim poudarkom na inovacijskih projektih, ki delujejo na stopnjah tehnološke pripravljenosti (angl. Technology Readiness Levels – TRL) 4–7. Na podlagi vzorca 18 zaključenih projektov, ki zajemajo razvoj tehnologij, izdelkov in storitev, raziskava analizira, kako mehanizmi, utemeljeni na ekosistemih, omogočajo prehod z raziskav na trg. Ugotovitve razkrivajo heterogene inovacijske poti ter šibko korelacijo med začetnimi ravnmi TRL in rezultati komercializacije. Uspešen prenos tehnologije je močno povezan z zgodnjo vključenostjo industrijskih partnerjev, integracijo poslovnega načrtovanja in jasno opredeljenimi strategijami intelektualne lastnine. Poleg tega rezultati poudarjajo pomen usklajene podpore ekosistema – vključno s financiranjem, z mreženjem in s spodbudami, vezanimi na uspešnost – pri premagovanju t. i. inovacijske »doline smrti«. Članek prispeva k literaturi s področja upravljanja inovacij z empiričnimi vpogledi v prenos tehnologije, ki ga poganja ekosistem, znotraj kapitalsko intenzivnega sektorja.

Ključne besede: prenos tehnologije, inovacijski ekosistemi, EIT RawMaterials, TRL, sodelovanje med raziskavami in industrijo



<https://doi.org/10.26493/1854-4231.21.31-40>

Introduction

Innovation is widely recognised as a key driver of economic growth, industrial competitiveness, and long-term sustainable development. In advanced economies, the capacity to generate new knowledge and transform it into valuable

products, processes, and services has become a central determinant of growth (Teece 2010). Universities and public research organisations play a crucial role in generating scientific knowledge and technological advances; however, the transfer of inventions into market-ready innovations

remains limited and often inefficient (Siegel et al. 2003).

Technology transfer has been extensively examined in the fields of innovation management and public policy, particularly with regard to the effectiveness of research funding mechanisms. Broadly defined, technology transfer refers to the process by which knowledge and research results developed within public or private research organisations (e.g., universities and research institutes) are applied in commercial or societal contexts (Bozeman 2000).

Traditional models of technology transfer conceptualise innovation as a linear progression from basic research to commercialisation. However, such models fail to capture the complexity of real-world innovation processes, particularly in deep-tech sectors, where iterative learning, industrial validation, and multi-actor interactions are essential (Adner 2017). In practice, technologies are continuously refined through user feedback, regulatory constraints, and operational experience, especially at intermediate Technology Readiness Levels (TRLs), where they are first exposed to market conditions.

In response to these limitations, contemporary innovation theory increasingly emphasises systemic and ecosystem-based perspectives, viewing innovation as a non-linear process emerging from interactions among interdependent actors (Adner 2017). The triple helix model highlights the roles of universities, industry, and government (Etzkowitz and Leydesdorff 2000), while broader ecosystem frameworks incorporate additional stakeholders, including investors, intermediaries, users, and civil society (Autio et al. 2018). From this perspective, technology transfer can be understood as an ongoing, network-embedded process, in which success depends on the alignment of incentives, capabilities, and expectations across stakeholders, supported by appropriate institutional and relational structures (Jacobides et al. 2018).

Despite decades of policy initiatives and substantial public investment in research and development, Europe continues to face challenges in translating research excellence into commercial success. This gap, often referred to as the 'European paradox,' reflects strong scientific output but comparatively weaker performance in innovation scaling and market deployment (European Commission 2024). A key bottleneck in this process is the 'innovation valley of death,' particularly at intermediate Technology Readiness Levels (TRL

4–6), where technologies require validation in real-world environments, industrial collaboration, and significant investment (Auerswald and Branscomb 2003; Héder 2017).

In response to these structural challenges, the European Union has developed a range of innovation policy instruments aimed at strengthening technology transfer and fostering closer collaboration between research, education, and industry in order to enhance innovation performance. Among these instruments, the European Institute of Innovation and Technology (EIT) has represented a central pillar since its establishment in 2008. Its creation reflected growing concern that Europe's innovation system was not fully capitalising on research outputs generated by its world-leading organisations.

Rather than funding isolated projects, the EIT promotes long-term, mission-driven innovation ecosystems through its Knowledge and Innovation Communities (KICs). These ecosystems integrate education, innovation, and business creation activities and are designed to support the entire innovation journey, from idea generation to market uptake. This approach reflects the understanding that innovation is a collective process involving multiple actors with complementary capabilities and activities (Etzkowitz and Leydesdorff 2000).

The EIT operates through Knowledge and Innovation Communities (KICs), which are large-scale partnerships addressing specific societal and industrial challenges. Each KIC focuses on a thematic area aligned with European strategic priorities, including climate change, energy, health, digitalisation, food systems, manufacturing, and raw materials.

Within this framework, EIT RawMaterials focuses on innovation across the raw materials value chain. Given Europe's strategic dependence on critical raw materials, as well as increasing demand driven by the green and digital transitions, innovation in this sector has become a key priority for the European Union (Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020 (Text with EEA relevance) (2024)).

EIT RawMaterials operates in a sector characterised by high capital intensity, long development cycles, and strict regulatory requirements.

Innovation projects in this domain face substantial barriers to commercialisation, particularly during the transition from laboratory research to industrial application. To address these challenges, EIT RawMaterials supports projects at intermediate TRL levels (TRL 4–7), providing funding, ecosystem support, and performance-based incentives (i.e., key performance indicators aligned with market-oriented outcomes) to facilitate technology transfer and market introduction within a structured, long-term framework for supporting innovation progress (Mankins 1995; Héder 2017). These mechanisms have been evaluated as effective in supporting innovation outcomes (European Institute of Innovation and Technology 2022) and are known to generate behavioural additionality (Georghiou and Clarysse 2006; OECD 2016).

Despite the extensive body of research on technology transfer, limited empirical evidence exists regarding how ecosystem-based innovation instruments influence commercialisation

outcomes at intermediate TRL levels. In particular, the relationship between technological maturity and successful market uptake remains insufficiently understood.

This paper contributes to the literature on innovation management by providing empirical evidence on technology transfer processes within an ecosystem-based policy instrument. It extends existing research by demonstrating that technological maturity alone is insufficient to explain commercialisation success and highlights the critical role of ecosystem dynamics, partnership structures, and strategic alignment in shaping innovation outcomes.

Methodology

This study adopts a qualitative, comparative, case-based approach, analysing 18 completed EIT RawMaterials projects. The primary objective is to generate in-depth insights into technology transfer processes within an ecosystem-based in-

Table 1 List of Projects Included in the Study

No.	Project name	Title	Duration [Y]	Closing Date
1	CastQC	A novel cast ultra-high-specific strength quasicrystal aluminium alloy	2	31.12.2024
2	DIMESEE-2	Dubrovnik International ESEE Mining School - Implementing innovations	5	31.12.2024
3	INNOCAT	Innovative CRM substitution technology for public authorities' vehicle catalysts	2	31.12.2020
4	LiBRE	LiBRE Development of sustainable processing technologies for Lithium and Borate	2	31.12.2025
5	MESCEL	HardMetal scrap electrolysis for recovery of valuable metals	2	31.12.2026
6	NRE-ELECTRA	Electric, Remote control, Automatic Narrow Reef mining Equipment 20230218_115104	2	31.12.2025
7	RIS Hub Adria	EIT RawMaterials RIS Hub Adria	8	31.12.2025
8	RIS-CuRE	Zero waste recovery of copper tailings in the ESEE region	3	31.12.2021
9	RIS-DustRec-II	Zero waste reprocessing of EAF and CF dust with competence build-up	2	31.12.2024
10	RIS-Internship	RIS Internship programme: broadening University-Business Cooperation	3	31.12.2024
11	RIS-RECOVER	Regional innovation scheme for zero waste extraction of critical raw materials. (EIT RIS activity related to action line I)	3	31.12.2020
12	RIS-RESTORE	Evaluation of Red Mud Tailings in the ESEE region	3	31.12.2022
13	SPL-CYCLE	Closing the loop of the Spent Pot-line (SPL) in Al smelting process	3	30.11.2021
14	WEEE-NET9	WEEE-NET: Improving CRMs extraction capacities in RIS WEEE recycling	3	31.12.2025
15	Whisper	Waterless Iron Silicate Production with Energy Recovery	2	30.11.2021
16	ZnOrgBAT	ZnOrgBAT - Rechargeable Zinc-organic batteries	2	31.12.2025
17	RIS-Alice	Al-rich industrial residues for mineral binders in ESEE region	3	31.12.2022
18	GeORIS	Innovative technologies for waste processing in ESEE Region	2	31.12.2024

novation framework, rather than to produce statistically generalisable results.

The projects listed in Table 1 were selected according to a set of predefined criteria to ensure their relevance to the research objectives. First, the projects had to be aligned with EIT RawMaterials innovation themes and the EIT RawMaterials Strategic Agenda 2021–2027, thereby ensuring their relevance and contribution to the European raw materials value chain. Second, the projects were required to start at a minimum Technology Readiness Level (TRL) of 4, indicating that they had progressed beyond the stage of basic research.

Third, the projects had to achieve a final TRL between 5 and 7, reflecting advancement towards industrial validation and bringing the innovations closer to market readiness. Finally, only projects that had been fully completed within the EIT RawMaterials evaluation framework were included, allowing for a systematic assessment of outcomes and exploitation activities at the conclusion of each project.

Each project was analysed across five key dimensions: technology readiness progression, partnerships and consortium composition, intellectual property management, the quality of business planning and market orientation, and exploitation and commercialisation outcomes. These dimensions capture both the technical and commercial aspects of technology transfer and are consistent with the multidimensional nature of innovation processes.

For analytical purposes, the projects were categorised into three broad types: technology development (innovation projects), education projects, and networking projects. This classification enabled a comparative analysis of different innovation pathways and the associated commercialisation challenges.

The analysis focused on identifying recurring patterns and relationships across projects, rather than establishing causal inference. The primary sources of data were internal anonymised reports, which outlined key project objectives, targets, and key performance indicators (KPIs), as well as other project deliverables, including developed prototypes and completed industrial validation activities.

It should be noted that most of the underlying documentation is confidential; therefore, detailed project-level information cannot be disclosed in this article.

Results and Discussion

Technology Readiness Progression

The analysis of project data reveals substantial heterogeneity in innovation trajectories and outcomes across the analysed projects. Although all projects achieved their targeted progression in Technology Readiness Levels (TRLs), the pace of development, the nature of partnerships, and commercialisation outcomes varied considerably.

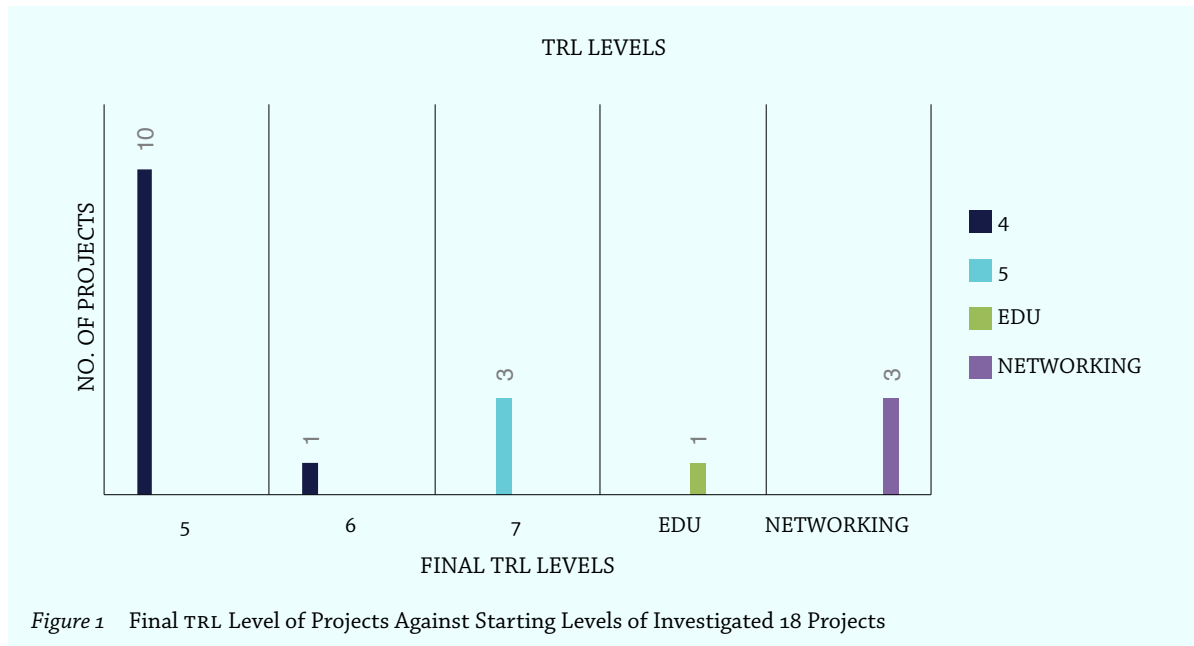
The projects progressed from TRL 4 – where technologies are validated in laboratory environments – to TRL 5 and TRL 6, where validation and demonstration occur in relevant environments, and, in some cases, to TRL 7, which represents system prototype demonstration under operational conditions.

As illustrated in figure 1, of the 18 analysed projects, 10 projects that started at TRL 4 progressed to TRL 5, while one project advanced from TRL 4 to TRL 6. In contrast, all three projects that started at TRL 5 progressed to TRL 7, indicating a higher likelihood of reaching advanced demonstration stages once initial validation has been achieved. Overall, approximately 89% of projects starting at TRL 4 progressed by one TRL level, whereas 100% of projects starting at TRL 5 reached TRL 7.

This difference can be partially explained by the structure of funding instruments. For instance, projects funded under the ‘KAVA Call 13 – Upscaling’ were explicitly designed to achieve higher TRL levels, with clearly defined objectives and strong alignment towards TRL 7. By contrast, RIS innovation projects typically targeted incremental progression from TRL 4 to TRL 5 or 6, reflecting their focus on early-stage development and regional capacity building.

However, despite consistent technological advancement across projects, TRL progression alone did not determine commercialisation success. Projects that reached similar final TRL levels exhibited significantly different exploitation outcomes, as discussed in subsequent sections. This finding suggests that, while TRL provides a useful framework for assessing technological maturity, it does not capture critical factors such as market readiness, business strategy, and ecosystem alignment.

Therefore, the results confirm that technological maturity alone is not a sufficient predictor of commercialisation success.



Partnerships and Industry Involvement

In relation to Technology Readiness Level (TRL) progression, the composition of project consortia – particularly the presence of clearly defined industrial partners responsible for validation – was identified as a critical factor. Such dedicated industrial involvement was present in all technologically oriented projects, as well as in one networking project, as illustrated in figure 2.

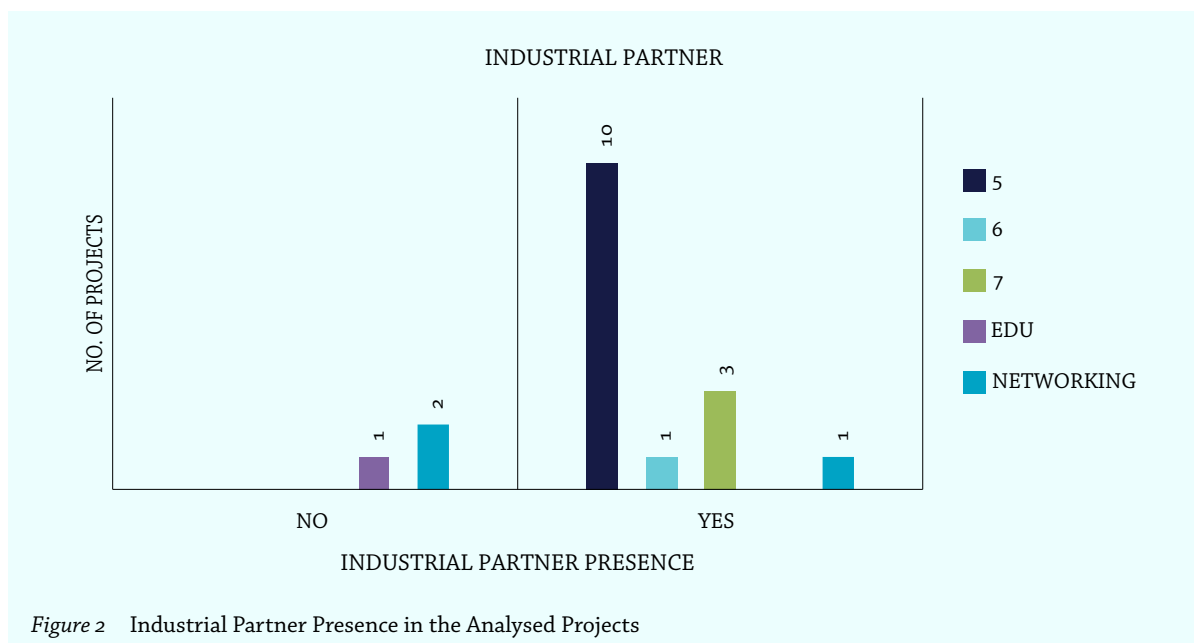
Projects characterised by strong industrial involvement from the early stages demonstrated clearer pathways towards both TRL progression and commercialisation. Industrial partners contributed access to real operating environments,

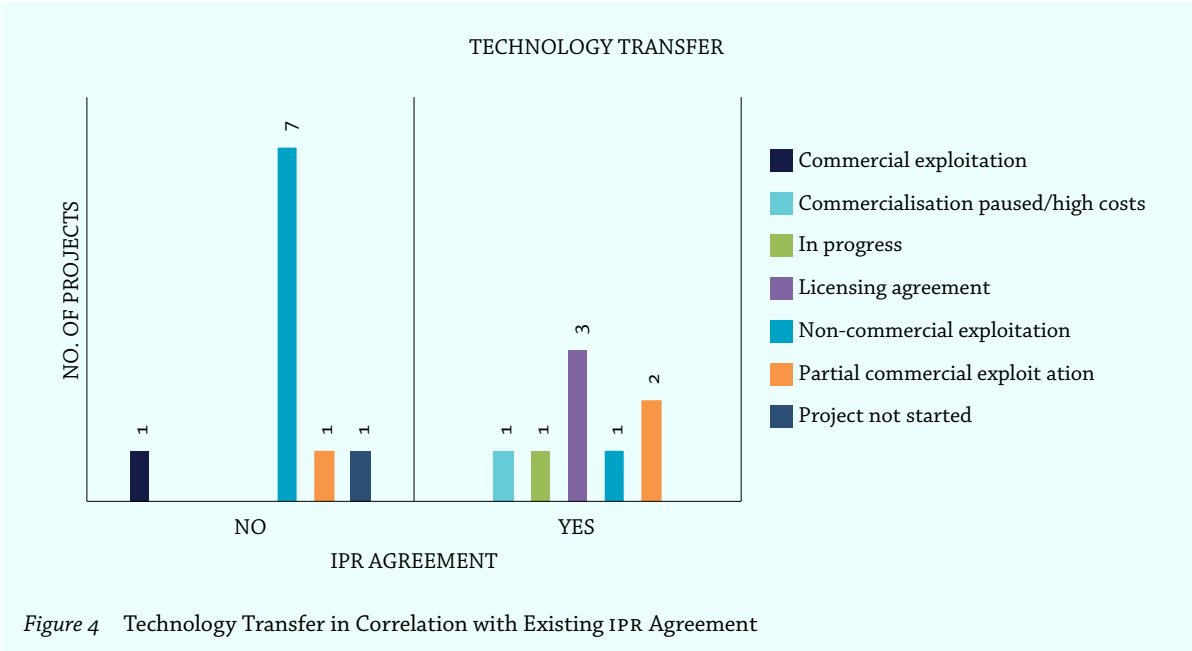
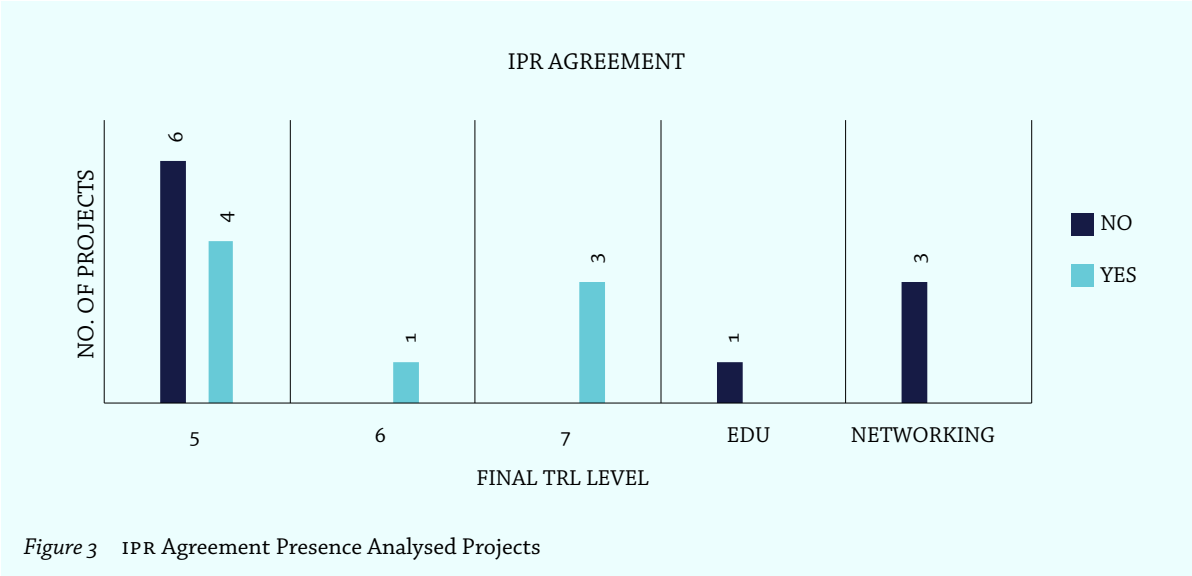
market insights, and enhanced project credibility. In contrast, projects dominated by academic partners often encountered greater challenges in aligning technical development with market needs, which in some cases resulted in delays in development processes.

This finding is consistent with ecosystem-based perspectives that emphasise the importance of coordination among interdependent actors (Jacobides et al. 2018).

Intellectual Property Management

Clear intellectual property (IP) ownership structures and well-defined exploitation agreements





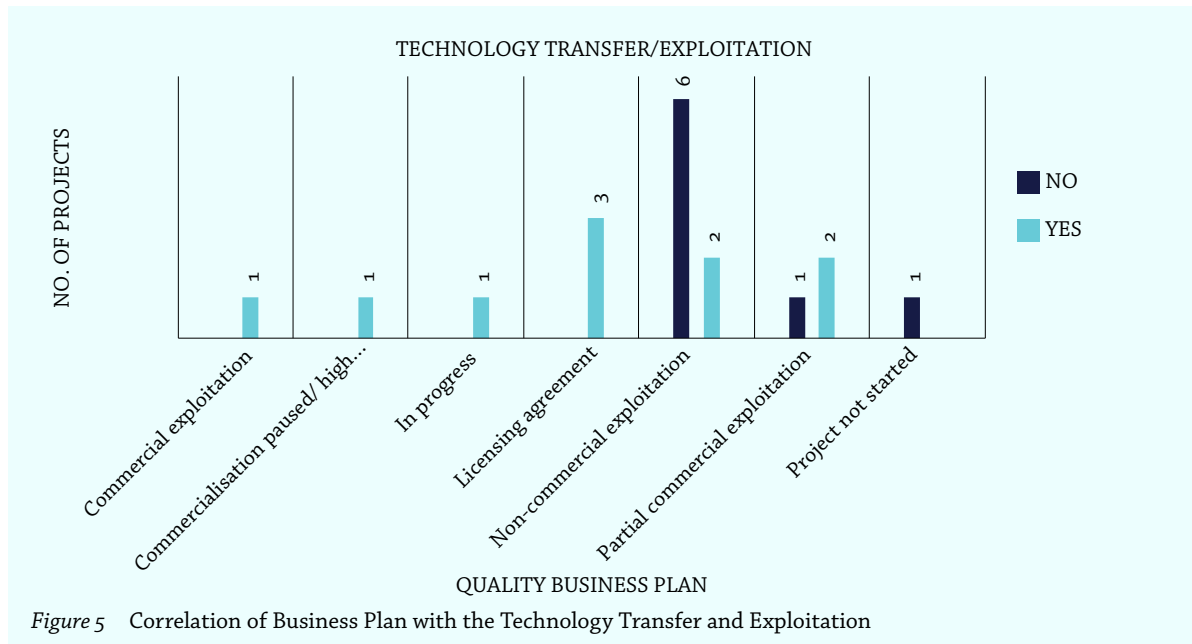
emerged as critical success factors. Projects that addressed IP-related issues at an early stage were better positioned to attract investment and establish commercial partnerships.

As illustrated in figure 3, formal intellectual property rights (IPR) agreements were present across projects reaching different final TRL levels. While no direct causal relationship between IPR agreements and TRL progression can be established, projects with clearly defined IP arrangements tended to exhibit more structured development pathways and a higher degree of readiness for subsequent exploitation activities.

In contrast, projects that postponed the definition of intellectual property arrangements encountered coordination challenges among part-

ners, particularly at later stages of development, when commercialisation considerations became more prominent. These challenges were primarily related to ownership clarification, access rights, and the allocation of responsibilities for exploitation.

Figure 4 provides further insight into the role of intellectual property management in shaping technology transfer outcomes. Projects with established intellectual property rights (IPR) agreements demonstrated a higher likelihood of progressing towards concrete exploitation activities, including licensing and preparation for market entry. In contrast, projects without formalised IP arrangements exhibited more limited or delayed technology transfer outcomes.



Importantly, these findings do not imply a direct causal relationship; rather, they suggest that clear IP governance supports coordination among partners and facilitates the alignment of expectations regarding exploitation. When combined with structured business planning, intellectual property management becomes a key enabler of successful technology transfer, effectively linking technological development with market-oriented outcomes.

Exploitation and Commercialisation Outcomes

Exploitation outcomes across the analysed EIT RawMaterials innovation projects varied significantly in terms of form, timing, and scope. Technology development projects primarily focused on process innovations or enabling technologies, which typically require integration into existing industrial systems and, consequently, careful business planning to ensure alignment with market needs.

As illustrated in figure 5, a clear positive relationship can be observed between the level of business planning and the success of exploitation outcomes. Projects that developed structured, early-stage business plans – incorporating market analysis, clearly defined customer segments, and well-articulated commercialisation strategies – were significantly more likely to achieve concrete exploitation results, such as licensing agreements, market entry, or the attraction of follow-up investments.

Projects with limited or delayed business planning tended to exhibit weaker or postponed

commercialisation outcomes, despite achieving comparable levels of technological progress. This finding indicates that technological advancement alone is insufficient to ensure successful exploitation, and that a strong strategic business orientation plays a critical role in bridging the gap between development and market uptake.

Product development projects demonstrated more direct pathways to market, often resulting in tangible outputs that could be tested and offered to potential customers. However, even in these cases, successful commercialisation remained strongly associated with the presence of robust business planning. Projects lacking structured commercial strategies experienced delays related to certification, standardisation, and scaling, often requiring additional investment prior to market entry.

Figure 6 further illustrates that successful technology transfer is not determined solely by TRL progression, but rather by the combined effect of technological maturity and the presence of structured business planning. Projects that achieved higher TRL levels without corresponding business planning demonstrated limited exploitation outcomes, reinforcing the importance of integrating technical and commercial development processes.

These findings support the argument that business planning acts as a mediating factor between technological maturity and successful commercialisation.

Across all project types, the role of EIT RawMaterials extended beyond the provision of fi-

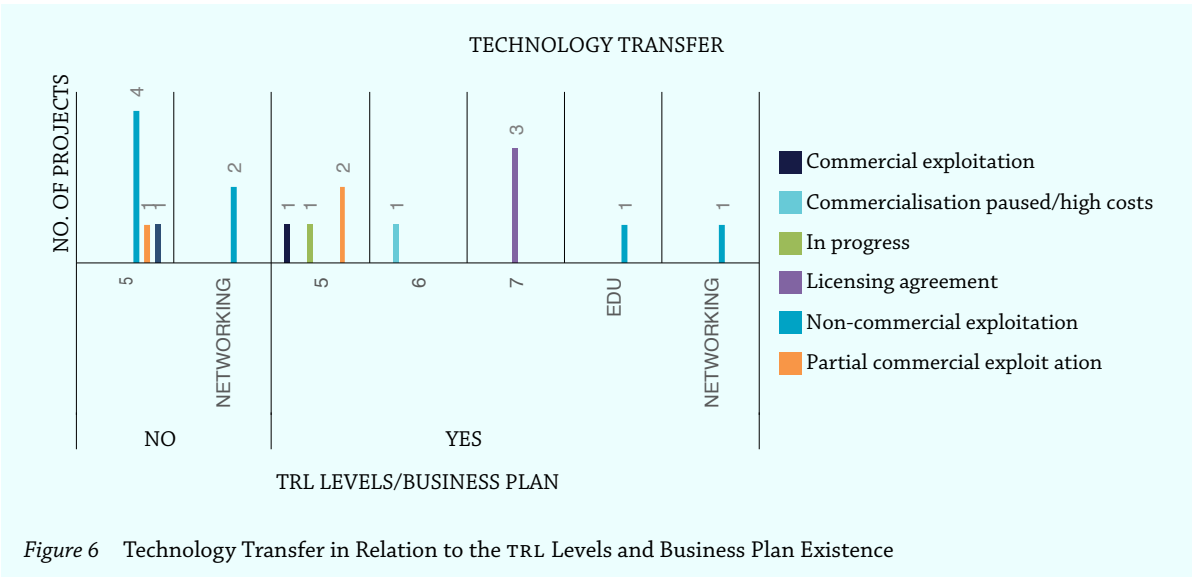


Figure 6 Technology Transfer in Relation to the TRL Levels and Business Plan Existence

nancial support. Access to networks, ecosystem visibility, and support for business development and investment attraction played a significant role in shaping exploitation outcomes. Projects that actively leveraged these ecosystem resources, in combination with strong business planning, were more likely to achieve sustained post-project continuation. This observation aligns with ecosystem-based perspectives on innovation, which emphasise the importance of coordinated interactions among interdependent actors in shaping commercialisation outcomes (Jacobides et al. 2018).

Discussion

The analysis identifies several recurring best practices that contribute to successful technology transfer and highlights the enabling role of the EIT ecosystem. These practices were observed across different project types and thematic areas, suggesting their broader relevance within deep-tech innovation contexts.

Early and continuous engagement with industrial partners and end-users emerged as a key success factor. Projects involving industry stakeholders from the outset were better able to align technical development with real-world requirements, anticipate regulatory constraints, and increase the likelihood of post-project exploitation. In addition, the integration of technical development with business planning and intellectual property (IP) strategy proved critical. Successful projects developed business models, conducted market analyses, and established IP strategies in parallel with technical work, thereby reducing uncertainty and enabling more informed decision-making.

Access to industrial pilot and demonstration infrastructure also played an important role, as it enabled validation under operational conditions and strengthened the value proposition for both customers and investors.

Overall, the findings indicate that technology transfer within the EIT RawMaterials framework is a non-linear, ecosystem-driven process in which technological, organisational, and market-related factors evolve simultaneously. A key insight is the weak relationship between TRL progression and commercialisation outcomes. While all analysed projects achieved technological advancement, their exploitation results varied significantly, suggesting that technological maturity alone is insufficient to explain innovation success. Although TRL provides a useful measure of technical progress, it does not capture critical dimensions such as market readiness, organisational alignment, and regulatory compliance. This underscores the need to complement TRL with broader frameworks, such as Commercial Readiness Levels (CRL) or Human Readiness Levels (HRL) (França et al. 2021).

These findings are consistent with ecosystem-based theories of innovation, which emphasise the importance of networks and complementarities among actors (Jacobides et al. 2018). Intellectual property management and business planning further emerged as key determinants of success. Early clarity regarding IP ownership and exploitation reduces uncertainty and facilitates collaboration, while integrated business planning enables projects to better respond to market and regulatory conditions. Moreover, the KPI framework applied by EIT RawMaterials appears

to introduce behavioural additionality by aligning incentives with long-term impact objectives (Georghiou and Clarysse 2006; OECD 2016).

From a policy perspective, the results provide empirical support for ecosystem-based innovation instruments that combine funding, networking, skills development, and performance-based incentives. In sectors characterised by high complexity, capital intensity, and long development cycles, such integrated approaches appear particularly effective in addressing the innovation valley of death (Auserwald et al. 2023; OECD 2016; Markham et al. 2010).

Conclusions

This study provides empirical evidence on technology transfer processes within the EIT RawMaterials innovation ecosystem, with a particular focus on projects operating at Technology Readiness Levels (TRL) 4–7. The findings demonstrate that technological advancement alone does not determine commercialisation success. While all analysed projects achieved measurable TRL progression, their exploitation outcomes varied significantly.

The results indicate that successful technology transfer is primarily driven by ecosystem-related factors, including early industrial involvement, structured business planning, and clear intellectual property governance. These elements facilitate alignment between technological development and market requirements, thereby reducing uncertainty and supporting the transition from innovation to commercial application.

A key insight of this study concerns the limitations of the Technology Readiness Level framework as a predictor of innovation success. Although TRL provides a useful measure of technological maturity, it does not capture critical dimensions such as market readiness, organisational alignment, and ecosystem coordination. This helps explain why projects with similar levels of TRL progression achieved substantially different commercial outcomes.

The findings further highlight the effectiveness of the EIT RawMaterials model as an ecosystem-based innovation instrument. By integrating funding, networking, skills development, and performance-based incentives, the model addresses both technological and systemic barriers to innovation, particularly in capital-intensive sectors.

This paper makes three key contributions to the innovation management literature. First,

it provides empirical insight into technology transfer processes at intermediate TRL levels. Second, it demonstrates the central role of ecosystem-based mechanisms in enabling successful commercialisation. Third, it highlights the limitations of TRL as a standalone indicator of innovation success and emphasises the importance of strategic alignment and ecosystem coordination.

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Razumevanje inovacij skozi prizmo motivacije: psihološki, organizacijski in pravni vidiki

Motivacija za inoviranje predstavlja eno temeljnih, a pogosto spregledanih predpostavk vsake inovacije. Zato je bil namen tega prispevka predstaviti dosedanje ugotovitve o motivaciji za inoviranje in odgovoriti na vprašanje, kakšna je vloga notranje in zunanje motivacije pri spodbujanju inovacijskega vedenja posameznikov ter kako nanju vpliva organizacijsko in regulatorno okolje. Pri tem smo izhajali iz spoznanja, da inovacij ni mogoče razumeti zgolj kot rezultat individualne ustvarjalnosti, temveč kot pojav, ki nastaja v presečišču motivacijskih, organizacijskih in institucionalnih dejavnikov. Da bi dosegli namen našega raziskovanja, smo preučili relevantno literaturo s področja inovacij, motivacije ter organizacijskih in pravnih vidikov inovativnosti. Na tej podlagi smo identificirali ključne koncepte in empirične ugotovitve, ki pojasnjujejo motivacijo za inoviranje, in prišli do ugotovitev o tem, kateri so ključni dejavniki, ki vplivajo na motivacijo za inoviranje, ter kako so medsebojno povezani. Ugotovili smo, da zgolj motivacija posameznika za inoviranje ne vodi nujno do dejanskega inovacijskega delovanja v organizacijah. Notranja motivacija sicer deluje kot ključni sprožilec inovacijskega vedenja in predstavlja temeljni predpogoj za nastanek inovacijskih idej, vendar se te lahko razvije in uresniči le v ustreznem organizacijskem okolju ter ob podpori jasnega in spodbudnega pravnega okvira. Naš prispevek tako presega ozke, enodimenzionalne pristope k razumevanju in spodbujanju inovacij ter odpira možnosti za nadaljnje raziskovanje povezav med motivacijo, organizacijskim okoljem in institucionalnimi dejavniki.

Ključne besede: inovativnost, motivacija za inoviranje, notranja in zunanja motivacija, organizacijsko okolje, pravni okvir inovacij

Understanding Innovation Through the Lens of Motivation: Psychological, Organizational, and Legal Perspectives

Motivation to innovate is one of the fundamental, but often overlooked elements of innovativeness. Therefore, the purpose of this paper is to present the findings on motivation to innovate and to answer the question about the role of intrinsic and extrinsic motivation in promoting innovation behavior of individuals and how is it influenced by the organizational and regulatory environment. In doing so, we started from the fact that innovation cannot be understood solely as the result of individual creativity, but as a phenomenon that arises at the intersection of motivational, organizational and institutional factors. In order to achieve the purpose of our research idea, we examined the relevant literature in the field of motivational, organizational and legal aspects of innovation. On this basis, we identified key concepts and empirical findings that explain motivation to innovate, and came to conclusions about which are the key factors that influence motivation to innovate and how they are interconnected. We found that the mere motivation of an individual to innovate does not necessarily lead to actual innovation activity in organizations. Although intrinsic motivation acts as a key trigger for innovative behavior and represents a fundamental condition for the emergence of innovative

ideas, these can only be developed and realized in an appropriate organizational environment and with the support of a clear and encouraging legal framework. Our contribution thus goes beyond narrow, one-dimensional approaches to understanding and promoting innovation and opens up possibilities for further research into the connections between motivation, organizational environment and institutional factors.

Key words: Innovative behavior, innovation motivation, intrinsic and extrinsic motivation, organizational environment, legal framework for innovation



<https://doi.org/10.26493/1854-4231.21.41-46>

Uvod

Razprave o družbenih inovacijah večinoma poudarjajo nove oblike in načine reševanja družbenih problemov, manj pozornosti pa namenjajo vprašanju, zakaj so posamezniki in organizacije sploh pripravljeni inovirati tudi na tem področju. Vendar motivacija za inoviranje predstavlja eno temeljnih, a pogosto spregledanih predpostavk vsake inovacije, tudi družbene. Zato ji v tem prispevku posvečamo posebno pozornost. A čeprav je motivacija za inoviranje ključnega pomena za to, da do inovacije sploh pride, pa inovacijskega ravnanja ni mogoče razumeti zgolj kot posledico individualne ustvarjalnosti ali notranjega vzgiba, temveč tudi kot rezultat prepleta zunanjih spodbud, organizacijskega okolja in pravnega oz. institucionalnega okvira, v katerem se inovativnost udejanja. Prav v tem presečišču se namreč razkrije, da inovacije niso zgolj spontani produkt posameznikove motivacije, ampak tudi učinek strukturiranih spodbud, zaznanih priložnosti, podpornih institucij in normativnih pravil – vsi omenjeni dejavniki lahko inoviranje bodisi omogočajo ali spodbujajo bodisi zavirajo. Tudi prispevki v prejšnji številki revije *Management* (2025, št. 2) pokažejo, da inoviranje ni le vprašanje novih rešitev, in pri tem izpostavljajo vlogo institucij, organizacijskih pogojev, prenosa znanja, sodelovanja z okoljem in sposobnosti univerz, da ustvarijo mehanizme, v katerih inovativne ideje sploh lahko nastanejo, se razvijejo in dosežejo družbeni učinek. Zato razumevanje dejavnikov, ki spodbujajo (ali zavirajo) inoviranje, predstavlja pomemben uvid v pogoje, pod katerimi lahko nastajajo tudi družbene inovacije.

V pričujočem prispevku izhajamo iz spoznanja, da inovacij ni mogoče razumeti zgolj kot rezultat individualne ustvarjalnosti, temveč kot pojav, ki nastaja v presečišču motivacijskih, organizacijskih in institucionalnih dejavnikov. Izhajajoč iz tega je bil naš namen analizirati in opisati, kateri dejavniki in na kakšen način oblikujejo

motivacijo posameznikov in organizacij za inoviranje. Temeljno vprašanje, ki nas je pri tem vodilo, se glasi: Kako notranja in zunanja motivacija vplivata na inovacijsko vedenje posameznikov ter kakšno vlogo imata pri tem organizacijsko in regulatorno okolje?

V metodološkem smislu raziskava temelji na pregledu, analizi in sintezi obstoječih znanstvenih spoznanj. Novi empirični podatki niso bili zbrani; raziskava izhaja iz sistematične obravnave izbrane znanstvene in strokovne literature s področij inovacij, motivacije ter organizacijskih in pravnih vidikov inovativnosti. Ključne ugotovitve smo povzeli z metodo kompilacije, s primerjalno metodo pa smo stališča raznih avtorjev medsebojno primerjali. Na tej podlagi smo identificirali ključne koncepte in empirične ugotovitve, ki pojasnjujejo motivacijo za inoviranje, in prišli do ugotovitev o tem, kateri so ključni dejavniki motivacije za inoviranje ter kakšna je njihova medsebojna prepletenost.

V nadaljevanju članka najprej sledita opredelitev pojma inovacija ter pregled ključnih teoretičnih izhodišč, ki oblikujejo razumevanje inovativnosti. V jedru članka obravnavamo vlogo motivacije za inoviranje, pri čemer posebno pozornost namenjamo razlikovanju med notranjimi in zunanjimi motivacijskimi dejavniki. Nato obravnavamo vlogo organizacijskega okolja in pravnega okvira pri motivaciji za inoviranje ter prikažemo njuno povezanost z individualnimi dejavniki. Analiza temelji na integraciji spoznanj različnih disciplin, kar omogoča celovitejši vpogled v obravnavani pojav. Na koncu članka odgovorimo na postavljeno vodilno vprašanje, strnemo ključne ugotovitve ter predstavimo možnosti njihove uporabe.

Pojem inovacija

Zelo poenostavljeno: inovacija je vsaka novost, ki prinaša korist. V teoriji je definicij inovacije in inovativnosti veliko, zato v nadaljevanju navajamo samo tiste najbolj znane.

Prvi, ki je pričel sistematično in skozi znanstven pristop preučevati inovacije ter inovativnost, je bil Joseph Schumpeter, ki velja za očeta tega področja v ekonomiji (Hall in Rosenberg 2010, 4). Po Schumpetru inovativnost pomeni izvirni razvoj nekega novega izdelka ali proizvodnega procesa in nastane kot rezultat eksperimentiranja z novimi kombinacijami obstoječih virov (Dosi in Nelson 2010, 91). Drucker (1985) je inovacije preučeval skozi prizmo podjetništva in inovativnost razume kot specifično orodje podjetnikov oz. sredstvo, s katerim izkoriščajo spremembo kot poslovno priložnost. Drucker je bil prvi, ki inovacij ni videl zgolj kot tehnološke rešitve, pač pa jih je videl v novostih na številnih področjih, tudi izven gospodarstva. Bil je tudi eden prvih, ki je poudarjal, da inovacije niso nključne, pač pa da so lahko rezultat sistematičnega in organiziranega procesa. Tudi West in Farr (1990) izpostavljata prispevek inovacij ne zgolj v ekonomskem smislu, pač pa tudi širše, saj inovativnost definirata kot zavestno uvedbo in uporabo postopkov ali izdelkov znotraj neke vloge, skupine ali organizacije, ki so za enoto uporabe novi in ki so namenjeni za bistveno povečanje koristi posameznika, skupine, podjetja ali družbe kot celote. Te širine pojma inovativnost pa nima opredelitev OECD, ki inovacijo razume kot nov ali izboljšan izdelek ali proces (ali kombinacija obojega), ki se pomembno razlikuje od predhodnega izdelka ali procesa in ki prinaša korist (OECD in Eurostat 2018, 20).

Raziskave kažejo, da inovativnost ni odvisna samo od »genialnosti« posameznika, temveč tudi od motivacije posameznika za inoviranje, organizacijskega okolja in institucionalnega sistema, v katerem deluje (Lundvall 1992; Nelson 1993; Edquist 2006). V nadaljevanju predstavljamo vsakega od posameznih dejavnikov inovativnosti, pri čemer začenjamo z motivacijo za inoviranje.

Motivacija za inoviranje

Že Schumpeter je opozoril na pomembno vlogo različnih motivov za inovativnost (Cohen 2010, 196). Frederick Herzberg (1966) je v svoji dvofaktorski teoriji motivacije razlikoval med higienimi dejavniki pri delu, ki preprečujejo nezadovoljstvo (npr. plača, delovni pogoji, varnost pri delu), in resničnimi dejavniki motivacije – motivatorji (npr. dosežki, priznanje, odgovornost), ki prispevajo k zadovoljstvu in večji zavzetosti pri delu. Kasnejše teorije motivacije so slednjo obravnavale tudi z vidika notranjih in zunanjih

spodbud. Teresa M. Amabile (1988, 134; 1996) poudarja, da je za ustvarjalnost in inovativnost posebej pomembna notranja motivacija, saj posameznik nalogo opravlja zaradi radovednosti, izziva ali želje nekaj dokazati. Ko je oseba notranje motivirana, opravlja neko delo, ker jo zanima, veseli ali predstavlja izziv, ne pa zaradi zunanjih vzrokov, kot so pritiski ali nagrade. Podobno Ryan in Deci (2000) razlikujeta med notranjo motivacijo, ko posameznik dejavnost opravlja zaradi lastnega zadovoljstva in zanimanja, ter zunanjo motivacijo, ko je vedenje posledica zunanjih nagrad, pritiskov ali pričakovanj. Avtorji, kot so Sauermann in Cohen (2010, 2135–2138), Towse (2010) in Amabile (1996), med temi t. i. intrinzičnimi oz. notranjimi motivi (angl. *intristic motives*) za inoviranje omenjajo: željo po intelektualnem naporu, raziskovalno radovednost, željo dokazati, da je nekaj možno, intelektualni izziv, sam obstoj problema, ki kliče po rešitvi, priznanje avtorstva oz. izumiteljstva, željo po priznanju kolegov. Nekateri od omenjenih avtorjev notranjo motivacijo opredeljujejo kot zanimanje za samo nalogo, drugi pa kot občutek zadovoljstva, ki izhaja iz opravljanja dejavnosti. Po drugi strani je zunanja motivacija povezana z delovnim okoljem in s pogoji dela, kot so plačilo, nagrade, varnost zaposlitve, odnosi, nadzor, organizacijska pravila in delovni pogoji. Teorija pri razlikovanju med notranjo in zunanjo motivacijo poudarja še, da je notranja praviloma trajnejša, ker je vezana na posameznikovo notranje doživljanje dela, ne le na zunanje koristi.

V starejši teoriji najdemo prepričanje, da je za spodbujanje inovacij najučinkoviteje, če se notranji in zunanji motivacijski dejavniki dopolnjujejo (Amabile 1993). Notranji motivi posameznika spodbujajo, da sploh začne razmišljati izven okvirov in iskati nove rešitve, zunanji motivi pa ustvarjajo okolje, v katerem je inovativno ravnanje sploh vzdržno. Sem sodijo plačilo, razne nagrade, priznanje, napredovanje ipd. Kombinacija obojih pa je tisto, kar v praksi najbolje deluje, pri čemer imajo notranji motivi večjo vlogo pri nastanku ideje, zunanji pa pri njeni stabilizaciji, vztrajanju in uresničitvi v organizacijskem okolju. Elizabeta Zirnststein (2016, 100) pa je pod vprašaj postavila dosedanje domneve o močni povezanosti inovacijskega napora delavcev z zunanjimi motivatorji, saj naj bi bila inovativnost predvsem odvisna od notranjih motivov delavcev. Avtorica (str. 100) izpostavlja, da obljuba finančne nagrade lahko na ustvarjalnost in inovativnost deluje celo zaviralno.

Organizacijsko okolje kot dejavnik inovativnosti

Inovativnost v organizacijah ni zgolj rezultat individualne ustvarjalnosti, temveč tudi posledica organizacijskega okolja, ki pomembno vpliva na motivacijo posameznikov za inoviranje. Sodobne raziskave poudarjajo, da inovacijsko vedenje izhaja iz prepleta notranjih motivov posameznika in zunanjih organizacijskih pogojev, ki lahko takšno motivacijo bodisi krepijo bodisi zavirajo (Amabile 1988; Edmondson 1999; Schein 2010; Tidd idr. 2001). Organizacijsko okolje tako vpliva tudi na pripravljenost zaposlenih, da se v inovacijske procese aktivno vključujejo. Ko govorimo o organizacijskem okolju za inoviranje, imamo v mislih organizacijsko kulturo, inovacijsko strategijo in psihološko varnost.

Organizacijska kultura predstavlja ključni element za inoviranje, saj na tej podlagi posamezniki ocenjujejo, ali je inovativno vedenje v organizaciji zaželeno in nagrajeno. Kultura, ki spodbuja učenje, odprtost in eksperimentiranje, krepi notranjo motivacijo zaposlenih, saj ustvarja občutek smisla, pripadnosti in avtonomije (Schein 2010). Nasprotno pa lahko rigidne, hierarhične ali kaznovalne kulture delujejo demotivacijsko, saj povečujejo zaznano tveganje inovativnega vedenja.

Eden ključnih dejavnikov za inoviranje je tudi inovacijska strategija organizacije, ki pozitivno vpliva na motivacijo zaposlenih za sodelovanje v inovacijskih aktivnostih (Fatur in Likar 2009). Kadar inovacijska prizadevanja zaposlenih v organizaciji niso strateško podprta, zaposleni pogosto ne zaznajo njihove vrednosti, kar zmanjšuje njihovo pripravljenost za inoviranje.

Poseben pomen v okviru organizacijskega okolja za inoviranje pa ima psihološka varnost, ki neposredno vpliva na motivacijo za izražanje idej in sodelovanje v inovacijskih procesih. Amy Edmondson (1999) poudarja, da zaposleni inovirajo predvsem v okoljih, kjer se počutijo varne pri izražanju novih idej, tudi če te vključujejo možnost napake. Psihološka varnost zmanjšuje strah pred negativnimi posledicami in tako deluje kot ključni mehanizem, ki omogoča, da se posameznikova notranja motivacija dejansko prevesi v inovacijsko vedenje.

Navsezadnje pa ima ključno vlogo management organizacije, ki z načinom vodenja oblikuje tako organizacijsko okolje kot motivacijske pogoje za inoviranje. Vodje, ki spodbujajo avtonomijo, sodelovanje in vključevanje zaposlenih, krepijo njihovo notranjo motivacijo za inoviranje (Edmondson in Lei 2014; Hirak idr. 2012). Nasprotno

pa vodenje, ki temelji na poudarjeni vlogi nadzora, zavira inovacijsko iniciativo.

Celovito gledano organizacijsko okolje deluje kot ključen posredni dejavnik inovativnosti, saj oblikuje motivacijske pogoje, v katerih posamezniki sprejemajo odločitve o tem, ali bodo svoje ideje razvijali in uresničevali. Inovacije tako niso zgolj rezultat ustvarjalnega potenciala posameznikov, temveč tudi okolja, ki ta potencial aktivira ali zavira.

Pravni okvir spodbujanja inovativnosti

Pri obravnavi inovativnosti v organizacijah ni mogoče prezreti dejstva, da inovacije niso zgolj ekonomski ali organizacijski pojav, temveč tudi predmet pravnega urejanja. Pravo sicer neposredno ne ureja inovativnosti kot take, ureja pa to, komu pripadajo rezultati inovacijskega delovanja, pri čemer ima osrednjo vlogo sistem pravic intelektualne lastnine. Ta predstavlja temeljni institucionalni mehanizem, s katerim pravo oblikuje spodbude za inovacijsko delovanje ter določa razmerja med posameznikom kot ustvarjalcem in organizacijo kot nosilcem inovacijskega procesa (Zirnstein 2016). V tem kontekstu ima sistem pravic intelektualne lastnine dvojno funkcijo. Po eni strani zagotavlja ekskluzivne pravice, ki omogočajo izkoriščanje inovacij in s tem ustvarjanje ekonomskih koristi, kar deluje kot zunanja spodbuda za inoviranje. Po drugi strani pa lahko prekomerna ali neustrezno oblikovana zaščita omejuje dostop do znanja, zmanjšuje možnosti nadaljnjih inovacij in zavira sodelovanje. Pravo mora zato vzpostaviti ustrezno ravnotežje med zaščito in dostopnostjo, med individualnimi interesi ustvarjalcev in širšim družbenim interesom za širjenje inovacij.

Pri tem je ključno, da so pravila glede pravic intelektualne lastnine in alokacije teh pravic med različne akterje inovacijskega procesa (npr. med zaposlenega in njegovega delodajalca) jasna in predvidljiva. Nejasna ureditev imetništva pravic in delitve koristi ali obveznosti teh akterjev lahko povzroči pravno negotovost, ki negativno vpliva na motivacijo za inoviranje. Posebej problematična je v tem smislu informacijska asimetrija glede vrednosti inovacije in njenega tržnega potenciala. Pravo mora zato zagotoviti transparentne in predvidljive mehanizme, ki zmanjšujejo tovrstna tveganja ter omogočajo učinkovito sodelovanje med udeleženci inovacijskega procesa.

Iz navedenega izhaja, da pravni vidiki spodbujanja inovativnosti ne delujejo neposredno, temveč posredno, preko oblikovanja institucional-

nega okolja, v katerem se inovacijska dejavnost odvija. Pravo določa pravila igre – kdo je upravičen do koristi, kako se te koristi delijo in pod kakšnimi pogoji se inovacije ustvarjajo. S tem vpliva na motivacijo posameznikov in organizacij za inoviranje ter na učinkovitost inovacijskih procesov.

Ugotovitve

Razprave o družbenih inovacijah večinoma poudarjajo nove oblike in načine reševanja družbenih problemov, manj pozornosti pa namenjajo vprašanju, zakaj so posamezniki in organizacije sploh pripravljeni inovirati tudi na tem področju. Vendar motivacija za inoviranje predstavlja eno temeljnih, a pogosto spregledanih predpostavk vsake inovacije, tudi družbene.

Analiza motivacije za inoviranje pokaže, da inovacijskega delovanja ni mogoče zadovoljivo pojasniti z enodimenzionalnimi pristopi, ki bi izhajali zgolj iz individualnih značilnosti posameznika ali izključno iz zunanjih spodbud. Nasprotno, inovativnost se oblikuje v presečišču psiholoških, organizacijskih in pravnih dejavnikov, pri čemer vsak od njih prispeva specifičen, vendar medsebojno pogojen vpliv na motivacijo posameznikov in organizacij za inoviranje.

Na ravni posameznika psihološki dejavniki, zlasti notranja motivacija, radovednost, interes in občutek izziva, predstavljajo temeljni pogon inovacijskega vedenja. Vendar pa notranja motivacija sama po sebi ne zadostuje. Njena realizacija je odvisna od širšega konteksta, v katerem posameznik deluje, kar pomeni, da je treba motivacijo razumeti kot nujen, vendar ne zadosten pogoj inovativnosti.

Organizacijsko okolje deluje kot tisti dejavnik inovativnosti, ki določa, ali se notranja motivacija lahko izrazi v inovacijskem vedenju. Organizacijska kultura, ki spodbuja odprtost, sodelovanje in učenje, ter vodstvene prakse, ki temeljijo na zaupanju in avtonomiji, povečujejo pripravljenost zaposlenih za inoviranje. Podobno ima pomembno vlogo tudi strateška umeščenost inovacij v smislu ustrezne inovacijske strategije. Organizacije, ki vzpostavljajo psihološko varno okolje, pa povečujejo verjetnost, da bodo zaposleni svoje ideje tudi dejansko razvijali in uresničevali.

Pravni okvir predstavlja tretjo, pogosto spregledano dimenzijo inovacijskega delovanja. Pravni dejavniki predstavljajo širši institucionalni okvir, ki določa pravila inovacijskega delovanja. S sistemom pravic intelektualne lastnine pravo

opredeljuje, komu pripadajo koristi inovacij ter kako se te koristi razporejajo. Njegova vloga pa ni omejena zgolj na zaščito rezultatov inovacij, temveč zajema tudi oblikovanje spodbud, ki vplivajo na motivacijo posameznikov in organizacij.

Na postavljeno vodilno vprašanje članka odgovarjamo, da motivacije za inoviranje ni mogoče pojasniti zgolj z vidika posameznikovih notranjih vzgibov ali zunanjih spodbud, temveč kot rezultat njihovega prepletanja z organizacijskimi in s pravnimi dejavniki. Notranja motivacija sicer deluje kot ključni sprožilec inovacijskega vedenja in predstavlja temeljni pogoj za nastanek inovacijskih idej, vendar se te lahko razvije in uresniči le v ustreznem organizacijskem okolju ter ob podpori jasnega in spodbudnega pravnega okvira. Inovacije tako niso rezultat enega samega vzroka, temveč posledica kompleksnega sistema, v katerem se prepletajo individualni interesi, organizacijske prakse in normativni okvir, pri čemer ima motivacija osrednjo, vendar ne samostojno vlogo.

Sklep

Razprave o inovacijah pogosto zanemarjajo vprašanje, zakaj so posamezniki sploh pripravljeni inovirati. Namen tega prispevka je bil zato prispevati k boljšemu razumevanju motivacije kot ene izmed temeljnih, a pogosto spregledanih predpostavk inovacijskega delovanja ter osvetliti njeno vlogo v širšem kontekstu organizacijskih in regulatornih (pravnih) dejavnikov.

V naši raziskavi smo ugotovili, da motivacije za inoviranje ni mogoče razumeti enodimenzionalno, saj se inovacijsko razmišljanje in delovanje oblikuje v presečišču psiholoških (motivacija), organizacijskih in pravnih dejavnikov, pri čemer notranja motivacija posameznika predstavlja ključni sprožilec inovacijskih idej, vendar sama po sebi ne zadostuje za realizacijo le-teh. Ta je odvisna od organizacijskega okolja, ki vpliva na pripravljenost zaposlenih, da se v inovacijske procese aktivno vključujejo. Pri tem gre predvsem za tri dejavnike: organizacijsko kulturo, inovacijsko strategijo in psihološko varnost. Nazadnje je realizacija inovacijskih idej odvisna tudi od pravnega okolja, ki določa, komu pripadajo rezultati inovacijskega delovanja, pri čemer osrednjo vlogo prevzema sistem pravic intelektualne lastnine. Ta predstavlja temeljni institucionalni mehanizem, s katerim pravo oblikuje spodbude za inovacijsko delovanje ter določa razmerja med posameznikom kot ustvarjalcem in organizacijo kot nosilcem inovacijskega procesa.

Naše ugotovitve imajo za prakso več pomembnih implikacij. Na ravni organizacij kažejo na potrebo po oblikovanju spodbudnega delovnega okolja, ki krepí notranjo motivacijo zaposlenih, spodbuja psihološko varnost ter omogoča aktivno vključevanje zaposlenih v inovacijske procese. Na ravni pravnega okvira pa opozarjajo na pomen jasnih, predvidljivih in uravnoteženih pravil, ki hkrati varujejo interese ustvarjalcev in omogočajo širjenje inovacij. Prispevek tako presega ozke, enodimenzionalne pristope k razumevanju in spodbujanju inovacij ter odpira možnosti za nadaljnje raziskovanje povezav med motivacijo, organizacijskim okoljem in institucionalnimi dejavniki.

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Odnos in uporaba umetne intelligence v trženju med slovenskimi podjetji

Članek predstavlja umetno inteligenco (UI) kot prelomno silo, ki spremeni in nadgrajuje poslovanje ter trženje v podjetjih. Empirična raziskava, izvedena med 113 zaposlenimi, analizira odnos, pogled in uporabo UI v trženju med slovenskimi podjetji. Rezultati kažejo, da imajo zaposleni izrazito pozitiven odnos do UI, predvsem kadar je uporabljena etično in odgovorno. Največjo dodano vrednost prepoznajo pri analitiki podatkov, chatbotih in virtualnih asistentih, analizi mnenj ter avtomatizaciji procesov, medtem ko jo slovenska podjetja trenutno največ uporabljajo pri ustvarjanju vsebin. Trenutno so med slovenskimi podjetji najbolj uporabljena generativna orodja, predvsem ChatGPT (81,4 %), sledijo orodja za avtomatizacijo oglaševanja (33,6 %) ter orodja za generiranje vizualnih vsebin, kot je Midjourney (23,0 %). Sklepno rezultati raziskave razkrivajo velik optimizem glede prihodnje vloge UI v poslovanju in trženju, ob hkratni poudarjeni skrbi za njeno etično uporabo ter ohranjanju aktivne vloge človeka pri kompleksnih in zahtevnih nalogah.

Ključne besede: umetna inteligenca, trženje, slovenska podjetja

Attitudes Toward and Use of Artificial Intelligence in Marketing Among Slovenian Companies

The article presents artificial intelligence as a transformative force that is reshaping and enhancing business operations and marketing within companies. An empirical study conducted among 113 employees examines the attitudes, perceptions, and use of artificial intelligence in marketing across Slovenian companies. The results indicate that employees hold a distinctly positive attitude toward AI, particularly when it is applied ethically and responsibly. The greatest added value is perceived in data analytics, chatbots and virtual assistants, sentiment analysis, and process automation, while Slovenian companies currently use AI most extensively for content creation. At present, the most widely adopted generative tools among Slovenian companies are ChatGPT (81.4%), followed by advertising automation tools (33.6%) and visual content generation tools such as Midjourney (23.0%). In conclusion, the findings reveal significant optimism regarding the future role of artificial intelligence in business and marketing, while simultaneously emphasizing the importance of its ethical application and the continued active role of humans in complex and demanding tasks.

Keywords: artificial intelligence, marketing, Slovenian companies



<https://doi.org/10.26493/1854-4231.21.47-56>

Uvod

Digitalna transformacija, ki jo spodbuja vse večje izkoriščanje tehnoloških rešitev, vključno z uporabo umetne inteligence (UI), je bila ključni vplivni dejavnik, ki je sprožil naslednji val »disruptivnega« poslovanja podjetij. Trženje je

ena od poslovnih smeri, ki zelo intenzivno doživlja to transformacijo. Sodobno trženje je začelo eksperimentirati z modernimi, najsodobnejšimi tehnologijami, kot je UI, in jih uvajati v osrednje operacije, da bi zagotovilo in pospešilo uspeh (Konečnik Ruzzier 2024; Kumar idr. 2024). V hit-

ro spreminjajočem se svetu se morajo podjetja spoprijemati s kompleksnostjo, inovirati in ohranjati konkurenčne prednosti.

Sodobno trženje je vse bolj podatkovno usmerjeno, avtomatizirano in inteligentno. Visoko osredotočen pristop novega trženja neposredno vpliva na tržne rezultate (Kumar idr. 2019; Paschen idr. 2019). Tehnološki napredki nenehno prinašajo dolgoročne spremembe v razvoju trženja in dokazujejo, da lahko trženje tesno sodeluje z novonastalo tehnologijo in temu primerno prinaša tudi pomembne napredke. Kumar idr. (2019) navajajo, da ko tehnologija deluje na osebni ravni, ustvarja pristržno vez z uporabniki, in ko tržniki izkoristijo takšno vez, je potencial za ustvarjanje vrednosti za stranke ogromen (Kumar idr. 2019). Napredne in inovativne rešitve za trženje, ki temeljijo na UI in ostalih tehnologijah, se lahko hitro prilagodijo spreminjajočim se potrebam podjetij in razvijejo komunikacijske ter ostale rešitve, ki so kritične in relevantne za različne deležnike podjetja (Konečnik Ruzzier 2024).

V sodobnem poslovnem okolju je vključevanje UI v poslovne in trženjske procese neizogibna razvojna usmeritev, pri čemer razprava ne temelji več na vprašanju njene smiselnosti, temveč na časovni dimenziji njene implementacije (Kumar idr. 2024). Poleg tega je ključno vprašanje, kako UI metodološko in strateško integrirati v poslovne ter trženjske procese, da bo prispevala k povečanju učinkovitosti in konkurenčnosti, ob hkratnem zagotavljanju transparentnosti ter uresničevanju etičnih načel v odnosu do porabnikov.

Številna globalna ter tudi slovenska podjetja v svojih poročilih izpostavljajo pozitivne učinke uporabe UI pri njeni integraciji v poslovne in trženjske procese. Vzporedno z njenim razvojem se povečuje število akademskih prispevkov, ki opredeljujejo koncept UI, pomen njenega sprejetja, uporabe ter strateške implementacije v poslovno prakso. Glede na dejstvo, da se raziskovalno področje UI in njenega uvajanja v poslovanje podjetij še vedno nahaja v zgodnji fazi razvoja, avtorji poudarjajo potrebo po nadaljnjih raziskavah, katerih namen je osvetliti izzive, priložnosti in dolgoročne implikacije, povezane z njenim vključevanjem v poslovne modele in procese.

Po nam dostopnih podatkih v Sloveniji doslej še ni bila izvedena sistematična raziskava o odnosu posameznikov do UI ter o njeni uporabi v podjetjih. Prav to predstavlja osrednji namen pričujočega prispevka, v katerem preučujemo odnos posameznikov do UI, hkrati pa analiziramo

področja, na katerih jo podjetja uvajajo, orodja, ki so jim pri tem v podporo, ter vpliv uvedbe na poslovne rezultate. Prispevek se ne omejuje zgolj na osvetlitev pozitivnih vidikov uporabe UI, temveč obravnava tudi njene negativne plati, pri čemer posebej izstopajo etični izzivi, povezani z njeno uporabo.

Pomen UI v trženju podjetij

UI pomembno spreminja/dopolnjuje trženje v sodobnih podjetjih (Konečnik Ruzzier 2024; Kumar idr. 2024; Grewal idr. 2024). Tehnologije UI tržnikom omogočajo dostop do naprednih orodij in vpogledov, s čimer lahko izboljšajo učinkovitost, personalizacijo in strateško odločanje pri kampanjah (Kumar idr. 2024). UI bo imela neposreden in pomemben vpliv na porabnike tako v storitvenih kot prodajnih okoljih, zato tržniki, raziskovalci in oblikovalci politik potrebujejo jasen vpogled v potencial in meje UI (Grewal idr. 2024).

Ključni prispevki UI k personalizaciji se odražajo v več razsežnostih, ki bistveno vplivajo na oblikovanje uporabniške izkušnje. Sistemi priporočil na podlagi analize preteklega vedenja uporabnikom ponujajo prilagojene izdelke, storitve in vsebine, kar se kaže pri globalnih ponudnikih, kot so Netflix, Amazon in Booking.com. Nadalje dinamično prilagajanje vsebin omogoča, da se spletne strani, oglasi in ponudbe v realnem času ustrezno prilagodijo posameznemu uporabniku. Ob tem pa personalizirano komunikacijo vse pogosteje omogočajo klepetalni roboti in virtualni asistenti, ki zagotavljajo individualizirano podporo ter ciljno usmerjena priporočila.

V nadaljevanju na kratko navajamo ključna področja, kjer je po mnenju Chintalapatija in Pandeyja (2022) zaznati največje nadgradnje, in sicer na področjih vsebinskega in doživljajskega trženja, trženjskih operacij in njihovih avtomatizacij, naprednejših trženjskih raziskav ter integriranega digitalnega trženja (Chintalapati in Pandey 2022). Navajamo zgolj osnovne ključne spremembe, ki se dogajajo, verjamemo pa, da bosta hitrost in uvajanje novih ter izboljšanih rešitev na področju trženja zaradi UI v prihodnosti prav tako korenita (Konečnik Ruzzier 2024).

Orodja na osnovi UI ustvarjajo vsebino, vključno s članki, z videoposnetki in grafikami, na podlagi predhodno določenih parametrov, pri čemer prihranijo čas in vire tržnikov. Algoritmi UI analizirajo ogromne količine podatkov, da razumejo porabniške preference in vedenje, kar tržnikom omogoča ustvarjanje personalizirane vsebine, prilagojene posameznikovim interesom

in želim. Ta stopnja personalizacije izboljšuje uporabniško izkušnjo in spodbuja vključenost ter zvestobo strank. Pomemben je tudi prispevek UI na področju doživljajskega trženja, kjer klepetalniki in virtualni pomočniki na osnovi UI zagotavljajo takojšnje podporo strankam in personalizirana priporočila (Konečnik Ruzzier 2024).

Orodja za napovedno analitiko, ki jih poganja UI, napovedujejo prihodnje trende in vedenje strank na podlagi zgodovinskih podatkov, kar tržnikom omogoča, da predvidevajo tržne spremembe in prilagajajo svoje strategije. UI avtomatizira ponavljajoče se naloge, kot so e-poštno trženje, načrtovanje na družbenih omrežjih in podpora strankam, s čimer tržnikom prihrani čas pri rutinskih operacijah in jim omogoča, da se osredotočijo na strateška opravila in ustvarjalnost. UI omogoča naprednejše in celovitejše trženjske raziskave, med drugimi je mogoče natančneje analizirati porabnike in njihova vedenja ter s tem izboljšati pristop ciljnega trženja v podjetjih. Orodja UI analizirajo predhodna vedenja kupcev preko različnih kanalov, s čimer podjetjem zagotavljajo bolj poglobljene vpoglede v vedenje porabnikov s kombiniranjem njihovih demografskih, geografskih, psihografskih in vedenjskih značilnosti, preteklega spletnega vedenja ter interakcij na spletnih omrežjih. To tržnikom omogoča, da sprejemajo odločitve na podlagi podatkov, kar vodi v učinkovitejše oglaševalske kampanje in višje stopnje klikov, konverzij in donosnosti naložb (Konečnik Ruzzier 2024).

UI pomembno revolucionira integrirano digitalno trženje z omogočanjem jasnejšega ciljnega trženja, ustvarjanjem personalizirane vsebine in avtomatizirano optimizacijo trženjskih akcij. Algoritmi UI analizirajo ogromne količine podatkov, da prepoznajo in segmentirajo ciljne porabnike. S pomočjo analiziranih podatkov lahko ustvarijo personalizirano vsebino (priporočila izdelkov, naslovi elektronskih sporočil in vsebina oglasov), ki je prilagojena individualnim preferencam porabnikov in njihovem preteklemu nakupnemu vedenju. Algoritmi UI nenehno spremljajo in analizirajo metrike uspešnosti trženjskih akcij (Konečnik Ruzzier 2024).

Polega mnogoštevilnih prednosti, ki jih lahko UI prinaša podjetjem, raziskave navajajo in opozarjajo tudi na negativne plati in omejitve uporabe UI pri poslovanju podjetij. Kumar idr. (2024) opozarjajo na potencialne grožnje glede zasebnosti in varnosti ter posledice pristranskosti, zlorabe in širjenja dezinformacij. Podobno izpostavljajo Suraksha Gupta idr. (2025), ki navajajo, da pri

implementaciji UI v trženju obstajajo tveganja glede zasebnosti, pristranskosti in preglednosti delovanja. Avtorji soglašajo, da je etična uporaba tehnologije ključna za ohranjanje ugleda podjetij in zaupanja potrošnikov. V ta namen predlagajo razvoj robustnih in preglednih modelov, ki zmanjšujejo pristranskost ter zagotavljajo ustrezno varstvo osebnih podatkov. Prav tako izpostavljajo, da uvajanje UI zahteva znatne investicije v infrastrukturo, usposabljanje in spremembo organizacijske kulture. Suraksha Gupta idr. (2025) ob tem opozarjajo še na odpor deležnikov do sprememb, ki predstavlja pomemben dejavnik uspešnosti implementacije (Gupta idr. 2025). Kumar idr. (2024) opozarjajo, da učinkovita implementacija UI zahteva razvoj dinamičnih organizacijskih sposobnosti – torej sposobnost prilagajanja, inoviranja in strateškega usmerjanja UI kot osrednjega orodja za ohranjanje konkurenčne prednosti.

Znanstvena in strokovna javnost tudi opozarja na razumevanje vloge človeka pri implementaciji, preverjanju in nadzorovanju opravil, ki jih opravlja UI. V nedavni raziskavi Grewal idr. (2025) predstavijo štirikvadrantni model, ki razvršča uporabo generativne UI glede na vrsto vhodnih podatkov in obseg človeške nadgradnje izhodov. Model pokaže, da se pri bolj strukturiranih podatkih generativna UI uporablja predvsem za avtomatizacijo standardiziranih nalog, medtem ko kompleksnejši in nestrukturirani podatki zahtevajo večjo človeško vključenost, zlasti pri strateških in kreativnih procesih. Model podjetjem pomaga razumeti ravnotežje med učinkovitostjo avtomatizacije in nujnostjo človeškega nadzora, saj lahko napačna umestitev privede do netočnih rezultatov, pristranskosti in izgube zaupanja, medtem ko premišljena integracija omogoča sinergijo med tehnološkimi zmožnostmi in človeško presojo (Grewal idr. 2025).

V tujini obstaja kar nekaj raziskav, ki merijo uvajanje in uporabo UI v poslovanju in trženju podjetij. V nadaljevanju navajamo rezultate najnovejše raziskave marketinške platforme Jasper AI, ki je bila izvedena konec leta 2024 in v začetku leta 2025 med 503 strokovnjaki iz različnih industrij (tehnologija, e-commerce, finance, zdravstvo ...). Raziskava ugotavlja, da 63 % trženjskih ekip uporablja generativno UI, pri čemer jih 78 % poroča o pozitivnem vplivu na produktivnost in zadovoljstvo zaposlenih. Večina uporabe je na področjih vsebinske produkcije (57 %), generiranja idej (55 %), SEO (iz angl. *search engine optimization*) in optimizacije (45 %) ter analitike (49 %).

Samo 49 % strokovnjakov redno meri ROI UI (iz angl. *return of investment of user interface*) projektov; dodatnih 22 % načrtuje začetek merjenja še v letu 2025. Samo 29 % podjetij dosega napredno raven, in sicer s strukturirano integracijo UI (merjenje ROI, vodstvo, domenska orodja itd.). Raziskava marketinške platforme Jasper AI jasno razkriva, da je generativna UI prešla iz faze eksperimentiranja v širšo implementacijo, pri čemer so koristi vidne v produktivnosti in zaključenih rezultatih. A za resničen preboj so ključni struktura (merjenje ROI), kakovost (managiranje znamke) in kultura (izobraževanje, vodstvo) (Jasper AI 2025). Poročilo nadalje navaja, da najuspešnejše trženjske ekipe odlikujejo jasno dokumentirane politike UI, uporaba specializiranih orodij namesto generičnih modelov, vzpostavljene mehanizmi za merjenje ROI, močna podpora vodstva ter sistematično izobraževanje, ki krepi veščine in spodbuja kulturo UI (Jasper AI 2025).

Empirična raziskava o odnosu in uporabi UI v slovenskih podjetjih

Metodologija

Podatke za raziskavo smo zbrali s pomočjo spletne ankete. Vprašalnik je bil naslovljen na zaposlene v podjetjih, ki neposredno oz. posredno pokrivajo področje trženja, in je bil namenjen preučevanju odnosa do UI ter njene uporabe v poslovanju in trženju slovenskih podjetij. Raziskovalni instrument je zajemal več vsebinskih sklopov. Prvi del je bil usmerjen v osebna stališča respondentov do UI, njenega potenciala in vloge pri trženju. Drugi del je obravnaval dejansko uporabo UI v podjetjih po področjih, vključno s preverjanjem uporabe posameznih orodij UI. Tretji del je bil namenjen preučevanju organizacijskih vidikov, kot so notranja usposabljanja, odnos zaposlenih in spodbude vodstva. Četrty del je bil osredotočen na zaznani prispevek UI k učinkovitosti trženjskih procesov, medtem ko je peti del preučeval etične vidike ter zaznana tveganja, povezana z uporabo UI. Zaključni sklop je bil usmerjen v pričakovanja glede prihodnje vloge UI v poslovanju in trženju, vprašalnik pa se je končal s sociodemografskimi vprašanji o podjetjih in respondentih.

Zgoraj predstavljene sklope smo preverjali s pomočjo več trditev. Večina trditev je bila merjena na petstopenjski Likertovi lestvici, pri čemer je vrednost 1 pomenila »Sploh se ne strinjam«, vrednost 5 pa »Popolnoma se strinjam«. Poleg tega so respondenti ocenjevali tudi področja, na katerih zaznavajo največjo dodano vrednost upo-

rabe UI, in sicer na petstopenjski lestvici, kjer je vrednost 1 pomenila, da dodane vrednosti ne vidijo, vrednost 5 pa, da zaznavajo visoko dodano vrednost uporabe. Na petstopenjski lestvici so ocenjevali tudi dejanski obseg uporabe UI v podjetju, pri čemer je vrednost 1 pomenila, da UI v podjetju sploh ne uporabljajo, vrednost 5 pa, da UI uporabljajo v največjem možnem obsegu.

Vzorec

V raziskavo je bilo vključenih 113 slovenskih podjetij, ki so v celoti izpolnili vprašalnik, pri čemer gre za priložnostni vzorec. Med sodelujočimi podjetji jih 83,2 % že uporablja UI, 9,7 % jo namerava uvesti, 7,1 % pa uporabe ne predvideva. 40 % podjetij UI najpogosteje uporablja na področju trženja. Analiza dinamike uporabe v zadnjem polletju kaže, da podjetja uporabe niso zmanjšala; pri 25,7 % obseg ostaja nespremenjen, 30,1 % jih je uporabo rahlo povečalo, medtem ko je 27,4 % podjetij poročalo o občutnem povečanju.

Struktura podjetij v vzorcu je raznolika: največ je mikropodjetij z dvema do devetimi zaposlenimi (35,4 %), sledijo mala podjetja z desetimi do 50 zaposlenimi (19,5 %), nato srednja podjetja z 51 do 250 zaposlenimi (16,9 %) ter velika podjetja z več kot 250 zaposlenimi (16,9 %). Glede na starost podjetij prevladujejo podjetja, starejša od 21 let (39,8 %), sledita skupini starih od 11 do 20 let ter od dveh do petih let (vsaka po 19,5 %). Kar 44,6 % podjetij posluje tako na domačem kot tujih trgih, 42 % posluje pretežno na slovenskem, 13,4 % pa pretežno na tujih trgih. Skoraj polovica podjetij (47,3 %) posluje hkrati na trgih B2B in B2C, 35,7 % pa pretežno na trgu poslovnih kupcev.

Med sodelujočimi posamezniki je bilo 48,2 % moških in 49,1 % žensk, večina v starostni skupini od 31 do 45 let (50,9 %), sledijo mlajši od 30 let (25 %) ter stari od 46 do 60 let (21,4 %). UI v osebne namene uporablja 78,8 % sodelujočih, 11,5 % jo namerava uporabljati v bližnji prihodnosti, medtem ko jih 9,7 % tega ne načrtuje.

Analiza vprašanj

Rezultati, prikazani v preglednici 1, kažejo, da imajo zaposleni izrazito pozitiven osebni pogled na uporabo UI v poslovanju in trženju. Najvišjo oceno je prejela trditev o koristnosti UI, kadar je ta uporabljena odgovorno in etično ($M = 4,58$), kar kaže na visoko zavedanje pomena etične dimenzije pri uvajanju tehnologije. Prav tako je UI prepoznana kot ena največjih inovacij zadnjega desetletja ($M = 4,35$) in kot pomembno orodje za pospešitev rutinskih opravil ($M = 4,31$), kar odra-

Preglednica 1 Osebni pogled na uporabo UI v poslovanju oz. trženju podjetij

Trditve	Povprečje	Standardni odklon
Verjamem, da je UI lahko koristno orodje, če jo uporabljamo odgovorno in etično.	4,58	0,730
UI razumem kot največjo inovacijo zadnjega desetletja.	4,35	0,810
UI razumem predvsem kot pomoč pri hitrejši izvedbi sicer rutinskih poslovnih/trženjskih del.	4,31	0,835
UI razumem kot sestavni del sodobnih poslovnih/trženjskih procesov.	4,25	0,931
Po mojem mnenju ima UI že v tem trenutku pomembno vlogo pri izvajanju trženjskih aktivnosti v podjetjih.	4,15	0,947
Menim, da UI na področju poslovanja/trženja bolj dopolnjuje kot nadomešča človeško delo.	4,09	0,912
Na koncu vsake poslovne/trženjske aktivnosti, ne glede na to, ali je izvedena na osnovi ali s pomočjo UI, stoji človek.	4,09	1,023
Imam občutek, da uvajanje UI na področju poslovanja/trženja prinaša več priložnosti kot izzivov.	4,04	0,935
Uporaba UI v poslovanju/trženju me navdušuje.	3,95	1,091
UI ne razumem zgolj kot orodje za zniževanje stroškov in prihranka časa, temveč kot orodje, ki omogoča izvajanje procesov (npr. personalizacijo vsebin), ki brez uporabe UI ne bi bili izvedljivi.	3,71	1,091
UI omogoča kreativne rešitve, ki jih brez tehnologije ne bi mogli doseči.	3,35	1,157
Verjamem, da lahko res kreativne rešitve ponudi le človek, in ne UI.	3,20	1,255
Uporaba UI v poslovanju/trženju me skrbi.	2,83	1,141

Lestvica: 1 – Sploh se ne strinjam; 5 – Popolnoma se strinjam.

za razmeroma pragmatičen odnos zaposlenih do uporabe tehnologije.

Relativno visoko soglasje je izraženo tudi pri razumevanju UI kot sestavnega dela sodobnih poslovnih in trženjskih procesov ($M = 4,25$) ter kot dopolnila človeškemu delu ($M = 4,09$). To potrjuje prepričanje, da UI v trenutni fazi razvoja večinoma nadgrajuje in podpira človeško delo, a ga ne nadomešča. Občutek, da UI prinaša več priložnosti kot izzivov ($M = 4,04$), dodatno nakazuje optimističen odnos do njenega potenciala.

Navdušenje nad uporabo UI je nekoliko nižje ($M = 3,95$), kar kaže, da je pozitiven odnos pogosto bolj racionalne kot čustvene narave. Podobno je z zaznavanjem, da UI omogoča izvajanje procesov, ki bi bili brez nje neizvedljivi ($M = 3,71$), in ustvarjanjem kreativnih rešitev, ki jih brez tehnologije ne bi mogli doseči ($M = 3,35$). Najnižjo oceno je prejela skrb glede uporabe UI ($M = 2,83$), kar pomeni, da tehnologija med zaposlenimi ne vzbuja večjih zadržkov ali strahov. Relativno visoki standardni odkloni pri večini trditev (zlasti

Preglednica 2 Dodana vrednost uporabe UI po področjih

Dodana vrednost uporabe UI po področjih	Povprečje	Standardni odklon
Analitika podatkov	4,38	0,818
Chatboti in virtualni asistenti	4,30	1,025
Analiza mnenj	4,24	0,825
Avtomatizacija trženjskih procesov	4,21	0,815
Ustvarjanje vsebin (besedila, slike, videi)	4,21	1,004
Personalizacija vsebin	4,18	0,915
Generiranje novih idej za trženjske vsebine	4,02	0,950
Oblikovanje/prilagajanje person	3,95	0,920
Personalizacija izdelkov/storitev	3,93	0,964
Segmentacija strank	3,91	0,924
Napovedovanje vedenja strank	3,87	1,018
Ustvarjanje prototipov na podlagi analize podatkov	3,87	0,953
Generiranje novih idej za izdelke/storitve	3,61	1,090
Razvoj izdelkov/storitev	3,55	1,054

Lestvica: 1 – Ne vidim dodane vrednosti uporabe UI; 5 – Vidim visoko vrednost uporabe UI.

pri percepciji kreativnih potencialov UI) pa kažejo na heterogenost mnenj, kar lahko odraža različne ravni izkušenj, kompetenc ter osebnih pričakovanj glede uporabe UI v poslovnih in trženjskih kontekstih.

Rezultati glede dodane vrednosti uporabe UI (preglednica 2) kažejo, da zaposleni prepoznavajo najvišjo dodano vrednost uporabe UI na področju analitike podatkov ($M = 4,38$), kar potrjuje vlogo tehnologije kot ključnega orodja za obdelavo velikih količin informacij in podporo pri sprejemanju odločitev. Visoko ocenjeni so tudi chatboti in virtualni asistenti ($M = 4,30$) ter analiza mnenj ($M = 4,24$), kar nakazuje, da je UI še posebej cenjena pri interakciji s strankami in pridobivanju vpogledov na podlagi povratnih informacij. Podobno visoko sta vrednotena avtomatizacija trženjskih procesov ($M = 4,21$) in ustvarjanje vsebin ($M = 4,21$), kar kaže na praktično uporabnost UI pri optimizaciji rutinskih nalog in podporo vsebinskemu marketingu.

Tudi personalizacija vsebin ($M = 4,18$) in generiranje novih idej za trženjske vsebine ($M = 4,02$) sta prepoznana kot pomembni dodani vrednosti, kar nakazuje, da UI prispeva k večji prilagodljivosti in inovativnosti v komunikaciji s ciljnim skupinami. Nekoliko nižje vrednosti se pojavljajo pri oblikovanju person ($M = 3,95$), personalizaciji izdelkov in storitev ($M = 3,93$), segmentaciji strank ($M = 3,91$) ter napovedovanju njihovega vedenja ($M = 3,87$).

Najnižjo dodano vrednost zaposleni pripisujejo generiranju novih idej za izdelke/storitve ($M = 3,61$) in razvoju izdelkov/storitev ($M = 3,55$). To

nakazuje, da je uporaba UI na področju inoviranja produktov trenutno razumljena kot dopolnilna in ne kot osrednja dejavnost, kar lahko odraža zadržke glede ustvarjalnih zmožnosti tehnologije. Relativno visoki standardni odkloni, zlasti pri ustvarjalnih in razvojnih vidikih ($SD > 1,0$), kažejo na večjo razpršenost stališč.

Rezultati uporabe UI po področjih, prikazanih v preglednici 3, kažejo, da slovenska podjetja v tem trenutku UI največ uporabljajo za ustvarjanje vsebin (besedila, slike, videi; $M = 3,98$) ter nekaj pri analitiki podatkov ($M = 3,43$) in generiranju novih idej za trženjske vsebine ($M = 3,43$). Nižje povprečne vrednosti se pojavljajo pri personalizaciji vsebin ($M = 3,20$), uporabi chatbotov in virtualnih asistentov ($M = 3,18$) ter avtomatizaciji trženjskih procesov ($M = 2,96$), kar kaže, da so podjetja pri teh funkcionalnostih UI šele v začetnih fazah uvajanja ali pa se z njimi srečujejo omejeno. Najnižja uporaba je opazna pri področjih, povezanih z razvojem izdelkov in storitev, napovedovanjem vedenja strank ter ustvarjanjem prototipov na podlagi analize podatkov. To kaže, da se UI pri inovacijskih in kompleksnejših procesih še ne uporablja sistematično ali v obsegu, ki bi ustrezal zaznani potencialni dodani vrednosti (kot je bilo predstavljeno v preglednici 2).

Rezultati v preglednici 4 glede uporabe orodij UI kažejo, da je med podjetji največja uporaba orodja ChatGPT (81,4 %), kar kaže na prevlado generativnih jezikovnih modelov kot primarnega sredstva za podporo ustvarjanju vsebin, komunikaciji in avtomatizaciji rutinskih nalog. Zmerno uporabo imajo orodja za avtomatizacijo oglaš-

Preglednica 3 Uporabe UI po področjih v podjetju

Področja uporabe UI v podjetju	Povprečje	Standardni odklon
Ustvarjanje vsebin (besedila, slike, videi)	3,98	1,067
Analitika podatkov	3,43	1,291
Generiranje novih idej za trženjske vsebine	3,43	1,257
Personalizacija vsebin	3,20	1,241
Chatboti in virtualni asistenti	3,18	1,552
Avtomatizacija trženjskih procesov	2,96	1,269
Generiranje novih idej za izdelke/storitve	2,94	1,302
Analiza mnenj	2,94	1,494
Segmentacija strank	2,91	1,292
Oblikovanje/prilagajanje person	2,84	1,264
Personalizacija izdelkov/storitev	2,83	1,267
Razvoj izdelkov/storitev	2,76	1,373
Ustvarjanje prototipov na podlagi analize podatkov	2,53	1,381
Napovedovanje vedenja strank	2,50	1,301

Lestvica: 1 – UI sploh ne uporabljamo; 5 – UI uporabljamo v največjem možnem obsegu.

Preglednica 4 Uporabe orodij UI v podjetjih

Orodja UI	v %
Chat GPT	81,4
Orodja za avtomatizacijo oglaševanja (npr. Google Ads AI, Meta Ads Manager)	33,6
Midjourney	23,0
Orodja za napovedno analitiko (npr. Microsoft Power BI, SAS Advanced Analytics)	21,2
Bing	20,4
Dall-E2	17,7
Orodja za optimizacijo uporabniške izkušnje (npr. Chatbot, personalizacija spletnih strani)	17,7
Orodja za avtomatizacijo kampanj (npr. HubSpot, Marketo)	15,9
Orodja, ki olajšujejo ustvarjanje, urejanje in izboljšanje zvočnih vsebin (npr. Udio AI, Suno)	12,4
Bart	11,5
Orodja za obdelavo naravnega jezika (npr. sentimentna analiza)	9,7
Jasper.ai	8,8
Orodja za personalizacijo vsebin (npr. Dynamic Yield, Adobe Target)	7,1
Leonardo.ai	7,1
Orodja za analizo družbenih omrežij (npr. Brandwatch, Sprinklr)	5,3
Ranway	4,4
Copy.ai	4,4
Sandbox	3,5
Peppertype	3,5
Hedra	2,7
Lensa	1,8

vanja, kot sta Google Ads AI in Meta Ads Manager (33,6 %), ter orodja za generiranje vizualnih vsebin, kot je Midjourney (23,0 %), kar kaže na omejeno, a prisotno integracijo UI v oglaševalske in kreativne procese.

Orodja za napovedno analitiko (21,2 %) in Bing (20,4 %) kažejo na začetno implementacijo analitičnih in raziskovalnih zmogljivosti, medtem ko je uporaba bolj specializiranih orodij, kot so Dall-E2 (17,7 %), chatbot in personalizacija spletnih strani (17,7 %) ter avtomatizacija kampanj (15,9 %), še vedno relativno omejena. Najnižji deleži uporabe so zaznani pri orodjih za sentimentno analizo, analizo družbenih omrežij, ustvarjanje zvočnih vsebin in personalizacijo vsebin, kar kaže, da so tehnično kompleksnejša

ali nišno usmerjena orodja v podjetjih še redko integrirana.

Ti podatki skupaj kažejo, da se podjetja v veliki meri osredotočajo na najdostopnejša in vizualno ali jezikovno najbolj usmerjena orodja UI, medtem ko kompleksnejše in specializirane rešitve še niso široko razširjene, kar odraža zgodnjo fazo implementacije UI v poslovnih procesih.

Rezultati glede uporabe in odnosa do UI v podjetjih (preglednica 5) kažejo, da so se zaposleni relativno zlahka prilagodili na uporabo in spremembe zaradi vpeljave UI v poslovanje in spremembe zaradi vpeljave UI v poslovanje ($M = 4,07$), kar kaže na pozitivno sprejemanje sprememb, ki jih prinaša digitalna transformacija. Podpora s strani vodstva, sodelavcev in prijateljev je prav tako zaznana kot visoka ($M = 3,88$),

Preglednica 5 Uporabe in odnos do UI v podjetju

Trditve	Povprečje	Standardni odklon
Na uporabo in spremembe zaradi vpeljave UI v poslovanje podjetja sem se zlahka prilagodil/-a.	4,07	1,039
Vodstvo/sodelavci/prijatelji spodbujajo uporabo UI.	3,88	1,076
Čutiti je, da imajo sodelavci/prijatelji pozitiven odnos do uporabe UI.	3,86	1,012
O pomenu in uporabi UI se s sodelavci/prijatelji veliko pogovarjamo.	3,84	1,120
Seznanjen/-a sem s pravili uporabe UI pri trženju naših izdelkov/vsebin.	3,07	1,401
V podjetju imamo/smo imeli izobraževanja in usposabljanja s področja UI.	2,85	1,599

Lestvica: 1 – Sploh se ne strinjam; 5 – Popolnoma se strinjam.

Preglednica 6 Prispevek UI k učinkovitosti poslovanja/trženja in poslovnim rezultatom podjetja

Trditve	Povprečje	Standardni odklon
Uporaba UI prispeva k hitrejšemu generiranju trženjskih vsebin.	4,09	1,033
Uporaba UI prispeva k cenejšemu generiranju trženjskih vsebin.	4,02	1,077
Verjamem, da UI pomembno prispeva k dolgoročnim strateškim ciljem podjetja.	3,89	1,021
Uporaba UI povečuje konkurenčno prednost našega podjetja.	3,81	1,185
Uporaba UI je izboljšala učinkovitost trženjskih procesov v našem podjetju.	3,60	1,120
Uporaba UI prinaša pozitivno donosnost investicij v trženje.	3,47	1,013
Naše podjetje prilagaja svoje poslovne modele za uspešno vključevanje UI.	3,40	1,264
UI prispeva k boljšim vpogledom v potrebe naših strank.	3,18	1,154
Zaradi uporabe UI lahko izvajamo procese (npr. personalizacija), ki jih sicer ne bi mogli.	3,12	1,181

Lestvica: 1 – Sploh se ne strinjam; 5 – Popolnoma se strinjam.

podobno kot pozitiven odnos sodelavcev do uporabe UI ($M = 3,86$).

Pogostost pogovorov o pomenu in uporabi UI je zmerna ($M = 3,84$), kar kaže, da se o tematiki razpravlja, a še ne sistematično. Seznanjenost z notranjimi pravili uporabe UI pri trženju izdelkov oz. vsebin je nižja ($M = 3,07$), kar lahko nakazuje potrebo po jasnejših smernicah in politikah uporabe. Najnižjo oceno so prejela izobraževanja in usposabljanja na področju UI ($M = 2,85$), kar kaže na pomanjkanje formalne podpore za pridobivanje znanj in krepitev kompetenc zaposlenih.

Visoki standardni odkloni pri večini trditev ($SD > 1,0$; pri izobraževanjih $SD = 1,599$) nakazuje heterogenost stališč, kar lahko odraža različne ravni izkušenj, dostopa do virov ali različno aktivno vlogo posameznikov pri uvajanju UI v poslovne procese. Skupno ti rezultati kažejo, da kljub pozitivnemu splošnemu odnosu obstajajo področja, kjer bi bila potrebna sistematičnejša podpora in usmerjeno izobraževanje.

Rezultati prispevka UI k učinkovitosti poslo-

vanja/trženja in poslovnim rezultatom podjetja (preglednica 6) kažejo, da zaposleni zaznavajo pomemben prispevek UI k učinkovitosti trženjskih in poslovnih procesov. Najvišje so ocenili hitrejšo generiranje trženjskih vsebin ($M = 4,09$) in znižanje stroškov pri tem procesu ($M = 4,02$), kar kaže, da UI predvsem prispeva k operativni učinkovitosti in optimizaciji rutinskih nalog. Zaposleni tudi prepoznavajo strateški pomen UI, saj se strinjajo, da tehnologija pomembno prispeva k dolgoročnim strateškim ciljem podjetja ($M = 3,89$) in povečuje konkurenčno prednost ($M = 3,81$). Vendar so nižje ocene prisotne pri izboljšanju splošne učinkovitosti trženjskih procesov ($M = 3,60$), pozitivni donosnosti investicij v trženje ($M = 3,47$) ter prilagajanju poslovnih modelov za uspešno vključevanje UI ($M = 3,40$), kar nakazuje, da se učinki UI v podjetjih še ne izražajo povsem sistematično ali na strateški ravni.

Najnižji rezultati se pojavljajo pri vpogledih v potrebe strank ($M = 3,18$) in pri izvajanju procesov, ki brez UI ne bi bili možni ($M = 3,12$), kar

Preglednica 7 Pogled na etični vidik in morebitne negativne posledice uporabe UI v poslovanju podjetij

Trditve	Povprečje	Standardni odklon
Pri uporabi UI je ključno spoštovanje in upoštevanje etičnih načel.	4,42	0,874
Etična in transparentna uporaba UI je ključna za dolgoročno zaupanje strank v blagovno znamko.	4,32	0,966
Menim, da so stranke premalo obveščene o tem, kako podjetja uporabljajo UI za personalizacijo.	3,62	1,080
Skrbi me, da lahko UI prispeva k širjenju pristranskih ali diskriminatornih praks.	3,31	1,158
Verjamem, da lahko uporaba UI oslabi človeško povezavo med blagovno znamko in strankami.	3,26	1,194
Skrbi me, da bi UI lahko zmanjšala potrebo po človeški kreativnosti.	3,06	1,496
Uporaba UI me skrbi zaradi morebitnih kršitev zasebnosti strank.	3,05	1,224
Menim, da bo UI v prihodnosti nadomestila človeško delo.	3,04	1,249

Lestvica: 1 – Sploh se ne strinjam; 5 – Popolnoma se strinjam.

Preglednica 8 Pogled o prihodnosti UI v poslovanju/trženju podjetij

Trditve	Povprečje	Standardni odklon
Verjamem, da se bo uporaba UI v poslovanju/trženju v prihodnosti še okrepila.	4,59	0,730
Za prihodnost uporabe UI bo pomembno zavedanje v podjetjih, da bo ključni odločevalec in potrjevalec generiranih vsebin ter procesov ostal človek.	4,38	0,786
Ljudi pri delu ne bo zamenjala UI, temveč posamezniki, ki jo bodo znali uporabljati.	4,35	0,917
Zaradi vpeljave UI v poslovanje/trženje podjetja bodo potrebna še bolj poglobljena in kritičnejša razmišljanja s strani zaposlenih.	4,03	0,981
S smotno, etično in transparentno uporabo UI se bo vez med porabniki in blagovnimi znamkami še bolj okrepila.	3,80	1,003
Menim, da bodo lahko dolgoročno preživela le podjetja, ki bodo smotno uporabljala UI v svojem poslovanju/trženju.	3,79	1,116

Lestvica: 1 – Sploh se ne strinjam; 5 – Popolnoma se strinjam.

kaže na omejeno uporabo UI pri kompleksnejših, inovativnejših funkcijah. Relativno visoki standardni odkloni ($SD > 1,0$) kažejo na heterogenost dojemanja vpliva UI med zaposlenimi, kar lahko odraža različne stopnje izkušenj in dostopa do tehnologije ter različno aktivno vključevanje posameznikov v njeno uporabo.

Zaposleni v podjetjih visoko vrednotijo etični vidik uporabe UI (preglednica 7). Najvišje ocene so bile dodeljene trditvam o spoštovanju etičnih načel pri uporabi UI ($M = 4,42$) ter etični in transparentni uporabi UI kot ključu za dolgoročno zaupanje strank v blagovno znamko ($M = 4,32$). To nakazuje močno zavedanje o pomenu etike in integritete pri uvajanju novih tehnologij v poslovne procese. Zmerno visoke ocene so prisotne pri dojetanju premalo obveščenih strank glede uporabe UI za personalizacijo ($M = 3,62$) ter skrbi zaradi širjenja pristranskih ali diskriminatornih praks s strani UI ($M = 3,31$). Anketirance malo skrbi, da bi UI lahko zmanjšala potrebo po človeški kreativnosti, nadomestila človeško delo ali povzročila kršitve zasebnosti, kar kaže, da večina zaposlenih še ne zaznava neposrednih resnih groženj na teh področjih, a obstajajo določeni zadržki.

Sklepni rezultati v preglednici 8 kažejo na izrazit optimizem glede prihodnje vloge UI v poslovanju in trženju, saj večina anketirancev pričakuje nadaljnjo rast njene uporabe ($M = 4,59$). Prav tako se zaposleni strinjajo z vidikom, da kljub tehnološkemu napredku človek ostaja osrednji odločevalec in potrjevalec procesov ($M = 4,38$) ter da bodo v prihodnosti konkurenčno prednost imeli posamezniki, ki bodo znali UI učinkovito uporabljati ($M = 4,35$). Udeleženci prepoznavajo tudi potrebo po poglobljenem in kritičnem razmišljanju ob implementaciji UI ($M = 4,03$). Manj izrazito, a

še vedno pozitivno pa je zaznano prepričanje, da lahko etična in transparentna uporaba UI okrepi vez med potrošniki in blagovnimi znamkami ($M = 3,80$) ter da bo dolgoročno preživetje podjetij po-
gojeno s smotno uporabo UI ($M = 3,79$).

Diskusija

Med 113 v vzorec vključenimi slovenskimi podjetji UI uporablja 94 podjetij oz. 83,2 %, medtem ko jo 40 % podjetij najpogosteje uporablja na področju trženja. Nobeno podjetje v zadnjem polletju uporabe ni zmanjšalo; pri 25,7 % je obseg ostal enak, medtem ko je 57,5 % podjetij uporabo povečalo. Slovenska podjetja v tem trenutku UI največ uporabljajo za ustvarjanje vsebin, temu sledita analitika podatkov in generiranje novih idej za trženjske vsebine. Manj jo uporabljajo pri personalizaciji vsebin, uporabi chatbotov in virtualnih asistentov ter avtomatizaciji trženjskih procesov, kar kaže, da so podjetja pri teh funkcionalnostih UI šele v začetnih fazah uvajanja ali pa se z njimi srečujejo omejeno. Trenutno so med slovenskimi podjetji najbolj razširjena generativna orodja, predvsem ChatGPT (81,4 %), sledijo orodja za avtomatizacijo oglaševanja (33,6 %), orodja za generiranje vizualnih vsebin, kot je Midjourney (23,0 %), orodja za napovedno analitiko (21,2 %) ter Bing (20,4 %).

Rezultati naše raziskave nakazujejo izrazito pozitiven odnos zaposlenih do UI kot tehnologije, ki bo pomembno preoblikovala poslovanje in trženje v podjetjih. Prav tako so izrazito optimistični glede njene prihodnje uporabe. Podobno kot poročajo Kumar idr. (2024) ter Grewal idr. (2025), zaposleni v slovenskih podjetjih UI dojemajo predvsem kot dopolnilo človeškemu delu in ne kot njegovo zamenjavo. Visoko vrednotenje etične in odgovorne rabe, ki ga izražajo anke-

tirani, se ujema s poudarki Surakshe Gupta idr. (2025) o nujnosti transparentnosti in skladnosti z regulativnimi okviri, da bi podjetja ohranila zaupanje strank. Naši rezultati tako potrjujejo, da je vprašanje etike v praksi enako pomembno kot tehnološke zmožnosti.

Prav tako se izkazuje podobna hierarhija področij uporabe kot v mednarodnih raziskavah. Ugotavljamo, da je največja dodana vrednost UI prepoznana na področjih analitike podatkov, avtomatizacije procesov in ustvarjanja vsebin, kar potrjujejo tudi tuje raziskave, ki UI obravnavajo kot orodje za večjo operativno učinkovitost (Kumar idr. 2024). Nasprotno pa so področja, povezana z inovacijami in razvojem novih izdelkov, ocenjena kot manj pomembna – kar je skladno s spoznanji, da je strateška in inovacijska raba UI še v začetnih fazah in zahteva višjo podatkovno zrelost (Grewal idr. 2025).

Rezultati raziskave potrjujejo, da slovenska podjetja UI trenutno uporabljajo pretežno za operativne koristi, kot sta avtomatizacija in ustvarjanje vsebin, pri čemer strateška uporaba ostaja omejena. To nakazuje potrebo po razvoju dinamičnih sposobnosti (Teece 2020; Kumar idr. 2024), ki podjetjem omogočajo, da UI ne vidijo le kot orodja za učinkovitost, temveč kot gonilo inovacij in razvoja novih poslovnih modelov. Ker raziskava hkrati razkriva pomanjkanje formalnih usposabljanj in notranjih pravil uporabe, sta za managerje ključnega pomena vlaganje v sistematične programe izobraževanja zaposlenih ter oblikovanje internih smernic, ki zagotavljajo odgovorno in etično uporabo tehnologije. S tem bodo podjetja lažje izkoristila priložnosti, ki jih UI ponuja pri personalizaciji, napovedni analitiki in strateškem odločanju.

Ta raziskava ima več omejitev, ki jih je treba upoštevati. Prvič, zaradi priložnostnega vzorca rezultatov raziskave ne moremo posplošiti na celotno slovensko populacijo. Predvidevamo, da je v raziskavi sodelovalo več tistih zaposlenih, ki jim je tematika UI bližje ter imajo do nje pozitiv-

nejši odnos, posledično je zaznana višja stopnja uvajanja in uporabe UI kot v primeru reprezentativnega vzorca. Drugič, uporaba samoocenjevalnih vprašalnikov pomeni, da rezultati odražajo percepcijo zaposlenih in ne nujno dejanske ravni uporabe ali merljivih učinkov UI. Tretjič, raziskava je zasnovana kot presečna raziskava, izvedena leta 2025. Zaradi hitrih sprememb, ki se dogajajo na področju uvajanja UI in njenih orodij v poslovne prakse, se lahko stališča in prakse podjetij hitro spreminjajo.

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