

Theoretical and Practical Research in Economic Fields

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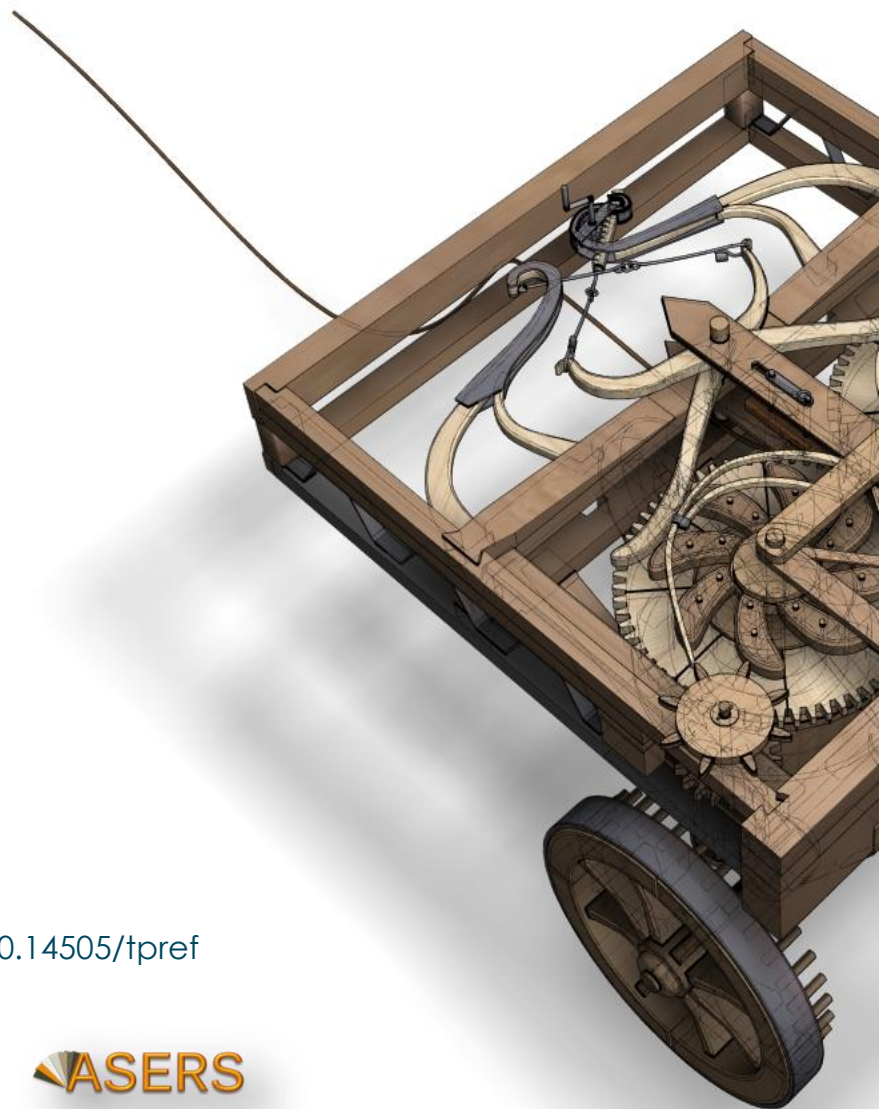
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Many economists today are concerned by the proliferation of journals and the concomitant labyrinth of research to be conquered in order to reach the specific information they require. To combat this tendency, **Theoretical and Practical Research in Economic Fields** has been conceived and designed outside the realm of the traditional economics journal. It consists of concise communications that provide a means of rapid and efficient dissemination of new results, models, and methods in all fields of economic research.

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Behavioural Economics Driven Entrepreneurship Nudges Among Individuals

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Abstract: This study aimed to develop and implement strategies rooted in the principles of behavioural economics to foster the growth of entrepreneurship within higher education institutions. By focusing on technology transfer offices (TTOs) as critical facilitators of innovation and entrepreneurship, the research assessed the competencies of 40 TTO employees from seven different countries. Utilizing the 180-degree feedback method, which incorporates both self-assessments and peer evaluations, the study identified significant discrepancies between how TTO employees perceived their skills and how their peers evaluated them. Notably, areas such as innovativeness, creativity, and collaboration showed marked differences, indicating a potential misalignment in self-awareness and actual competency levels. The findings emphasized the necessity for a more balanced and holistic approach to competency development, ensuring that TTO employees are equipped not only with technical skills but also with interpersonal and innovative capabilities essential for fostering an entrepreneurial mindset. In addition to the competency assessment, the study included feedback from 203 participants who attended entrepreneurship workshops facilitated by TTO employees involved in an international project. The participants overwhelmingly rated the training as useful and practical, suggesting that such initiatives significantly contribute to entrepreneurial skill development. Ultimately, this research highlights that enhancing the competencies of TTO employees is crucial for providing better support for academic entrepreneurship. As TTO employees become more adept in their roles, this leads to increased readiness among faculty and students to undertake business ventures, thereby contributing to a vibrant entrepreneurial ecosystem within higher education institutions. The study calls for ongoing professional development and training programs for TTO staff to ensure they remain effective in their support roles, ultimately fostering a culture of innovation and entrepreneurship in academia.

Keywords: entrepreneurship; business incentives; higher education institutions; competency; support specialists; technology transfer.

JEL Classification: A12; D03; D81.

Introduction

In a world where innovation and entrepreneurship are driving economic growth, it is necessary to determine how to effectively motivate people to start businesses. Traditional methods of supporting entrepreneurs, such as

financial assistance or legislative changes, are not always effective enough, as they do not address the psychological barriers and motivational factors that influence the decision to start a business.

Behavioural economics, which combines economic and psychological approaches, provides new tools for designing such measures. Research relevance is also determined by the growing interest of governments, educational institutions and international organisations in entrepreneurship development as an important element of economic development (Suh 2019). In the context of globalisation and rapid technological change, support for entrepreneurship is becoming critical to the competitiveness of national economies. Determination of how to effectively use the principles of behavioural economics to stimulate entrepreneurial activity can be a key factor in the success of these efforts.

In addition, the research relevance is determined by the need to address social issues such as unemployment and social inequality. Entrepreneurship can be an important means of creating new jobs and improving living standards (Mohammadi *et al.* 2025). Developing measures that encourage entrepreneurship can help address these challenges by providing people with new opportunities for self-fulfilment and economic growth.

One of the key problems is a lack of understanding of the psychological barriers that prevent people from starting their businesses (Novykova *et al.* 2022). Although behavioural economics offers many tools to overcome these barriers, their effective application requires a deep knowledge of the individual motivations and fears of potential entrepreneurs (Aviv *et al.* 2008).

Another relevant challenge is the difficulty of measuring and evaluating the results of behavioural interventions. The effectiveness of such interventions may vary depending on the context, culture and personal circumstances of the participants, making it difficult to develop universal strategies that would be equally effective in different settings. Integrating behavioural interventions into existing entrepreneurship support programmes is also a significant challenge. Many of these programmes focus on providing financial assistance or advisory services, while behavioural interventions require a more flexible and individualised approach, which may require additional resources and changes in the structure of support.

B. Suh (2019) is one of the founders of behavioural economics, a field that combines economics and psychology to study how people make decisions in economic situations. The study focuses on how psychological factors, such as emotions, cognitive biases and social influences, affect economic behaviour. B. Suh was one of the first to question traditional economic models based on the assumption that people act rationally and seek to maximise their benefits.

S. Kemp (2019) studied behavioural economics, focusing on how psychological factors influence economic decisions. His research focuses on the processes that guide people's choices in complex economic situations, such as financial decision-making, risk management, and responses to economic incentives. S. Kemp emphasises that human behaviour often deviates from classical economic models that assume rationality and predictability. Studies contribute to the determination of how people act in economic conditions, making behavioural economics relevant for improving economic models and developing policies that consider the real psychological mechanisms that influence decision-making.

T. Allard *et al.* (2019) contributed to the development of behavioural economics by studying how psychological and social factors influence people's economic behaviour. The research focuses on how people make decisions under uncertainty, what cognitive biases influence their choices, and how emotions can alter rational risk and benefit assessment. T. Allard *et al.* addressed economic decisions from a psychological perspective, exploring how real-world behavioural patterns deviate from standard economic theories that assume rational behaviour. The work showed that human behaviour is often more complex and unpredictable than traditional economic models suggest.

Within the framework of research on behavioural economics and entrepreneurship, the study of J.-P. Bassino *et al.* (2019) is relevant. They studied how various interventions, including reminders and nudges, can influence decision-making in various areas of life, including entrepreneurship. Their research has shown that even simple measures can significantly increase the effectiveness of entrepreneurship support programmes.

T. Studzieniecki *et al.* (2022) found that the key motivators for entrepreneurs are the desire for independence, self-realisation and financial stability. At the same time, he noted that many potential entrepreneurs face barriers such as fear of failure, lack of financial resources and the necessary knowledge.

R. Klesta *et al.* (2024) examined the factors influencing employee motivation across generations X, Y, and Z within the IT industry. Their study highlights that while traditional motivators such as salary and job security remain important, younger generations place a higher value on work-life balance, opportunities for professional development, and a sense of purpose in their work. The research emphasizes that understanding these

generational differences is crucial for organizations aiming to enhance employee engagement and retention. By fostering an environment that aligns with the unique motivations of each generation, companies can effectively drive performance and cultivate a more dynamic workforce (Kalyuzhna *et al.* 2024).

J. Jemmy (2024) conducted a systematic review of leadership styles in public administration, analyzing their effectiveness in driving organizational performance. The study reveals that different leadership styles, such as transformational, transactional, and servant leadership, have distinct impacts on organizational outcomes. J. Jemmy identifies transformational leadership as particularly effective in fostering innovation and employee engagement, while transactional leadership tends to enhance short-term performance through structured processes and clear expectations. The research underscores the importance of aligning leadership approaches with organizational goals to maximize performance. By understanding the nuances of various leadership styles, public administrators can better navigate challenges and drive positive change within their organizations (Burmistrov *et al.* 2024).

V. Vasilios and P.I. Xanthopoulou (2024) conducted a literature review on types of leadership and their impact on the effectiveness and efficiency of public organizations. Their analysis highlights various leadership styles, such as autocratic, democratic, and transformational leadership, and examines how each style affects organizational performance and employee satisfaction. The review identifies that transformational leadership is particularly effective in enhancing motivation and engagement among public sector employees, leading to improved service delivery and organizational outcomes. However, the authors note that certain areas remain underexplored, including the context-specific effectiveness of these leadership styles across different public organizations and the interplay between leadership styles and organizational culture. By addressing these gaps, the research aims to contribute to a deeper understanding of how leadership dynamics can be leveraged to enhance public sector performance.

The study aims to develop effective approaches based on the principles of behavioural economics that promote entrepreneurial activity at higher education institutions. The task was to analyse existing theoretical approaches and practical examples, as well as to develop and test new methods of influencing the motivation to engage in entrepreneurial activity. The novelty of the study lies in its application of behavioural economics principles to enhance entrepreneurship within higher education institutions by systematically assessing and developing the competencies of technology transfer office (TTO) employees, using a 180-degree feedback method and participant evaluations to bridge gaps in self-awareness and peer perception.

1. Materials and Methods

The survey of the units' employees' competencies took place from September 1 to October 30, 2023. During this period, a total of 40 employees from 8 research commercialization entities across 7 different countries participated. This comprehensive survey aimed to evaluate the competencies of these employees using a 180-degree feedback method. In this approach, each of the 40 employees was assessed one colleague (40+40), providing a well-rounded view of their skills and performance from multiple perspectives.

The 180-degree feedback method was chosen to ensure a balanced evaluation by including self-assessments as well as peer assessments. This dual approach helps to capture a more complete picture of each employee's competencies, including their technical abilities, teamwork, leadership skills, and other relevant attributes. The study, which lasted for a month, aimed to integrate specialised knowledge and project management methods, which ensured the quality and accuracy of all stages of work. Modern management approaches were used to optimise planning, monitoring and control of processes, which helped to achieve the goals set on time. Before conducting the research, joint workshops were held with the heads of TTOs, who were considered competent judges with the most experience in the processes carried out by these offices. The meetings took place weekly (on November 8, 15, and 21, 2022) and lasted between half an hour to an hour. During these meetings, discussions primarily focused on the research objectives, the role of TTOs in the knowledge transfer process between research institutions and the socio-economic environment, differences in the functioning of TTOs and universities, and common features in the form of processes that are similarly implemented across units.

Within the group of competent judges, four processes were identified for study in the institutions:

1. Administrative handling of studies, collaboration with external entities.
2. Direct and indirect commercialization.
3. Process of creation of added value for the services and products of national manufacturing companies.
4. Process of support for academic entrepreneurship.

During the workshops, participants had the opportunity to evaluate from a collective list of 36 competencies which 6-9 competencies were crucial for executing a specific process within their unit. They could also add new competencies to the list, which they did. Through joint discussion, the ideal level of competency a specialist involved in each process should possess to optimally perform their tasks was determined. As a result, four models of the main processes carried out in TTOs were developed.

The nearly year-long gap between the workshops and the research allowed TTO heads to explain the purpose of the study to their employees, apply the acquired knowledge and skills in practice, and help participants better understand the theoretical foundations of the research and deepen their knowledge on the subject. Next, using the example of the University of Silesia in Katowice, it was demonstrated how the competencies of TTO employees influence the entrepreneurship education programs they run.

2. Research Results

The barriers to the Development of Innovation and Entrepreneurship can be both financial and psychological, including fear of failure, lack of self-confidence and lack of support from society. To simplify the understanding, traditional economic models use the concept of behaviour within the framework of the Resourceful, Evaluating, Maximising Man (REMM) concept (Gentsoudi 2023). Understanding and overcoming these barriers are key to creating a favourable environment for entrepreneurship.

Research shows that people often do not make rational decisions due to their limited ability to process information, which is manifested in the phenomenon of limited rationality. For instance, a consumer may buy an expensive product without researching alternative options that could be more profitable (Kerimkhulle *et al.* 2023a). Heuristics play a key role in decision-making when people rely on mental shortcuts, such as choosing a product based on a well-known brand only, ignoring other options. The anchoring effect illustrates how initial information influences subsequent decisions: people may value a product according to the first price they see, even if there are better deals available (Kim *et al.* 2019). Overconfidence often leads to an overestimation of one's knowledge and abilities, which can be dangerous, as in the case of an investor who believes that he or she can predict the market better than others, leading to losses.

Table 1. Principles of behavioural economics

Principle	Description	Example
Limited rationality	Neglect of rationality due to limited information processing capabilities.	A person buys an expensive item without analysing the market
Heuristics	People use mental shortcuts (heuristics) to make decisions.	When choosing a product, a person focuses on the brand, ignoring other possibilities
Anchoring effect	The first piece of information received influences subsequent decisions.	People estimate the value of a product based on the first price
Excessive self-confidence	Reassess own abilities	Overconfidence leads to investment losses.
The effect of ownership	People place more value on things they already own.	A person refuses to sell an old car for the market price, believing it to be much more valuable.
Social norms	Behaviour is often determined by social norms and expectations.	A person buys a certain product because friends or colleagues use it, even if it is not the best choice.
Framing	The way information is presented influences people's decisions.	A person chooses a product that is advertised as "90% fat free" instead of "contains 10% fat", even though it is the same thing.
The status quo effect	People tend to stay with the status quo.	People do not change service providers, even if there are better and cheaper options, because they are unwilling to change.
Hyperbolic discounting	People want to benefit here and now, even if the long-term profit will be more profitable and greater.	People spend money on small things now instead of saving for a bigger purchase in the future.
Loss of the obverse	People react more strongly to losses than to equivalent gains.	The fear of loss overshadows the possible benefits.

Source: compiled by the authors based on (Barros and Ortega 2019).

The status quo effect shows the tendency of people to stay in the status quo, avoiding change, even when there are better alternatives. Hyperbolic discounting demonstrates how people prefer immediate gains to future gains, even if they are smaller: for example, spending money on small things now instead of saving for a larger

purchase. Finally, aversion loss shows that people react more strongly to possible losses than to equivalent gains, as in the case of an investor who avoids risky investments for fear of losing money, even if the potential gain could be significant (Table 1).

Studies have shown a significant increase in the number of new business registrations following the implementation of appropriate measures. The use of methods based on coercive measures, social norms and instant rewards has proven to be effective in attracting young people to entrepreneurship and stimulating the creation of new start-ups (Piiroinen and Raghavendra 2019).

An important element of support for young entrepreneurs is the existence of companies specialising in business development among young people. For example, in Cyprus, there is GrantXpert Consulting Ltd (Cyprus), a consulting company that actively promotes entrepreneurship among young people. It involves students and young entrepreneurs in international projects, which allows them to gain valuable experience at the global level. Thanks to this approach, young professionals not only gain knowledge but also expand their international contacts, which is an important factor in successful business development.

However, in addition to private companies, universities also play an important role in supporting youth entrepreneurship (Shahini 2024). They provide young people with the knowledge, skills, and access to resources needed to successfully start and grow a business. Institutions such as University of Silesia in Katowice (Poland), Vytautas the Great University (Lithuania), University of Castilla-La Mancha (Spain), Lviv University of Trade and Economics (Ukraine), Malardalen University (Sweden), Teaching Factory Competence Centre (TF CC) Greece, SPIN-US (Poland) actively cooperate with young entrepreneurs by creating special programmes and incubators that facilitate the formation of new businesses.

The University of Silesia in Katowice (Poland) is an important educational centre in Central Europe with a wealth of experience in training specialists in various fields, including economics and entrepreneurship. Through its programmes focused on the practical application of knowledge, the university helps students develop the necessary skills to start and run a business. The Teaching Factory Competence Centre, located in Greece, is noted for its innovative approach to learning, where theory is combined with practice, this centre actively involves students in real production processes, which allows them not only to acquire theoretical knowledge but also to learn how to solve actual business problems in practice. This approach significantly increases their readiness for the real business environment. Malardalen University (Sweden) is known for its research in economics and business, which often combines traditional economic models with innovative approaches. This university actively cooperates with business, involving students in research projects, which helps them better understand the current challenges and opportunities in entrepreneurship, and contributes to the development of critical thinking and the ability to adapt to a rapidly changing market.

Vytautas the Great University (Lithuania) and Castilla-La Mancha University (Spain) play a significant role in the development of entrepreneurial education in their countries. Both universities offer specialised programmes aimed at preparing students for entrepreneurship. They support students in creating business projects by providing them with the necessary knowledge, resources and mentoring support, which helps young people to confidently enter the world of entrepreneurship using the knowledge gained during their studies.

Lviv University of Trade and Economics (Ukraine) is also known for its active support of young entrepreneurs. The university has established numerous partnership programmes and business incubators to help students develop their business ideas, these initiatives are aimed at enabling young entrepreneurs to bring their ideas to life using the university's infrastructure and resources. SPIN-US Ltd (Poland) is a company that actively promotes innovation and entrepreneurship through the commercialisation of scientific research. It helps researchers and students turn their ideas into commercially successful products and services. This approach not only fosters entrepreneurship but also stimulates innovation, which is a key factor in the modern economy. The survey collected information on the competency levels of employees supporting the process of knowledge transfer from researchers to entrepreneurs, as well as employees supporting the development of academic entrepreneurship. The study of employees' competencies took place from September 1 to October 30, 2023. A total of 40 employees from 8 entities engaged in research commercialization across 7 countries participated in the survey. The competency assessment was conducted using the 180-degree method, involving 40 employees and their 40 colleagues.

The first phase of the Transfer Office Competencies study focused on laying the foundations for assessing the competencies of transfer office staff at each facility, creating a model of exemplary competencies that a knowledge transfer support employee should possess. A two-hour diagnostic workshops was held with a group of selected representatives of participating universities (competent judges), including: University of Silesia in Katowice (Poland), Vytautas the Great University (Lithuania), University of Castilla-La Mancha (Spain), Lviv

University of Trade and Economics (Ukraine), Malardalen University (Sweden), Teaching Factory Competence Center (TF CC) (Greece), SPIN-US (Polish target company) and GrantXpert (Cyprus). The main goal of the event was to define expectations, develop a profile of the ideal employee for knowledge transfer and establish criteria for hiring. It was investigated which competencies and in which TTO were self-assessed at the same level as required. Discrepancies between the lowest and highest competency scores, strengths and weaknesses of individual institutions in terms of entrepreneurship and knowledge transfer were revealed.

University of Silesia in Katowice is a major public research university located in Katowice, Poland. Established in 1968, it's one of the most prominent universities in the Silesian region (Table 2).

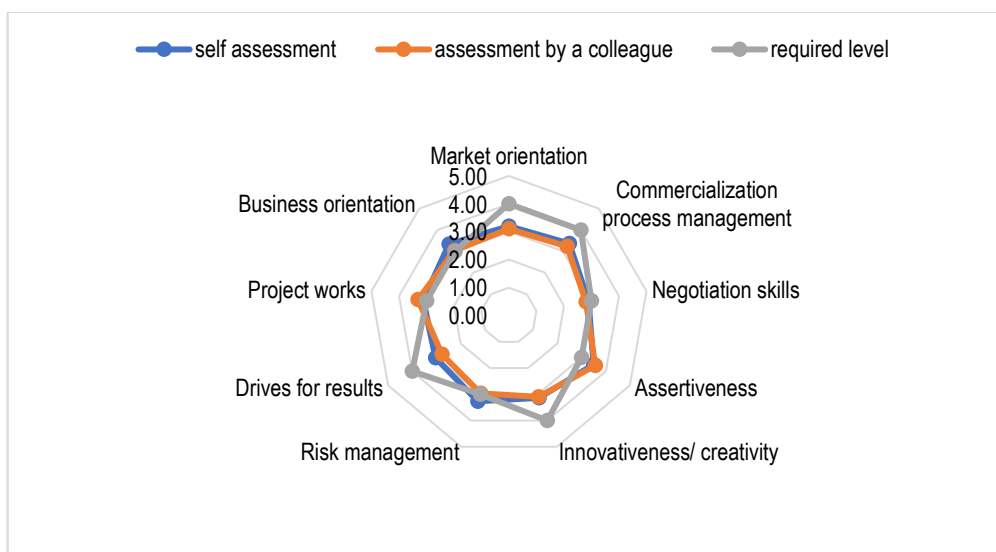
Table 2. Research results based on the example of the University of Silesia, profile 1B: The process of direct and indirect commercialization

Parameter	A	B	C	A – C	B – C	A – B
Competences	Self-assessment	Assessment by a colleague	Required level	Self-assessment vs required level	Assessment by a colleague vs required level	Self-assessment vs assessment by a colleague
Market orientation	3.20	3.10	4.00	-0.80	-0.90	0.10
Commercialization process management	3.37	3.23	4.00	-0.63	-0.77	0.13
Negotiation skills	2.89	2.81	3.00	-0.11	-0.19	0.08
Assertiveness	3.50	3.57	3.00	0.50	0.57	-0.07
Innovativeness/Creativity	3.13	3.10	4.00	-0.87	-0.90	0.03
Risk management	3.27	2.97	3.00	0.27	-0.03	0.30
Drives for results	3.03	2.77	4.00	-0.97	-1.23	0.27
Project works	3.12	3.31	3.00	0.12	0.31	-0.19
Business orientation	3.33	3.04	3.00	0.33	0.04	0.29

Source: compiled by the authors.

Overall, self-assessments reveal some areas where individuals are below the required levels, particularly in competencies like Market Orientation, Innovativeness/Creativity, and Drives for Results. Conversely, there are areas where self-assessments meet or exceed the required levels, such as Assertiveness and Business Orientation. The discrepancies between self-assessments and colleague assessments highlight differences in perception, with self-assessments often being slightly more favorable or less critical compared to colleague evaluations (Figure1).

Figure 1. Research results based on the example of the University of Silesia



Source: compiled by the authors.

Vytautas the Great University is a prominent public university located in Kaunas, Lithuania. Established in 1922, it is known for its commitment to high-quality education, research, and international cooperation (Table 3).

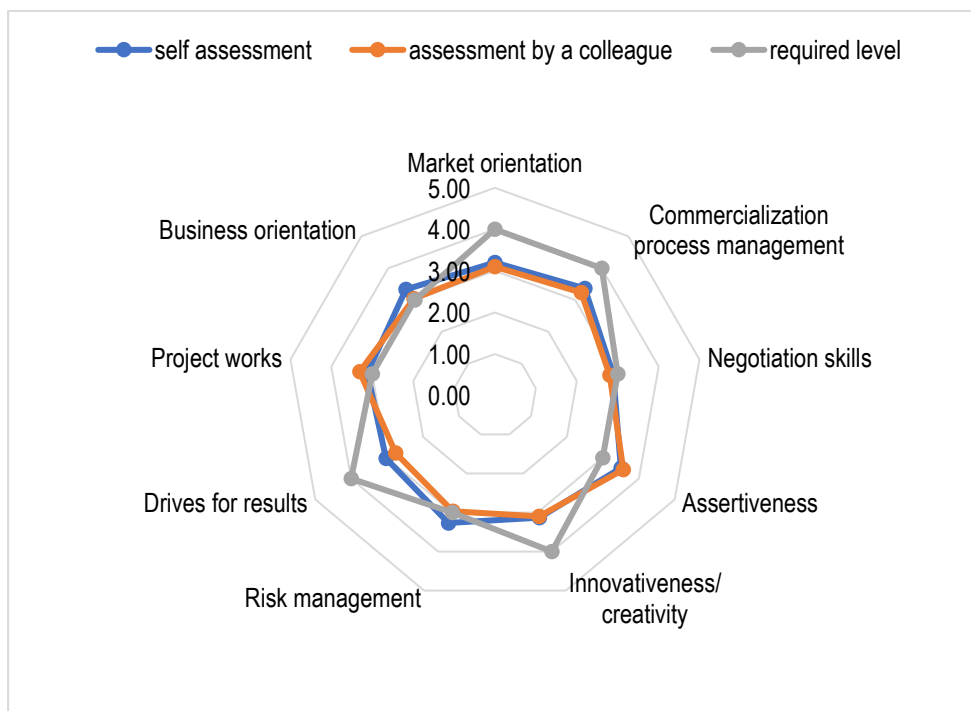
Table 3. Research results based on the example of the Vytautas the Great University (Lithuania), profile 1A: The process of direct and indirect commercialization

Parameter	A	B	C	A – C	B – C	A – B
Competences	Self-assessment	Assessment by a colleague	Required level	Self-assessment vs required level	Assessment by a colleague vs required level	Self-assessment vs assessment by a colleague
Administration	3.40	3.20	3	0.40	0.20	0.20
Negotiation skills	3.00	3.40	3	0.00	0.40	-0.40
Organizing your own work	1.60	2.60	3	-1.40	-0.40	-1.00
Problem solving	2.25	1.50	3	-0.75	-1.50	0.75
Cooperation & Team work	2.75	4.75	4	-1.25	0.75	-2.00
Relationship building	3.00	2.60	3	0.00	-0.40	0.40
Flexibility	2.20	3.20	4	-1.80	-0.80	-1.00
Communication skills	3.40	1.60	3	0.40	-1.40	1.80
Law & Regulatory knowledge	3.75	4.25	3	0.75	1.25	-0.50

Source: compiled by the authors.

In summary, the evaluations indicate that there are notable differences between self-assessments and colleague assessments across various competencies. While some areas, such as Administration and Law & Regulatory Knowledge, show relatively minor discrepancies, others, such as Cooperation & Team Work and Communication Skills, reveal significant differences in perceived performance. Overall, these discrepancies highlight the variability in self-perception versus external assessment, pointing to potential areas for further development and alignment (Figure 2).

Figure 2. Research results based on the example of the Vytautas the Great University (Lithuania)



Source: compiled by the authors.

The University of Castilla-La Mancha (UCLM) is a public university located in the Castilla-La Mancha region of Spain. Established in 1985, UCLM is known for its strong focus on research, teaching, and regional development (Table 4).

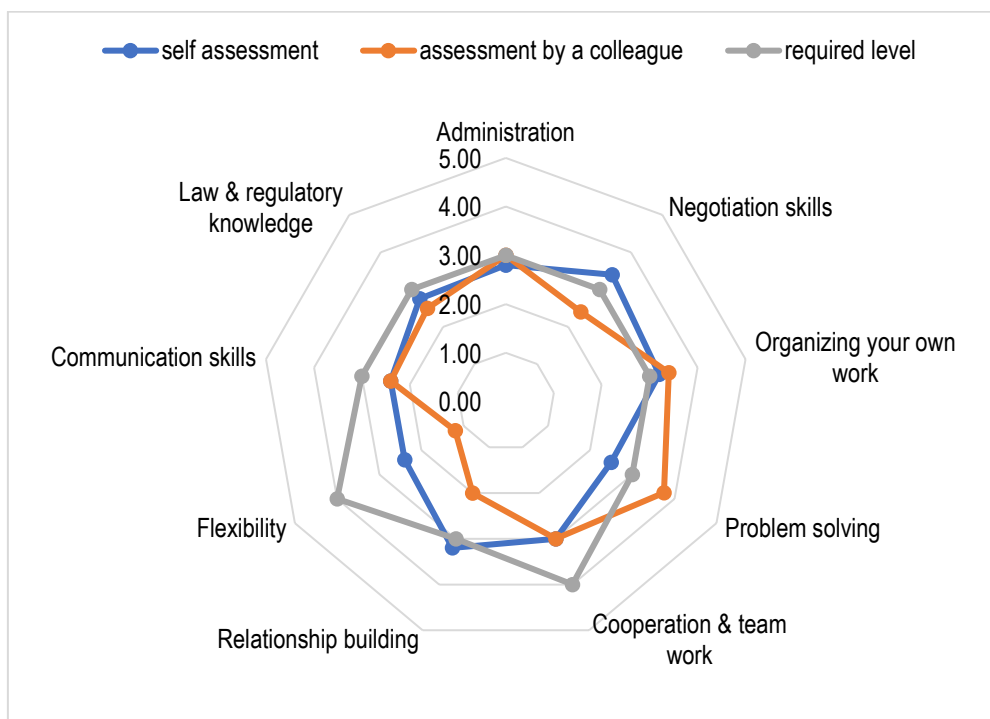
Table 4. Research results based on the example of University of Castilla-La Mancha (Spain), profile 1A: The process of direct and indirect commercialization

Parameter	A	B	C	A – C	B – C	A – B
Competences	Self-assessment	Assessment by a colleague	Required level	Self-assessment vs required level	Assessment by a colleague vs required level	Self-assessment vs assessment by a colleague
Administration	2.80	3.00	3	-0.20	0.00	-0.20
Negotiation skills	3.40	2.40	3	0.40	-0.60	1.00
Organizing your own work	3.20	3.40	3	0.20	0.40	-0.20
Problem solving	2.50	3.75	3	-0.50	0.75	-1.25
Cooperation & Team work	3.00	3.00	4	-1.00	-1.00	0.00
Relationship building	3.20	2.00	3	0.20	-1.00	1.20
Flexibility	2.40	1.20	4	-1.60	-2.80	1.20
Communication skills	2.40	2.40	3	-0.60	-0.60	0.00
Law & Regulatory knowledge	2.75	2.50	3	-0.25	-0.50	0.25

Source: compiled by the authors.

In summary, the evaluations highlight various discrepancies between self-assessments and colleague assessments. Areas such as Negotiation Skills, Problem Solving, and Relationship Building show notable differences, with self-assessments generally more favorable in these areas compared to colleague evaluations. Conversely, areas like Flexibility and Cooperation & Team Work demonstrate consistent lower evaluations, indicating a mutual recognition of the need for improvement. Overall, the data suggests that aligning self-perception with colleague perceptions and addressing areas with significant discrepancies could lead to improved performance and better outcomes (Figure 3).

Figure 3. Research results based on the example of the University of Castilla-La Mancha (Spain)



Source: compiled by the authors.

Lviv University of Trade and Economics (LUTE) is a prominent public university located in Lviv, Ukraine. Established in 1946, it specializes in economics, management, and related fields (Table 5).

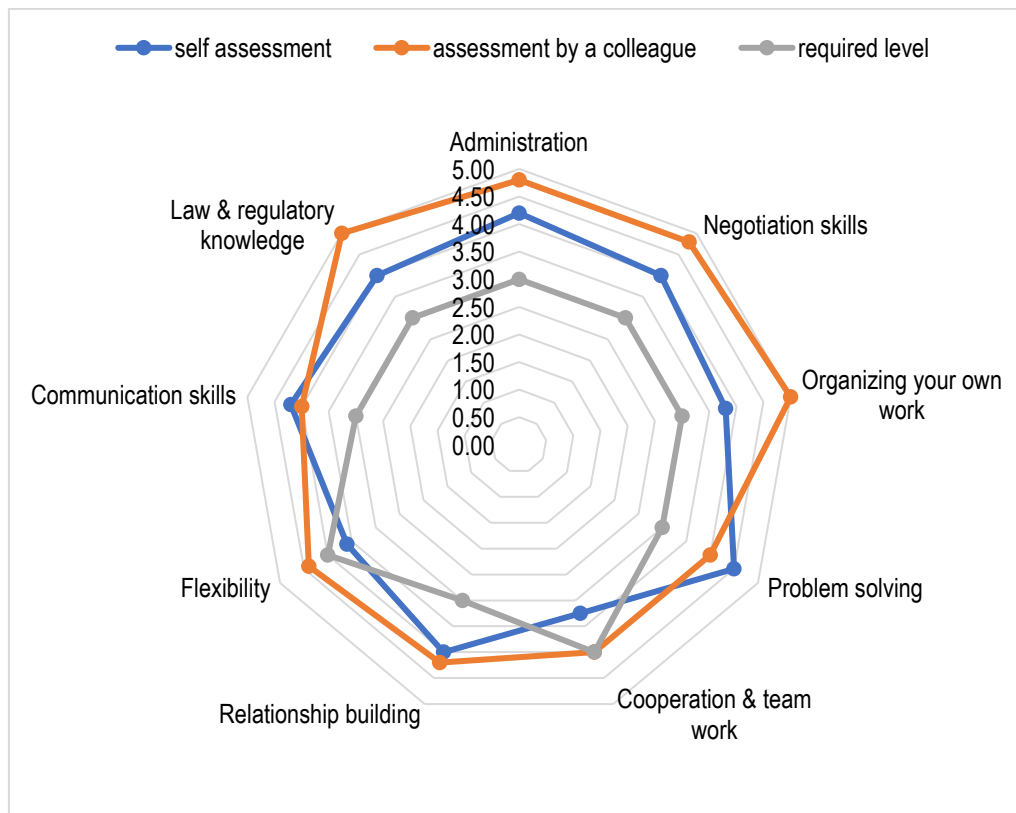
Table 5. Research results based on the example of Lviv University of Trade and Economics (Ukraine), profile 1B: The process of direct and indirect commercialization

Parameter	A	B	C	A – C	B – C	A – B
Competences	Self-assessment	Assessment by a colleague	Required level	Self-assessment vs required level	Assessment by a colleague vs required level	Self-assessment vs assessment by a colleague
Administration	4.20	4.80	3	1.20	1.80	-0.60
Negotiation skills	4.00	4.80	3	1.00	1.80	-0.80
Organizing your own work	3.80	5.00	3	0.80	2.00	-1.20
Problem solving	4.50	4.00	3	1.50	1.00	0.50
Cooperation & Team work	3.25	4.00	4	-0.75	0.00	-0.75
Relationship building	4.00	4.20	3	1.00	1.20	-0.20
Flexibility	3.60	4.40	4	-0.40	0.40	-0.80
Communication skills	4.20	4.00	3	1.20	1.00	0.20
Law & Regulatory knowledge	4.00	5.00	3	1.00	2.00	-1.00

Source: compiled by the authors.

Addressing these discrepancies and focusing on areas where both self-assessment and colleague assessments fall short of the required levels could help in aligning perceptions and improving overall performance (Figure 4).

Figure 4. Research results based on the example of the Lviv University of Trade and Economics (Ukraine)



Source: compiled by the authors.

Malardalen University (MDU) is a public university located in Västerås and Eskilstuna, Sweden. Established in 1977, MDU is known for its focus on applied research and its strong ties with industry and regional development (Table 6).

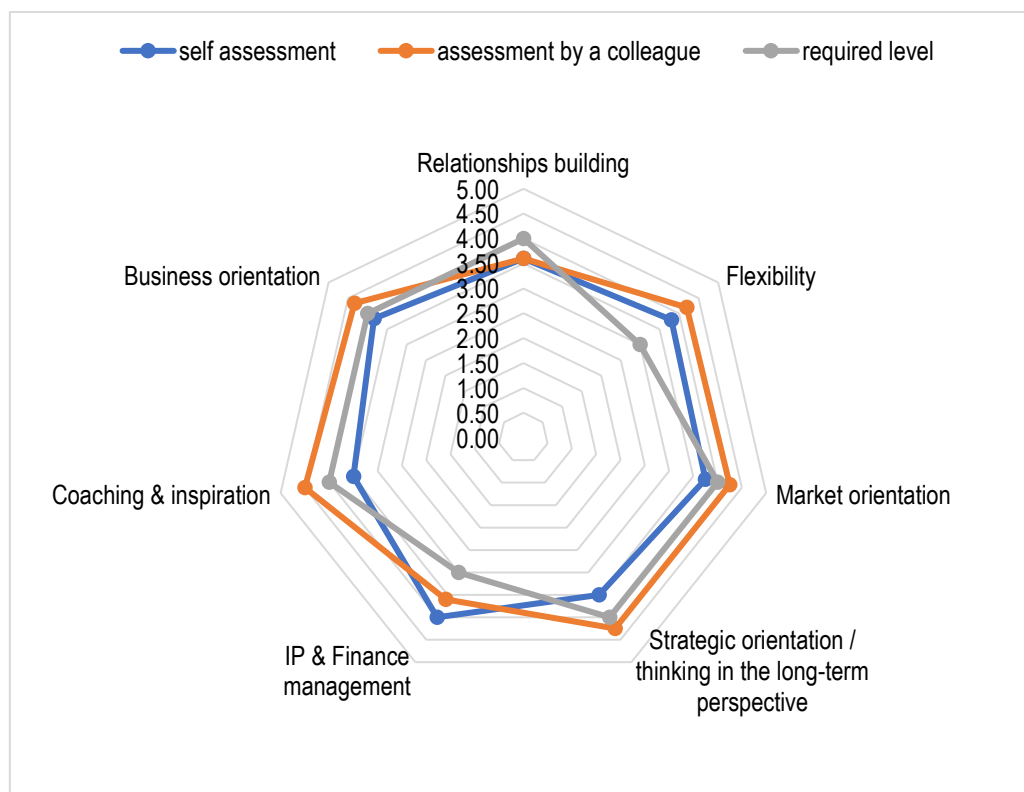
Table 6. Research results based on the example of Malardalen University (Sweden), profile 3: The process of direct and indirect commercialization

Parameter	A	B	C	A – C	B – C	A – B
Competences	Self-assessment	Assessment by a colleague	Required level	Self-assessment vs required level	Assessment by a colleague vs required level	Self-assessment vs assessment by a colleague
Relationships building	3.60	3.60	4	-0.40	-0.40	0.00
Flexibility	3.80	4.20	3	0.80	1.20	-0.40
Market orientation	3.75	4.25	4	-0.25	0.25	-0.50
Strategic orientation / Thinking in the long-term perspective	3.50	4.25	4	-0.50	0.25	-0.75
IP & Finance management	4.00	3.60	3	1.00	0.60	0.40
Coaching & Inspiration	3.50	4.50	4	-0.50	0.50	-1.00
Business orientation	3.83	4.33	4	-0.17	0.33	-0.50

Source: compiled by the authors.

Overall, the discrepancies indicate areas where self-perception differs from colleague perception, suggesting the need for targeted development and possibly further feedback to align these evaluations and enhance competency in critical areas (Figure 5).

Figure 5. Research results based on the example of the Malardalen University (Sweden)



Source: compiled by the authors.

The Teaching Factory Competence Center (TF CC) in Greece is part of a broader initiative to enhance practical, hands-on learning and industry collaboration in engineering and technology education. This center is

designed to bridge the gap between theoretical knowledge and real-world application, providing students with opportunities to work on industry-relevant projects and gain practical experience (Table 7).

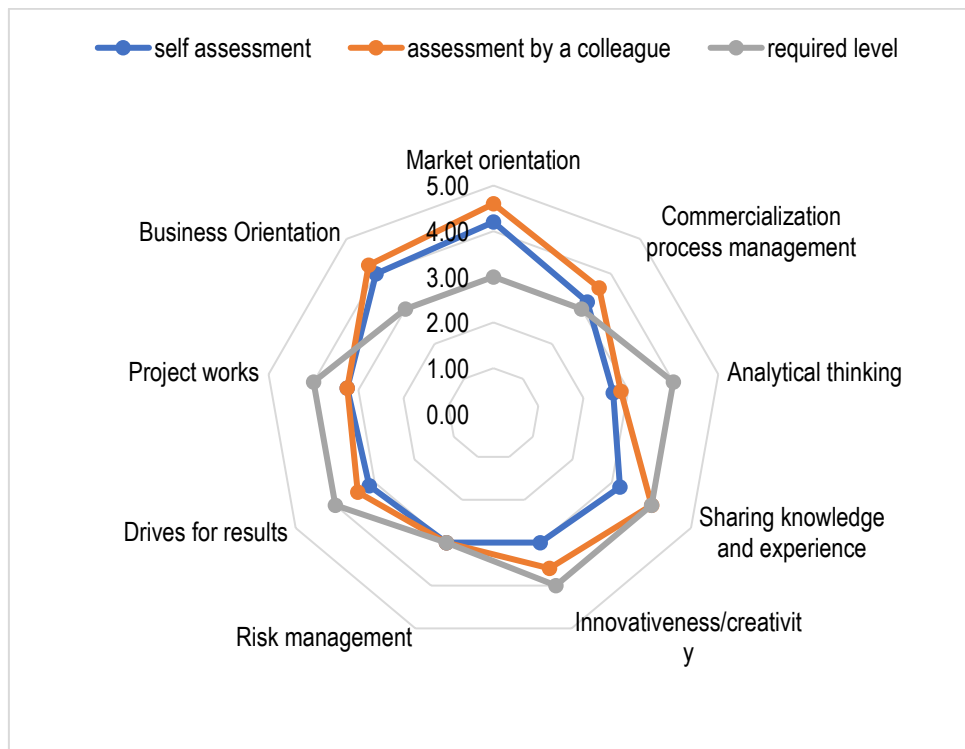
Table 7. Research results based on the example of TF CC in Greece, profile 2: The process of direct and indirect commercialization

Parameter	A	B	C	A – C	B – C	A – B
Competences	Self-assessment	Assessment by a colleague	Required level	Self-assessment vs required level	Assessment by a colleague vs required level	Self-assessment vs assessment by a colleague
Market orientation	4.20	4.60	3	1.20	1.60	-0.40
Commercialization process management	3.20	3.60	3	0.20	0.60	-0.40
Analytical thinking	2.67	2.83	4	-1.33	-1.17	-0.17
Sharing knowledge and experience	3.20	4.00	4	-0.80	0.00	-0.80
Innovativeness/Creativity	3.00	3.60	4	-1.00	-0.40	-0.60
Risk management	3.00	3.00	3	0.00	0.00	0.00
Drives for results	3.14	3.43	4	-0.86	-0.57	-0.29
Project works	3.25	3.25	4	-0.75	-0.75	0.00
Business Orientation	4.00	4.25	3	1.00	1.25	-0.25

Source: compiled by the authors.

The data suggests that while there is alignment in some areas, there are notable differences in competencies such as sharing knowledge and experience, innovativeness/creativity, and analytical thinking. Addressing these discrepancies through targeted development initiatives and seeking additional feedback could enhance overall competency alignment with required levels (Figure 6).

Figure 6. Research results based on the example of the TF CC in Greece



Source: compiled by the authors.

SPIN-US is a special purpose vehicle based in Poland, typically established to achieve specific business objectives or projects. These entities are often created for particular tasks such as research, development, or commercialization of new technologies and innovations (Table 8).

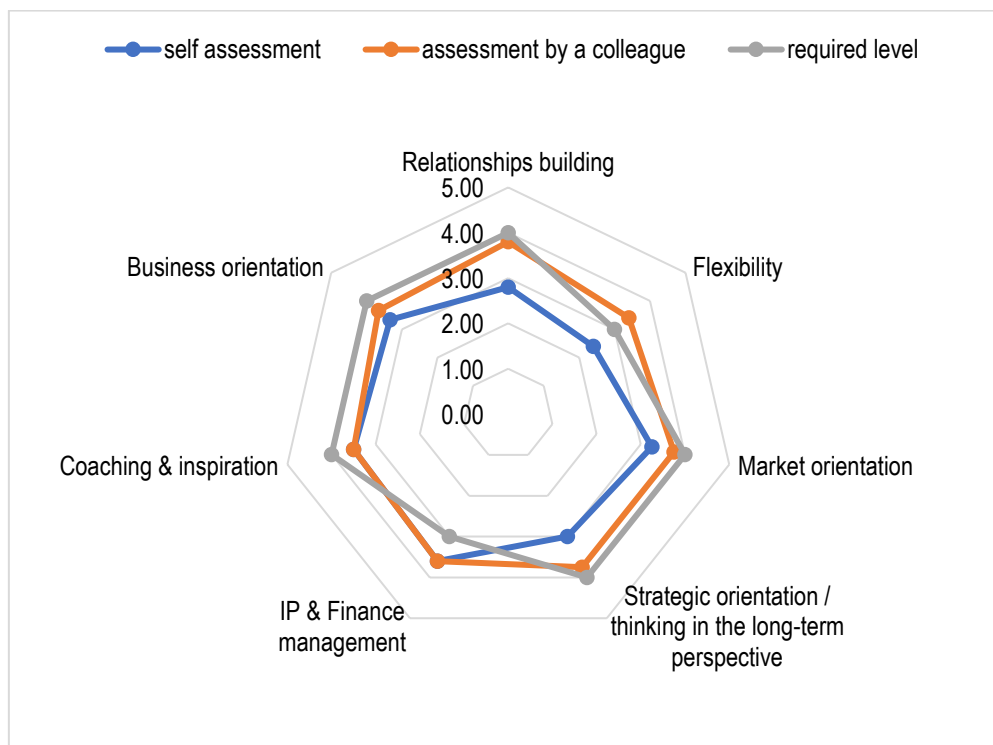
Table 8. Research results based on the example of SPIN-US (Poland), profile 3: The process of direct and indirect commercialization

Parameter	A	B	C	A – C	B – C	A – B
Competences	Self-assessment	Assessment by a colleague	Required level	Self-assessment vs required level	Assessment by a colleague vs required level	Self-assessment vs assessment by a colleague
Relationships building	2.80	3.80	4	-1.20	-0.20	-1.00
Flexibility	2.40	3.40	3	-0.60	0.40	-1.00
Market orientation	3.25	3.75	4	-0.75	-0.25	-0.50
Strategic orientation /Thinking in the long-term perspective	3.00	3.75	4	-1.00	-0.25	-0.75
IP & Finance management	3.60	3.60	3	0.60	0.60	0.00
Coaching & Inspiration	3.50	3.50	4	-0.50	-0.50	0.00
Business orientation	3.33	3.67	4	-0.67	-0.33	-0.33

Source: compiled by the authors.

Overall, the data indicates that while there are some competencies where self-perception and colleague perception align well, several key areas require further development. Addressing these gaps through targeted training and development activities could help bridge the differences and better align individual performance with required competency levels (Figure 7).

Figure 7. Research results based on the example of the SPIN-US (Poland)



Source: compiled by the authors.

GrantXpert is a consultancy firm based in Cyprus, specializing in providing support and expertise in grant management and funding opportunities. The company offers services related to identifying, applying for, and managing grants and other funding sources (Table 9).

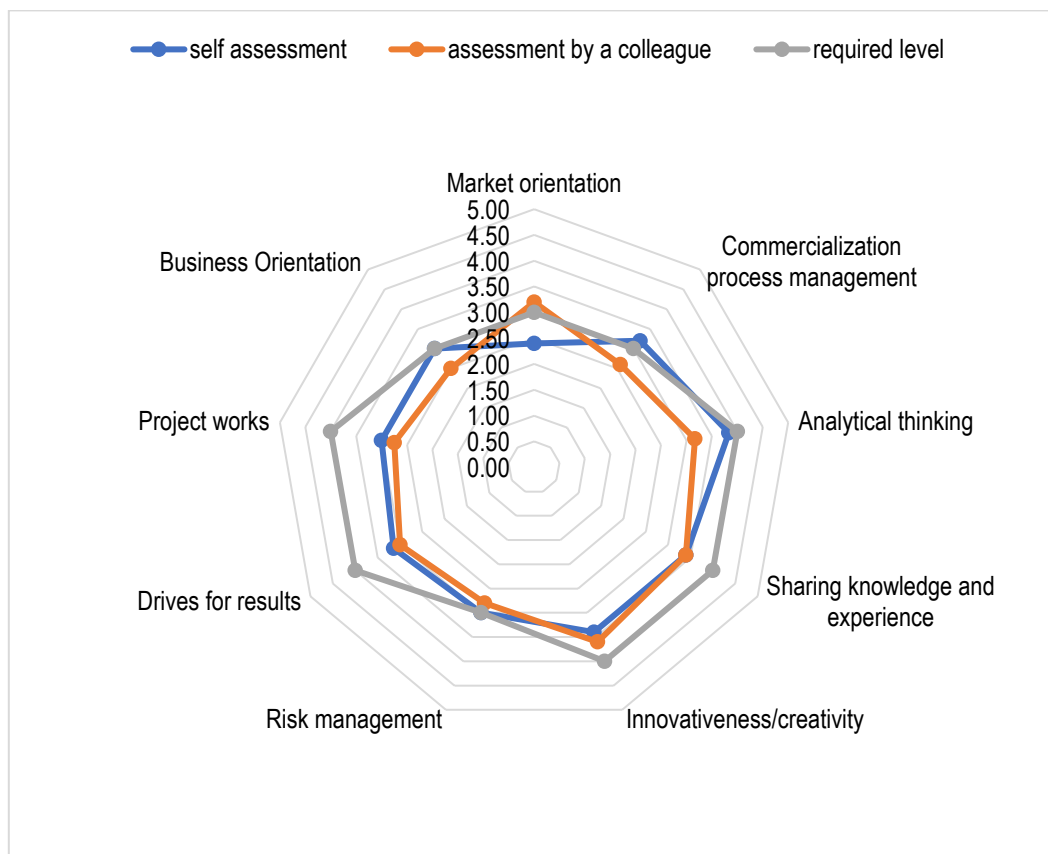
Table 9. Research results based on the example of GrantXpert Cyprus, profile 2: The process of direct and indirect commercialization

Parameter	A	B	C	A – C	B – C	A – B
Competences	Self-assessment	Assessment by a colleague	Required level	Self-assessment vs required level	Assessment by a colleague vs required level	Self-assessment vs assessment by a colleague
Market orientation	2.40	3.20	3	-0.60	0.20	-0.80
Commercialization process management	3.20	2.60	3	0.20	-0.40	0.60
Analytical thinking	3.83	3.17	4	-0.17	-0.83	0.67
Sharing knowledge and experience	3.40	3.40	4	-0.60	-0.60	0.00
Innovativeness/Creativity	3.40	3.60	4	-0.60	-0.40	-0.20
Risk management	3.00	2.80	3	0.00	-0.20	0.20
Drives for results	3.14	3.00	4	-0.86	-1.00	0.14

Source: compiled by the authors.

Overall, the assessments highlight several areas where the individual's self-perception differs from colleague evaluations and required competency levels. Addressing these gaps through focused development initiatives could enhance alignment with the required standards and improve overall competency performance (Figure 8).

Figure 8. Research results based on the example of the GrantXpert Cyprus



Source: compiled by the authors.

Unit's strength lies in the tenacity of its members, as both self- and peer-ratings exceed the required level (3.50 and 3.59, respectively). Self-evaluation and peer evaluation are consistent and similar, but the indicators are below the required level, except for Perseverance, Project Work and Business Orientation. Given the high level of Persistence, it is recommended to develop the competencies of results-oriented and innovation/creativity

to create a good foundation for the further development of other competencies. This indicates that cognitive and motivational competencies will help in full development.

The results of interviews with entrepreneurs show that the main motivators for starting their own business are the desire for independence, self-realisation and financial stability. The main barriers to entrepreneurship include lack of funding, lack of knowledge and skills, and fear of failure (Olko 2023). Many entrepreneurs have overcome these barriers by seeking additional funding, training, and mentoring, which are often provided by TTOs and higher education institutions. Some entrepreneurs are familiar with the principles of behavioural economics and have used them to motivate customers and employees, develop marketing strategies, and increase personal productivity (Weijers *et al.* 2020; Kerimkhulle *et al.* 2023b). These principles are also becoming increasingly important for universities and TTOs. The most effective principles of behavioural economics are social proof, motivational incentives, and setting up an environment to promote positive action.

Members of the departments, including those involved in commercialization or entrepreneurship development, must prioritize goals, evaluating them according to the criteria of urgency and importance. They must be clear about which goals are less important to their department and university, and which are of higher priority and require immediate attention (Mamadova *et al.* 2019; Thunström 2019). This helps optimize resources and efforts, directing them to achieve the most meaningful results. Members of the department must analyze possible options for action, considering constraints and resources, to determine the most effective approaches. This includes flexibility in planning and willingness to adapt to new conditions or change strategy when necessary (Thaler 2016; Veliev *et al.* 2018). The main focus should be on achieving the expected results. Instead of focusing on possible difficulties or limitations, department members should focus their efforts on finding solutions and ways to overcome problems. It's important to avoid a mindset that focuses on evidence that something can't be done, and instead develop a mindset for success, viewing every challenge as an opportunity for growth and development (Simon 2022). Such thinking promotes the development of initiative and a creative approach to work, helps to find non-standard solutions and contributes to increasing the overall efficiency of the department's work in achieving its goals.

A study conducted among 203 participants of entrepreneurship workshops led by TTO employees, who enhanced their competencies through an international collaborative project, showed that most students rated the workshops positively. The results indicated that 55% of participants believed that practical exercises effectively complemented the theoretical knowledge provided during the workshops, and 31% reported being able to apply the acquired knowledge in practice. Additionally, the quality of teaching was rated highly, with an average score of 3.43 on a 4-point scale. These results highlight the significant role of high-quality, practical training in entrepreneurship education and underscore the need for further competency development among TTO employees to effectively support entrepreneurial initiatives.

In addition, a structured analysis of the regulatory environment found that legislative reforms aimed at simplifying taxation and protecting the rights of entrepreneurs have the greatest potential to stimulate innovative entrepreneurship and the development of small and medium-sized enterprises (Kahneman and Tversky 2021). The results of the study confirmed the effectiveness of applying the principles of behavioural economics to develop measures aimed at supporting entrepreneurial initiatives (Peredalo *et al.* 2019). The findings are the basis for further strategies to support entrepreneurship and will contribute to the development of effective policies in this area.

Overall, this empirical study has demonstrated that the application of behavioural principles in the development of TTOs is a powerful tool for stimulating entrepreneurship and supporting future entrepreneurs. In particular, the study of bounded rationality, cognitive biases and social norms helps to develop more effective interventions that take these factors into account.

3. Discussions

The results of the study confirmed that psychological measures, such as nudges as well as the tools supporting these competencies, can significantly increase the motivation to start their businesses. These measures were found to be effective in reducing psychological barriers and stimulating a positive decision to start a business, which is consistent with the findings of E.U. Weber (2020) and N. Mažar (2019), whose research confirms that behavioural measures can help correct cognitive biases and encourage more rational decisions. Their work on prospect theory demonstrates how perceptions of losses and gains influence decision-making, which is an important aspect of entrepreneurial motivation.

The analysis of the research results confirms that organizational changes related to the more effective use of the individual competencies of TTO employees in academic practice can significantly stimulate the growth of

new companies. This is achieved through better support in their processes and more efficient utilization of resources, which is consistent with the findings of research conducted by the World Bank, which indicates that reducing administrative barriers can significantly increase the level of entrepreneurial activity in developing countries. Simplifying bureaucratic procedures within the university and among units supporting entrepreneurs as well, reduces the time and resources required to start a new business, which in turn makes Entrepreneurship education become more accessible and attractive to young people (Bayanbayeva *et al.* 2023). Additionally, legal support provided by the university through TTO employees reduces the costs of regulatory compliance and overall administrative burdens, which are significant obstacles for new businesses (Grishnova *et al.* 2019).

Similar results were also acquired in European Union studies, where simplification of bureaucratic procedures was found to have a positive impact on entrepreneurial activity and the investment climate, highlighting the importance of improving the regulatory framework to support and stimulate the development of small and medium-sized businesses. EU countries that have implemented business facilitation policies have seen an increase in the number of new businesses and an increase in overall economic activity (Dankevych *et al.* 2023; Pereguda *et al.* 2025).

Concerning the principles of behavioural economics, the results of the study show that approaches such as social norms and instant rewards have a positive impact on motivation for entrepreneurship (Dorosh 2019; Ismayil-Zada 2022). Social norms, as studies have shown, can significantly influence the behaviour of individuals, encouraging them to take certain actions or make decisions that they might not have considered without these external influences.

R.H. Thaler and C.R. Sunstein (2021) emphasise that the use of social norms and nudges can help correct cognitive biases and encourage more rational and effective decisions. Nudges, or gentle nudges, can reduce psychological barriers and make choices more obvious and easier to make (Kuznetsova 2016). In the context of entrepreneurship, this can include using positive examples of successful entrepreneurs as role models or providing small rewards to encourage certain business behaviours.

Thus, the integration of behavioural economics principles into entrepreneurship support strategies can significantly increase the effectiveness of measures aimed at stimulating business activity. The simplification of administrative procedures for supporting entrepreneurs and researchers together with the introduction of behavioural approaches applied in TTOs can create a favourable environment for the development of new enterprises and provide support for new entrepreneurs on their way to success (Trusova *et al.* 2021; Musayeva *et al.* 2024).

However, some aspects of the results differ from the findings of other studies. For example, a study conducted in Europe showed that social norms have less influence on the decision to start a business compared to other behavioural factors such as financial incentives or educational programmes (Behavioural Insights Team 2018). In this study, social norms related to the functioning of universities, TTOs, and the methods of transferring intellectual property rights during the commercialization process had a greater impact, which may stem from the cultural characteristics of our sample that could differ from the European context. The results of the study also confirm the importance of TTO employees providing mentoring, participating in training, and supporting access to financial resources. This aligns with the findings of the Global Entrepreneurship Monitor program, which highlights the significance of mentoring and educational programs for the success of entrepreneurs (Libenko and Peredaló 2019).

Given these findings, further research should include a more in-depth analysis of the impact of specific behavioural interventions by TTO employees on different population groups. For instance, a study by C. Segal in cognitive psychology has shown that young people may be more susceptible to certain cognitive biases than adult entrepreneurs. It is also worth addressing how behavioural interventions can be adapted to different cultural contexts, which is an important aspect of optimising interventions.

The study significantly contributes to understanding the use of behavioural economics principles to stimulate entrepreneurship (Studzeniecki *et al.* 2022). The findings support the effectiveness of behavioural measures and demonstrate the importance of taking into account cultural and social contexts when developing them, which is confirmed by the research of such authors as R. Thaler and C.R. Sunstein (2021) and opens up new prospects for further research aimed at optimising behavioural measures and adapting them to the needs of different population groups.

However, some aspects of the study turned out to be different from the results of other scientific studies, which are worth considering in detail (Kreshpaj *et al.* 2020). For example, a study by M. Kremer *et al.* (2019) showed that social norms have less influence on entrepreneurial decisions than financial incentives or educational programmes. The study found that the impact of social norms on the motivation to start a business

was limited. In this study, in contrast, it was found that social norms have a significant impact on participants' decisions to start a new business venture, a discrepancy that may be related to cultural or socioeconomic differences in the samples studied and points to the need for further research into cultural contexts.

F. Tramontana and L. Gardini (2021) in a study on positive psychology notes that "motivating" measures do not always have a long-term effect on entrepreneurial activity offered by TTO employees can significantly increase students' motivation to start a business. However, the issue of long-term impact still requires further research.

Similarly, a study by D. Vines and S. Wills (2020) determined that administrative simplifications do not always lead to increased entrepreneurial activity in developed countries. They emphasise that in advanced economies, other factors, such as access to high-quality mentoring programmes, may have a greater impact. In contrast, the study found that the simplification of administrative procedures could have a significant positive impact on the number of new businesses, indicating differences in contexts and levels of economic development.

The results of the study also contradict the findings of S. Storm (2021), who notes that mentoring is the main factor for supporting entrepreneurship only in the long term. In this study, the development of competencies related to coaching and inspiring students, including mentoring and participation in training, demonstrated a significant positive impact in both the short and long term. This indicates the potential for developing these competencies among TTO staff to immediately boost entrepreneurial motivation (Tepavicharova *et al.* 2020).

Differences in studies reveal that the impact of behavioural measures and organisational changes on entrepreneurial activity can vary significantly depending on cultural, socioeconomic and regional contexts, highlighting the importance of an in-depth analysis of these contexts to better understand how different factors affect the effectiveness of measures aimed at stimulating entrepreneurship (Bilik and Recep 2020). For example, the fact that in some countries administrative simplification leads to a significant increase in the number of new businesses may not be so obvious in other countries with different socio-economic conditions or cultural characteristics (Chorna 2009).

Cultural differences can affect how behavioural interventions are perceived and implemented. For example, social norms that are critical in certain cultures may have less impact in other cultural settings where other factors, such as financial incentives or educational programmes, more important (Trusova *et al.* 2020). Moreover, socio-economic conditions, such as the level of economic development and access to resources, can affect how well organisational change is implemented and what measures are most useful for stimulating entrepreneurship.

Conclusions

Research shows that competent TTO employees can offer "nudges" that significantly increase individuals' motivation to start their own businesses and the development of entrepreneurial competencies. They reduce psychological barriers, increase confidence in one's abilities, and stimulate positive entrepreneurial decisions. Psychological interventions are effective in a variety of cultural and regional contexts, which confirms their versatility and adaptability. The conclusions drawn from the empirical research on the use of behavioural economics principles to design interventions that encourage people to become entrepreneurs are multifaceted and include several key aspects.

Firstly, using the example of the University of Silesia in Katowice, it can be stated that the introduction of behavioural economic principles into curricula and training for future entrepreneurs has proven to be extremely effective. Workshop participants were given the opportunity to develop into more conscious, flexible, and innovative entrepreneurial individuals, better equipped to adapt to a dynamic and unpredictable business environment. This suggests that behavioral interventions can effectively overcome the psychological barriers and doubts that often hold back potential entrepreneurs.

Secondly, interactive training workshops and joint agreements on competencies for specific profiles enabled TTO employees to apply theoretical knowledge in practice. This not only reinforced their knowledge but also contributed to the development of practical competencies essential for supporting researchers, entrepreneurs, and students planning to start a business.

Individual consultations with coaches and experts in behavioural economics also proved to be a valuable element of the study. The personalised approach allowed participants to receive specific advice and recommendations that met their individual needs and challenges, which contributed to greater self-confidence and readiness to implement their business ideas.

Despite the positive results, the study has certain limitations. These include the limited applicability of the selected methods and the need for further adaptation to specific regional and cultural contexts. Behavioural

economic approaches, such as nudges, simplified procedures related to supporting entrepreneurs and researchers are highly effective in stimulating entrepreneurship. They help to reduce psychological barriers, increase motivation and create a favourable regulatory environment for new businesses.

Credit Authorship Contribution Statement

Maria Garus: Project administration, Writing – original draft, Supervision, Writing – review and editing.

Olaf Flak: Methodology, Writing – original draft.

Barbara Kozusznik: Formal analysis, Writing – original draft, Visualization.

Virginia Barba Sánchez: Investigation, Formal analysis, Writing – review and editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-Assisted Technologies

The authors declare that generative AI or AI-assisted technologies were not used in any way to prepare, write, or complete this manuscript.

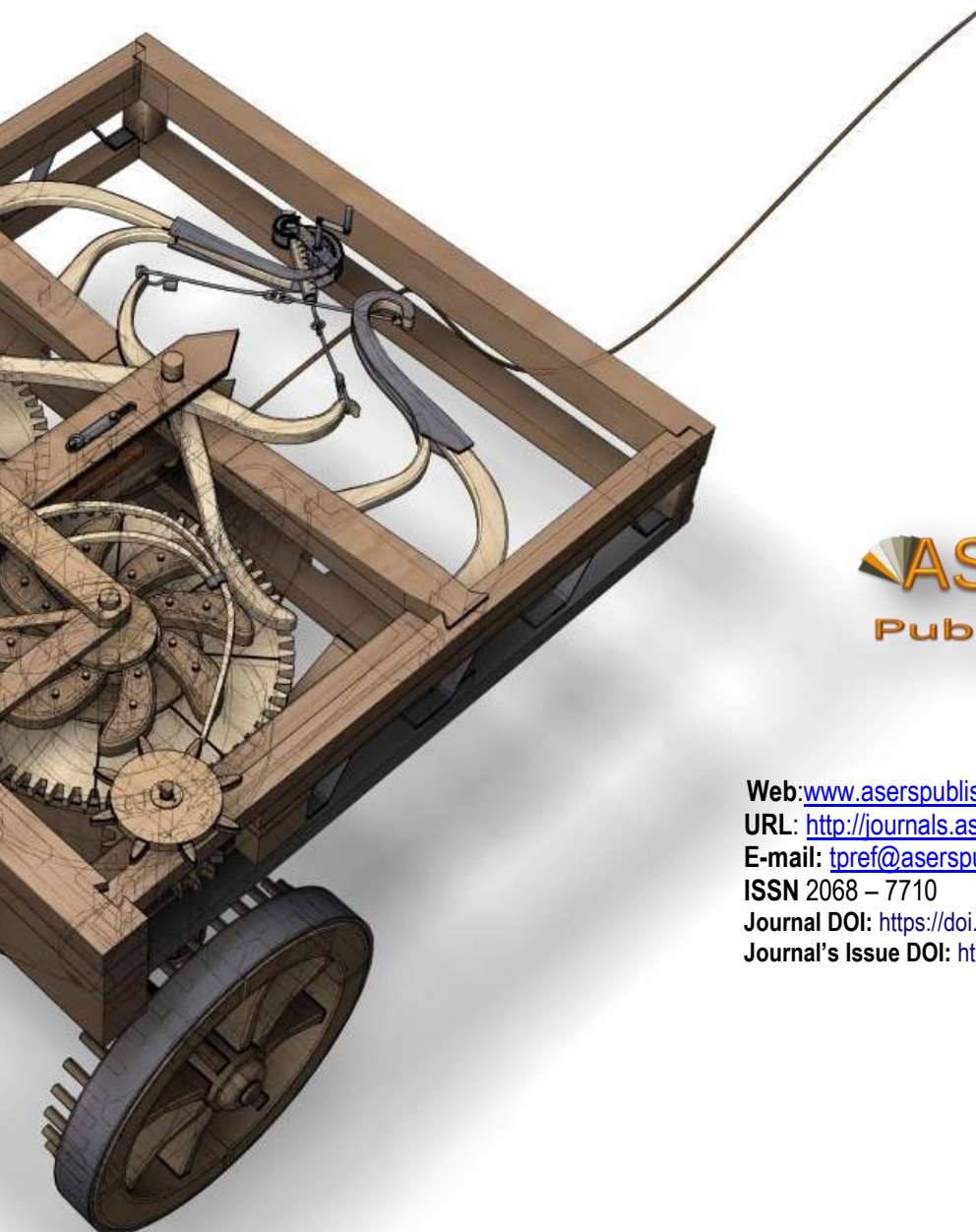
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