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Work package 1

Final report on Entrepreneurial Ecosystem in Azerbaijani Higher Education Institutions

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1 Introduction

This survey is conducted as part of the "Enhancing Sustainable Entrepreneurial Ecosystem in Higher Education of Azerbaijan (ENGAGE)" initiative under the Erasmus+ program funded by the European Union. The primary objective of this survey is to evaluate the existing landscape of entrepreneurship within institutions of higher education in Azerbaijan, with a specific focus on discerning strengths, potential opportunities, and areas that necessitate improvement within their entrepreneurial ecosystems.

This paper undertakes a thematic analysis of the entrepreneurial landscape within Azerbaijani universities, leveraging insights derived from the data furnished by these institutions. The analysis centers on five overarching themes, each with its associated sub-themes. The study delivers a holistic portrayal of the strategies, organizational structures, teaching methodologies, research initiatives, and challenges encountered by Azerbaijani universities in cultivating entrepreneurship within the higher education system.

The significance of entrepreneurship in higher education is a growing area of interest for Azerbaijani universities. This analysis aims to explore the various dimensions of entrepreneurship within these institutions, shedding light on the key themes that shape their approach. Thus, this research involves the characteristics of the explorative research design, which aims to explore the entrepreneurial dimension in 11 Azerbaijan universities. The following project partners actively participated in the survey:

- Mingachevir State University
- Baku Business University
- Azerbaijan State University of Economics
- Azerbaijan Technical University
- Baku Higher Oil School
- Azerbaijan Tourism and Management University
- Azerbaijan State University of Culture and Arts
- Ganja State University
- Nakhchivan State University
- Azerbaijan State Agricultural University
- Odlar Yurdu University

In this regard, as the study does not aim to satisfy the research questions in the current phases of the study, coding of the segments of the data was conducted by inductive research approach. Subsequently, to identify new concepts in other words themes and sub-themes of the study open coding method has been chosen for starting first cycle of the coding process. Before starting thematic analyses, patterns of the raw data have been detected and every appropriate segments to the themes and sub-themes assigned to the categories.

This analysis provides a comprehensive overview of the entrepreneurial dimensions within 11 Azerbaijani universities. Identified themes and sub-themes cover the strategic planning, performance indicators, implementation of entrepreneurial objectives,

organizational capacity, teaching and learning approaches, research initiatives, and challenges faced by institutions. The findings contribute valuable insights to the ongoing discourse on fostering entrepreneurship within higher education, offering a nuanced understanding of the strategies and challenges encountered by Azerbaijani universities in building vibrant entrepreneurial ecosystems.

2 Leadership and Governance

Leadership and governance play a pivotal role in fostering innovation and entrepreneurship at universities by setting the strategic vision and creating an enabling environment. Effective leadership encourages a culture of innovation, supports the integration of entrepreneurship into academic programs, and facilitates collaborations with industry, ultimately driving the institution towards entrepreneurial excellence. Due to the survey result below main headings have been indicated to align with the results.

Universities’ Strategic Plan: Considering the given qualitative data from Azerbaijani universities, the universities display a commitment to entrepreneurship through their strategic plans. These documents outline a comprehensive vision for integrating innovation and entrepreneurship within the academic landscape. Objectives within these plans often focus on creating infrastructure, supporting innovation activities, and advancing knowledge.

Table 2.1. Respondents' perceptions in the context of developing an entrepreneurial mindset in institutional strategic planning.

Statistics		
2.1 How do you rate the level of emphasis placed on developing entrepreneurial mindset in your institution's strategic planning?		
N	Valid	11
	Missing	0
Mean		3.45
Median		4.00
Mode		4
Std. Deviation		.934
Range		3

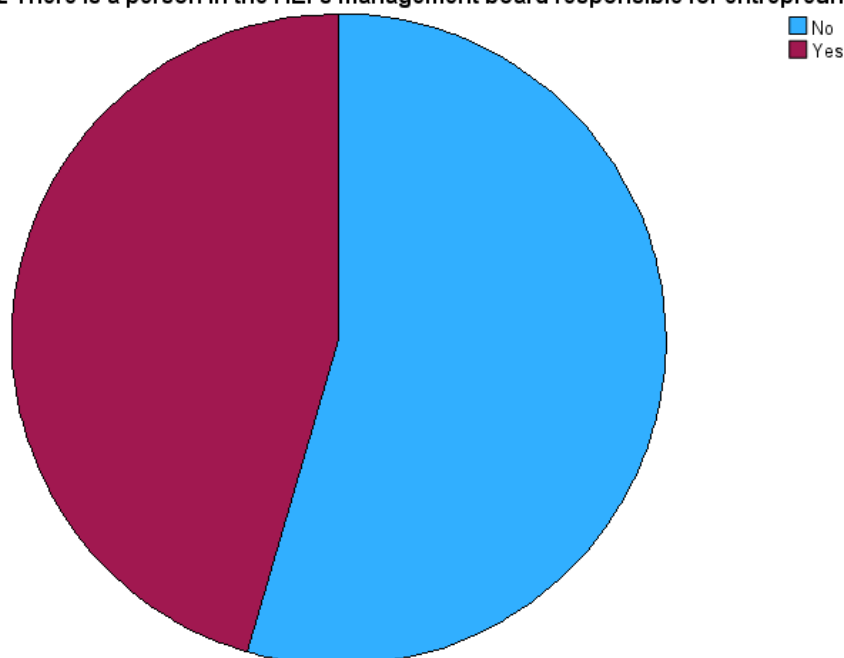
The table 1 provides information on respondents’ perceptions in the context of developing an entrepreneurial mindset in institutional strategic planning. The average rating given by respondents is 3.45 out of a possible range of 1 to 5, which suggests a

moderately positive perception. The median, which is 4.00, is also towards the positive end of the scale, which is an indication that the majority of responses tend to be on the positive side. Also a significant number of respondents selected 4 in case of mode indicating a common viewpoint of positive emphasis. The standard deviation is 0.934, suggesting a degree of consensus among respondents in their ratings.

2.2 There is a person in the HEI's management board responsible for entrepreneurial activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	6	54.5	54.5	54.5
	Yes	5	45.5	45.5	100.0
	Total	11	100.0	100.0	

2.2 There is a person in the HEI's management board responsible for entrepreneurial activities

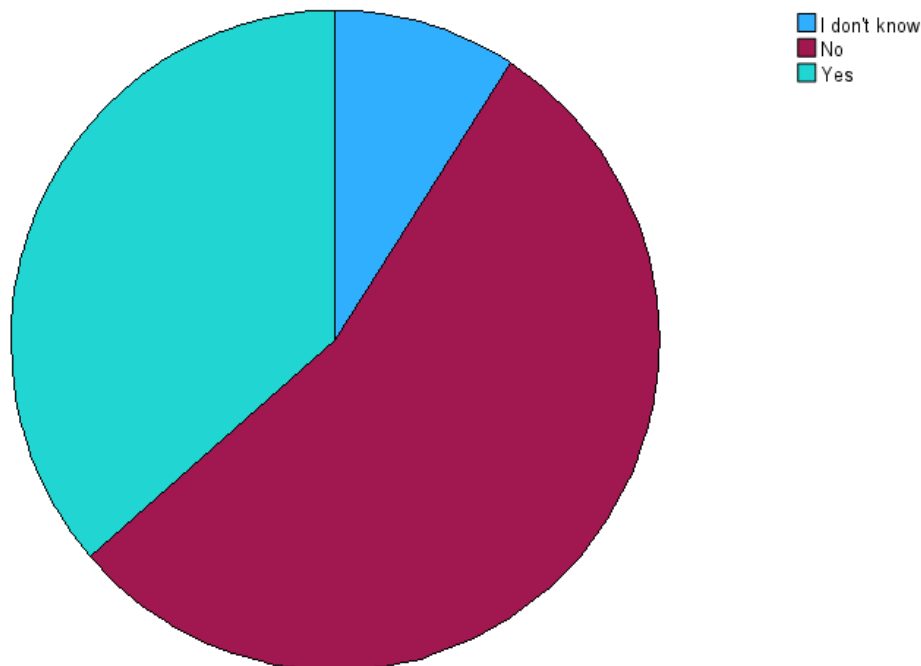


The pie charts and the tables provide information on the responses to several statements related to entrepreneurial activities within the universities. For question 2.2, which is about a person in management board responsible for entrepreneurial activities, ***over half of the respondents fall into the "No" category***, indicating that a significant proportion of institutions do not have a designated person on the management board for such activities. ***This is an indication that this representation is somewhat ignored by the university administrations.***

2.3 There are clearly set performance indicators on institutional strategy to monitor the entrepreneurial activities.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I don't know	1	9.1	9.1	9.1
	No	6	54.5	54.5	63.6
	Yes	4	36.4	36.4	100.0
	Total	11	100.0	100.0	

2.3 There are clearly set performance indicators on institutional strategy to monitor the entrepreneurial activities.



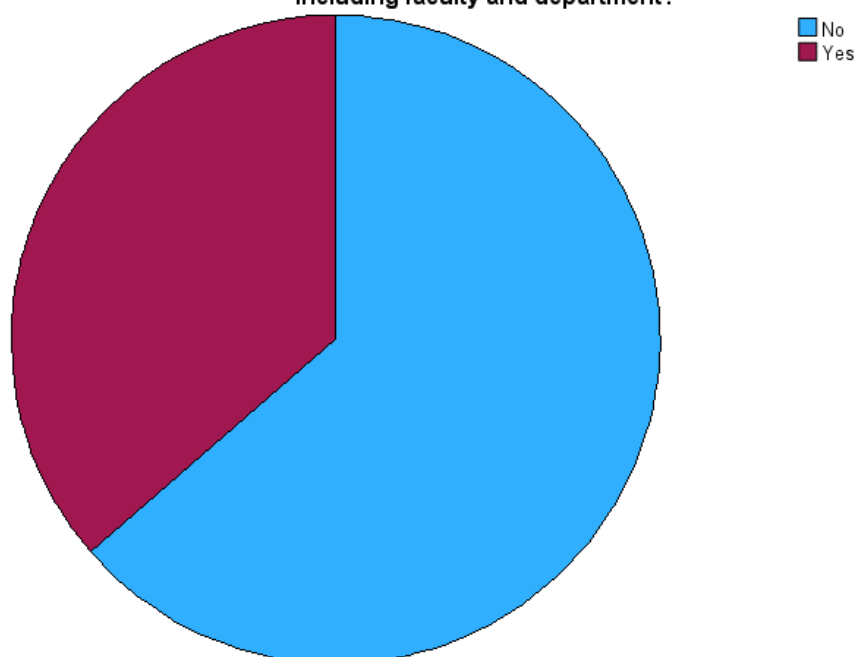
As for question 2.3, performance indicators on institutional strategy for entrepreneurial activities, a substantial portion of respondents (54.5%) reported that there are no clearly set performance indicators on the institutional strategy to monitor entrepreneurial activities. This is a deficiency in terms of measuring the level of entrepreneurship in universities and carrying out the activities required for development.

Within our institutional strategy, specifically outlined in Goals 6 and 12, there are well-defined performance indicators to meticulously monitor entrepreneurial activities. These indicators span categories such as Employee Engagement and Satisfaction, Educational and Training Programs, and Collaborations and Partnerships. Notably, new Key Performance Indicators (KPIs) have been meticulously developed for all university activities, slated for implementation starting the 2024-2025 academic year.

2.4 University set specific indicators to effectively implement its entrepreneurship objectives at various levels, including faculty and department?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	7	63.6	63.6	63.6
	Yes	4	36.4	36.4	100.0
	Total	11	100.0	100.0	

2.4 University set specific indicators to effectively implement its entrepreneurship objectives at various levels, including faculty and department?



Finally, for question 2.4, related to specific indicators for entrepreneurship objectives at various levels, significant majority of respondents (63.6%) indicated that the university has not set specific indicators to effectively implement its entrepreneurship objectives at various levels, including faculty and department. However, the atmosphere of ownership in universities should start at the micro level, at the level of individuals. It is not enough to have relevant objectives in the general strategy plan. The objectives should be set at the level of relevant departments and even individuals, they should be constantly monitored, and the results should be discussed and taken into account in new strategic actions.

In general, responses collectively suggest a potential gap in organizational structures and strategies related to entrepreneurial activities within the surveyed universities. ***Lack of a designated person on the management board for entrepreneurial activities (Table 2.2) and absence of specific indicators for monitoring and implementing entrepreneurial objectives (Tables 2.3 and 2.4) might indicate areas for improvement in fostering and supporting entrepreneurial initiatives.*** These insights can guide further investigation and decision-making processes within the

institutions to strengthen their entrepreneurial initiatives and better integrate them into their overall strategies.

At a faculty level, a focus on entrepreneurship-related training and industry collaboration is emphasized, while at the department level, efforts include supporting student clubs, competitions, and initiatives to cultivate entrepreneurial thinking. New Key Performance Indicators (KPIs) are set for university-wide activities, effective from the 2024-2025 academic year.

In alignment with Strategic Objective 2: Transforming into an Entrepreneurial University, Priority 2.1 outlines the implementation of the Entrepreneurial University Model in departments. This involves comprehensive workshops for faculty training, targeting 75% departmental faculty engagement, as well as encouraging at least 50% faculty involvement in start-up projects. Additionally, initiatives focus on actively engaging 30% of the student body in entrepreneurial projects each semester through platforms, programs, and bi-annual innovation competitions.

Under Priority 2.2: Development of University-Industry Cooperation, strategies include establishing a "Education-Science-Industry" Union, launching a University-Industry Cooperation Center, securing representation in local industrial parks, initiating business incubators, creating subsidiary enterprises, establishing dedicated departments within industrial enterprises, and developing industrial laboratories on campus. These endeavors aim to strengthen collaboration and innovation between the university and industry sectors.

In terms of activities the university organize to foster an entrepreneurial culture, the university is in the process of establishing a Start-up Center, with identified activities aimed at fostering entrepreneurship. Annual events such as startup weeks and external training sessions, like the Creative Spark program, contribute to entrepreneurial education. The university regularly hosts workshops, seminars, startup competitions, hackathons, and innovation challenges, providing platforms for students to pitch ideas, secure funding, and develop innovative solutions. Initiatives like the "LEAN" startup school, conducted semiannually by the Innovation and Research Center, focus on incubation basics and pitching skills. Meanwhile, the Innovation and Research Centre supports potential startups, offering guidance and hosting info sessions and workshops. In contrast, another institution does not currently conduct activities to foster entrepreneurship but organizes various training sessions and events, such as business weeks, startup competitions, and visits to EU universities through the ENGAGE project. Additionally, workshops and projects on entrepreneurship are regularly held at the University of Economics.

2.6 The university is a driving force for entrepreneurship development in the wider regional, social and community environment.		
N	Valid	11
	Missing	0
Mean		3.00
Median		3.00
Mode		3
Std. Deviation		1.095
Range		4

For question 2.6, which is about the university being a driving force for entrepreneurship development in the region, the average rating is 3.00 suggests a somewhat neutral perception. The mode is 3, indicating that “Neutral” is the most frequently occurring response. The standard deviation is 1.095 which suggests greater variability in responses, indicating that opinions are more diverse. However, universities should undertake important duties such as being the locomotive and guidance in social and economic life, and entrepreneurship in the society.

Inclusion of Entrepreneurship-related Objectives: According to the given data, strategic goals directly related to innovation and entrepreneurship form a critical aspect of the university’s strategic plan. ***The objectives underscore the institutions commitment to fostering an entrepreneurial spirit, often manifesting in the form of dedicated initiatives and support mechanisms.***

Implementation of Entrepreneurial University Model: According to the given data, departments within some universities actively try to implement the Entrepreneurial University Model. This involves establishing collaborations with industries, fostering a culture of innovation, and creating pathways for university-industry partnerships. There is no information about other universities approaches, but more than half of the universities’ emphasis is on transforming academic departments into hubs of entrepreneurial activity. There is no information about other universities approaches,

Future Vision: The strategic development documents of Azerbaijani universities, like the UNEC Strategic Development 2030, reveal a future vision. This vision indicates a collective aspiration among institutions to evolve into entrepreneurial university. The focus is on preparing students for the challenges of a dynamic and competitive future.

Performance Indicators: Performance indicators (KPIs) embedded in university strategies provide a measurable framework for assessing success. These indicators often revolve around employee engagement, educational programs, and collaborations. Periodic reviews and the introduction of new KPIs further demonstrate a commitment to continuous improvement in some universities from 11 universities (less than half).

Inclusion of KPIs in Strategy: The inclusion of KPIs in the overall strategy signifies a strategic approach to entrepreneurship for few specific universities that provided the

data in the study. According to them, these indicators provide a quantitative and qualitative assessment of the effectiveness of initiatives, ensuring that university activities align with entrepreneurial goals.

Implementation of Entrepreneurial Objectives: Entrepreneurial objectives are somehow implemented at various levels within Azerbaijani universities. At the faculty level, participation in entrepreneurship-related training and collaboration with industry are key components for approximately half of the universities that participated in the study. New KPIs for departmental activities indicate a structured approach to integrating entrepreneurship.

Faculty Level: According to the faculty members of less than half universities in the survey, actively participate in entrepreneurship-related training and collaborate with industry partners. This involvement is a testament to the commitment of individual faculty members to promote an entrepreneurial mindset within the academic community for the universities that indicated the information but there is no data about other universities.

Department Level: Very few departments within universities actively support student clubs, competitions, and initiatives. The strategic objective of transforming into an entrepreneurial university emphasizes the collective effort at the departmental level to integrate entrepreneurship into the academic fabric.

The university's strategic plan outlines a commitment to fostering innovation and entrepreneurship. Specific objectives include establishing infrastructure, supporting innovation activities, assisting startup ideas, and enhancing knowledge and skills for entrepreneurship.

Key initiatives encompass:

Supporting Startups: Providing essential services and resources, such as mentorship programs, funding access, co-working spaces, and partnerships with venture capitals, to promote economic development.

Encouraging Research and Development: Fostering entrepreneurial ventures through investments in research projects, collaborations with industry experts, and the establishment of a technology transfer office.

Integration of Entrepreneurship in Education: Embedding entrepreneurship into the curriculum through dedicated courses, workshops, and extracurricular activities to equip students with essential skills for business management.

Recent activities, particularly student-led initiatives and university involvement in related projects, have significantly raised awareness of entrepreneurial innovation and development.

The forthcoming strategic plan (2024-2028) emphasizes the transformation of the university into an Entrepreneurial University. This involves implementing the Entrepreneurial University Model in departments and fostering University-Industry Collaboration. The UNEC Strategic Development 2030 further envisions the university's evolution into an entrepreneurial institution, with ongoing initiatives like entrepreneurship education and the operation of the UNEC Business Incubator.

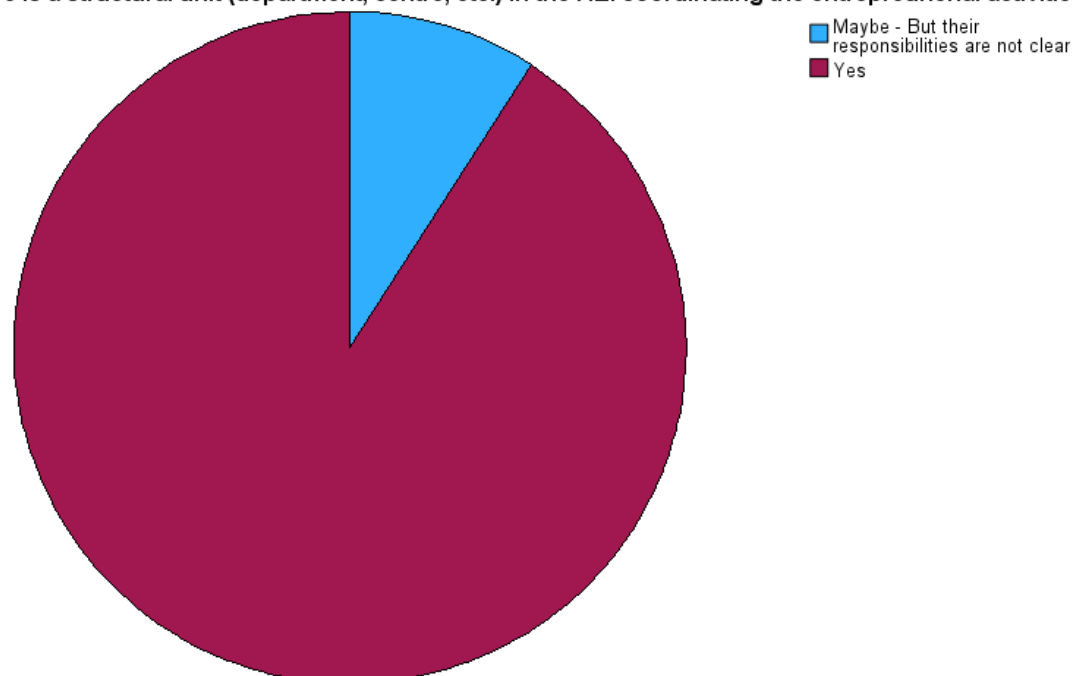
3 Organizational Capacity, People and Incentivization

Organizational capacity, people, and incentives are integral components in fostering innovation and entrepreneurship at universities. Building organizational capacity involves creating structures and processes that support entrepreneurial initiatives, while engaging and incentivizing individuals through mentorship programs, professional development opportunities, and recognition schemes enhances a culture conducive to innovation and entrepreneurial success within the academic community.

3.1 There is a structural unit (department, centre, etc.) in the HEI coordinating the entrepreneurial activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe - But their responsibilities are not clear	1	9.1	9.1	9.1
	Yes	10	90.9	90.9	100.0
	Total	11	100.0	100.0	

3.1 There is a structural unit (department, centre, etc.) in the HEI coordinating the entrepreneurial activities



In response to question 3.1, the survey findings reveal a strong consensus among respondents, with an overwhelming majority (90.9%) affirming the existence of a dedicated structural unit at their respective universities for coordinating entrepreneurial activities. This high level of agreement signifies a positive organizational stance and proactive coordination, indicating robust recognition and

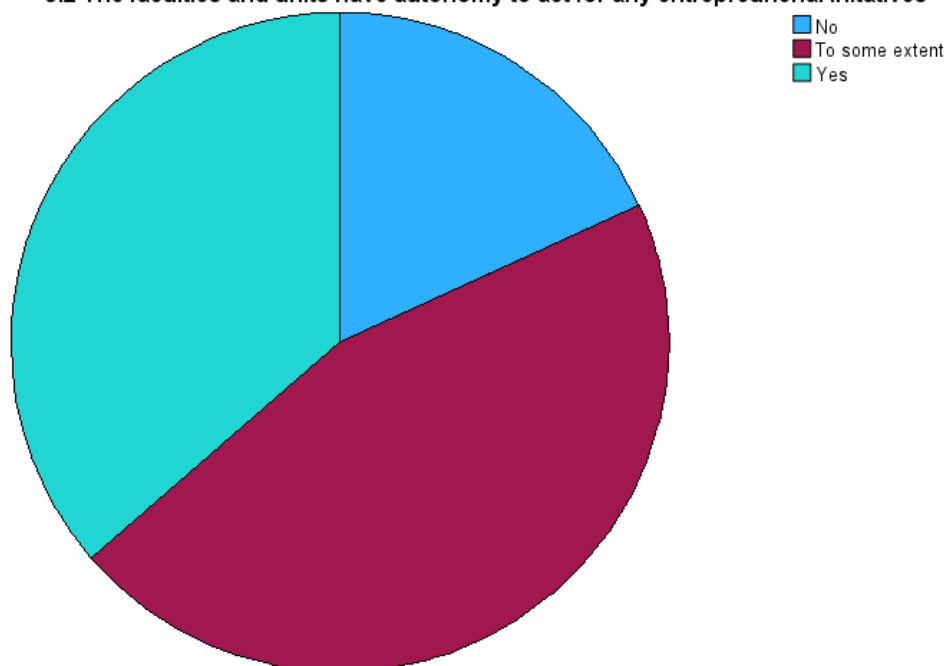
support for entrepreneurial initiatives within the Higher Education Institution (HEI). **This alignment underscores the commitment to fostering a conducive environment for entrepreneurship within the academic setting.**

The entrepreneurial activities within the surveyed universities are strategically coordinated by various dedicated structural units. These include the Innovation and Technology Transfer Office situated within the Department of Innovations, overseen by a Vice-Rector for Science and Innovation. Different units such as Technological Transfer, Scientific Research, and Analyses collaborate under this leadership. In some universities the entrepreneurial activities are led by University-Industry Cooperation Departments. Additionally, universities have established specific entities such as the Innovation and Research Centre, the Center for Entrepreneurship and Innovation, born out of the ENGAGE Project, and standalone Innovation Centers. Other vital units contributing to entrepreneurial endeavors include the University-Industrial Cooperation & Lifelong Learning Center, Research and Development Department, Smartech and Innovation Center, Career Center, University-Industry Cooperation Department, and the UNEC Business Incubator. These diverse structural units play integral roles in driving innovation, facilitating technology transfer, fostering entrepreneurial initiatives, and promoting collaborative ventures between academia and industry. ***However, it is clear that existing the relevant infrastructure is not sufficient; But it is a necessary step to effectively enhance the entrepreneurial activities of universities.***

3.2 The faculties and units have autonomy to act for any entrepreneurial initiatives

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	2	18.2	18.2	18.2
	To some extent	5	45.5	45.5	63.6
	Yes	4	36.4	36.4	100.0
	Total	11	100.0	100.0	

3.2 The faculties and units have autonomy to act for any entrepreneurial initiatives



As for question 3.2, autonomy of faculties and units for entrepreneurial activities, nearly half of the respondents (45.5%) fall into the "To some extent" category, indicating a moderate level of autonomy. ***There is a range of autonomy among faculties and units for entrepreneurial initiatives, which suggests that while some entities have the freedom to act independently for entrepreneurial initiatives, others may face constraints or require more centralized decision-making.*** Overall, the presence of a structural unit coordinating entrepreneurial activities is a positive aspect, demonstrating a centralized effort to support entrepreneurship within the HEI. The varying degrees of autonomy among faculties and units require a more detailed examination of specific policies, structures, and decision-making processes. ***In fact, it is a matter of debate to what extent HEI's are autonomous before faculties and units.*** However, the presence of a coordinating structural unit for entrepreneurial activities reflects a positive, centralized effort within the Higher Education Institution (HEI) to support entrepreneurship.

Statistics						
		3.3 The university has a sustainable financial strategy in place to support entrepreneurial development.	3.4 The university's entrepreneurial objectives are supported by a wide variety of funding sources/investment, including investment by external stakeholders.	3.5 The HEI is open to engaging and recruiting individuals with entrepreneurial experience from private sector (lectures, seminars, practical experience sharing)	3.6 The university invests in staff development to support its entrepreneurial agenda.	3.8 There are clear incentives and rewards for staff who actively support the university's entrepreneurial agenda.
N	Valid	11	11	11	11	11
	Missing	0	0	0	0	0
Mean		2.45	2.73	3.64	3.00	2.45
Median		3.00	3.00	4.00	3.00	2.00
Mode		3	4	4	3	2
Std. Deviation		.934	1.191	1.027	1.095	1.036
Range		3	3	3	4	3

The following passages provide insights on statistical information on five different aspects related to entrepreneurial development and support within the university. Question 3.3 asks for participant opinion about sustainable financial strategy at the university. Here the mean score of 2.45 indicates ***a moderately positive perception of the university's financial strategy to support entrepreneurial development.*** The median of 3.00 suggests that, on average, respondents consider the financial strategy to be somewhat sustainable. The mode being 3 indicates a concentration of responses around a moderate level of sustainability. The relatively high standard deviation (0.934) and a range of 3 suggest some variability in opinions regarding the sustainability of the financial strategy. When it comes to question 3.4, the mean score of 2.73 indicates a moderately positive perception that entrepreneurial objectives are supported by a variety of funding sources. The median of 3.00 and mode of 4 indicate some variability in responses, with a tendency towards positive views. The higher standard deviation (1.191) and a range of 3 suggest diversity in opinions about the extent to which entrepreneurial objectives are supported financially. As for question 3.5, openness to engaging and recruiting individuals with entrepreneurial experience, the mean score of 3.64 indicates a relatively high level of perception that the university is open to engaging and recruiting individuals with entrepreneurial experience. The median of 4.00 and mode of 4 indicate a consistent and positive view. However, these individuals are not very keen on this issue. Because cooperation with universities does not seem very attractive for individuals with entrepreneurial experience.

Regarding the number of guest lecturers from enterprises (3.5.1), institutions take pride in having a diverse cadre of teaching and administrative staff who not only possess strong academic credentials but also actively participate in business ownership. However, it's noteworthy that there is currently no specific data collected

on the extent of this engagement. Many lecturers contribute to the entrepreneurial ecosystem by inviting guest speakers who bring real-world entrepreneurial insights into the academic environment, although the exact numbers regarding this practice are not available. The institution values the practical experience and industry connections these educators bring to enrich the educational experience for students.

The responses indicate varying levels of specificity regarding the number of teaching staff with entrepreneurial or private sector backgrounds at the respective institutions (3.5.2). One respondent notes that, **for innovation-driven entrepreneurship, the number is 1, while for traditional entrepreneurship, it is 5. Another response simply states "10," providing a numerical count without specifying the type of entrepreneurship.** A third response acknowledges the presence of entrepreneurial teaching staff but emphasizes the lack of statistical data to specify the exact number. The variations in the responses underscore the need for more comprehensive data collection mechanisms to precisely quantify the entrepreneurial backgrounds of teaching staff.

Question 3.6 investigates if the universities do investment in staff development for entrepreneurial agenda. **Here the mean score of 3.00 suggests a moderately positive perception that the university invests in staff development to support its entrepreneurial agenda.** The median of 3.00 indicates a central tendency, but the mode being 3 suggests some variability in responses. The standard deviation of 1.095 and a range of 4 suggest diversity in opinions about the extent of investment in staff development.

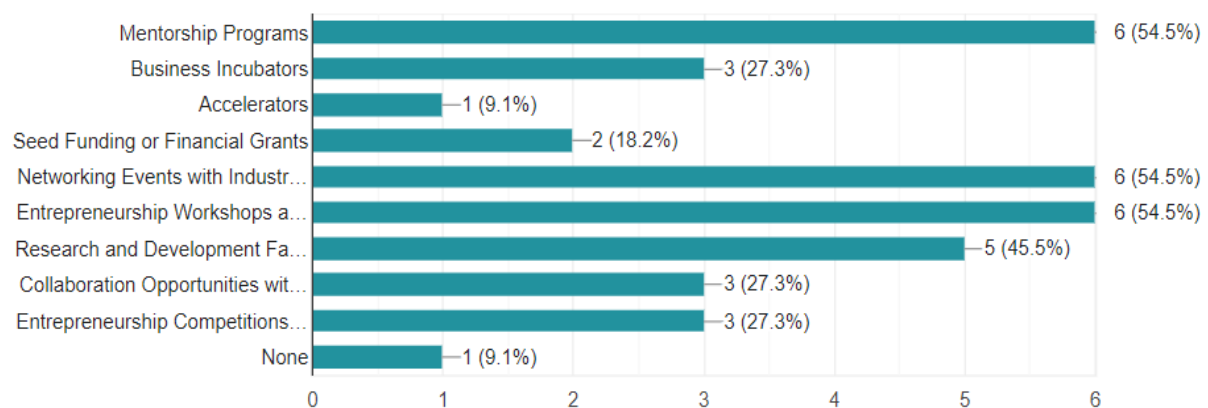
Finally, question 3.8 search for answers regarding university incentives and rewards for staff supporting entrepreneurial agenda. In this section the mean score of 2.45 indicates a moderately positive perception of the existence of clear incentives and rewards for staff supporting the entrepreneurial agenda. The median of 2.00 suggests a tendency towards lower perceptions in this aspect. The mode being 2 indicates a concentration of responses around a lower level of perceived incentives. The standard deviation of 1.036 and a range of 3 suggest some variability in opinions about the clarity and effectiveness of incentives and rewards.

In general, **the universities are open to seeking assistance in terms of financial strategies and support to further their academic and entrepreneurial objectives** with some variability in opinions. There is a high level of positive perception regarding the openness to engaging individuals with entrepreneurial experience. The investment in staff development and the clarity of incentives and rewards show moderate positive perceptions but with more variability in opinions. **The findings suggest that while there is generally positive sentiment, there may be areas where communication and alignment between staff perceptions and university objectives could be improved. This requires a systematic approach to the subject.**

3.7 What types of support structures does your institution offer to support entrepreneurial projects initiated by students and faculty?



11 responses



For question 3.7, regarding type of support, respondents said that Mentorship Programs, Collaboration Opportunities with Businesses, Networking Events with Industry Experts, Research and Development Facilities, Collaboration Opportunities with Businesses, and Entrepreneurship Workshops and Training Sessions are most frequent supports provided by universities. Acceleration services seems to be provided only by one university.

To sum up, minority universities actively supports and incentivizes participation in startup events by allocating funds to cover expenses such as travel and accommodation for both students and staff. Additionally, successful participants, be they students or staff members, may receive monetary rewards as recognition for their achievements. However, it's worth noting that there is currently no established and accepted mechanism for these incentives, and the rewarding process lacks a systematic structure. Despite the absence of a formalized system, the university's commitment to funding and rewarding individuals engaging in startup activities underscores its dedication to fostering entrepreneurship within the academic community.

4 Entrepreneurship development in teaching and learning.

Entrepreneurship development in teaching and learning is integral to fostering innovation and entrepreneurship at the universities. Incorporating entrepreneurial principles into the academic curriculum equips students with the essential knowledge, skills, and mindset needed for entrepreneurial endeavors. By integrating real-world case studies, practical projects, and industry collaborations, universities create an immersive learning environment that nurtures creativity and problem-solving. Moreover, experiential learning opportunities, such as internships, startup competitions, and mentorship programs, provide students with hands-on experience and exposure to entrepreneurial processes.

Statistics				
		4.1 Entrepreneurship education is integrated into the curriculum across various study profiles, including fields like medicine, engineering, computer science etc.	4.2 Academic staff take an entrepreneurial approach to develop entrepreneurial skills among students	4.3 University encourages or requires students to undertake entrepreneurial projects
N	Valid	11	11	11
	Missing	0	0	0
Mean		2.73	2.64	3.09
Median		3.00	3.00	4.00
Std. Deviation		1.272	.924	1.446
Range		4	3	4
Sum		30	29	34

The provided table contains information on statistics for questions related to entrepreneurship education, the entrepreneurial approach of academic staff, and the encouragement for students to undertake entrepreneurial projects. In terms of question 4.1, which is about integration of entrepreneurship education into the curriculum, the average rating is 2.73, indicating a moderate perception that entrepreneurship education is integrated into the curriculum across various study profiles. The median is 3.00, suggesting some variability in responses and high standard deviation (1.272) indicating a relatively high level of variability in responses. The range is 4, indicating a wide spread of responses.

The same can be said for question 4.2 in terms of mean (2.64) reflecting a moderate perception that academic staff take an entrepreneurial approach to develop

entrepreneurial skills among students. For question 4.3 the average rating is 3.09, indicating a moderately positive perception that the university encourages or requires students to undertake entrepreneurial projects. Here the standard deviation is 1.446, indicating a relatively high level of variability in responses.

Respondents express varied perspectives on the utilization of particular methodologies associated with strongly agreeing to question 4.2.1. While some emphasize disagreement or a lack of strongly agreeing, others provide insights into implemented methodologies. Mentioned methodologies include mentorship programs and the incorporation of real-world projects to enhance entrepreneurial learning experiences. Conversely, some respondents express a lack of methodologies or limited application of entrepreneurial teaching methods within their institutions. The diversity of responses underscores the different approaches and challenges institutions face in implementing effective methodologies to foster entrepreneurship in their teaching practices.

While one respondent expresses disagreement with question 4.3.1, another, who strongly agrees, provides examples of entrepreneurial projects in which students are or have been actively involved. This shows that there are very different approaches among universities. Noteworthy initiatives include ENACTUS, ROBOTEX, and Science and Innovation Camp. These projects likely serve as platforms for students to apply entrepreneurial principles, foster innovation, and gain practical experience in real-world settings. The contrast in responses highlights differing perspectives on the extent of entrepreneurial project involvement among students within the surveyed institutions.

In general, it is crucial for the university to ensure that entrepreneurship education is not only integrated into the curriculum but also effectively delivered across various study profiles. The perceived variability in responses may indicate areas for improvement in standardizing and enhancing entrepreneurship education practices. The variability in responses for encouraging entrepreneurial projects may indicate differing practices or policies across departments. Identifying successful models and sharing best practices can contribute to a more consistent and impactful approach to fostering entrepreneurial projects. ***In summary, while there is a perception that entrepreneurship education is integrated into the curriculum and students are encouraged to undertake entrepreneurial projects, the variability in responses suggests the need for a more standardized and effective approach. In addition, it is important to include the entrepreneurship as a core course in different fields.***

In response to the question (4.4) about training or professional development opportunities for faculty in teaching entrepreneurship, diverse approaches are evident across the surveyed institutions. Some mention occasional training, often in the context of various projects, while others highlight specific programs such as mentorship and entrepreneurial mindset training. The provision of advice and support for staff or students with startup ideas, assistance in patent acquisition, and participation in national and international events are noted as ways to foster entrepreneurship potential. Additionally, engagement in dual-degree programs and seminars conducted by external lecturers contribute to faculty development. Some institutions organize workshops, seminars, and training sessions focused on problem and project-based teaching

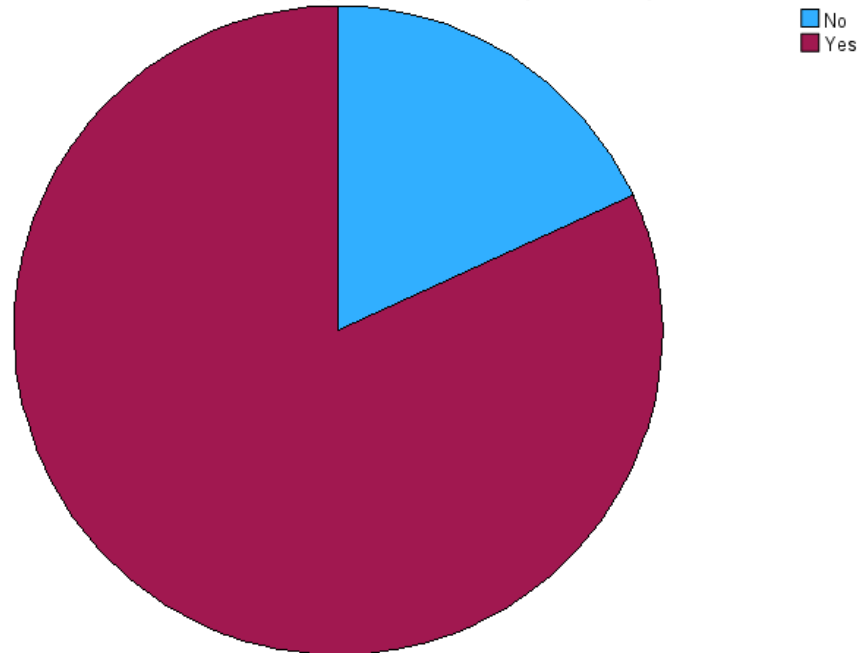
methodologies to enhance faculty skills in implementing interactive, real-world problem-solving approaches in their teaching. While acknowledging ongoing efforts, some institutions recognize the need for more systematic and comprehensive integration of these teaching strategies into the curriculum to better promote experiential learning and practical application. Faculty members are generally encouraged to undertake entrepreneurship-related training, with some institutions having specific resources like Business Incubator open to the entire university community. The various approaches reflect a commitment to supporting faculty in delivering effective entrepreneurship education.

The institutions offer a range of subjects or courses designed to enhance entrepreneurship competencies across various study fields (4.5). Examples include "Fundamentals of Entrepreneurship" and "Introduction to Business" offered in multiple programs, specialized courses such as "Entrepreneurship in Tourism" and "Entrepreneurial Finance". Other offerings encompass "Entrepreneurship activities in the fields of culture and arts," "Transformation of Innovation into Business and Entrepreneurship," and courses like "Principles of Entrepreneurship and Business" and "Project Management." Some institutions include subjects like "Social Entrepreneurship," "Business Design Courses," and specialized courses on "Innovation Management." While entrepreneurship is integrated into selected programs, the scope varies, with some institutions offering it as a standalone course and others incorporating it into related fields like business administration and management. Overall, the diverse array of subjects reflects a concerted effort to instill entrepreneurial competencies across different academic disciplines.

4.6 Does your institution collaborate with the business or entrepreneurial community to enhance learning experiences in entrepreneurship?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	2	18.2	18.2	18.2
	Yes	9	81.8	81.8	100.0
	Total	11	100.0	100.0	

4.6 Does your institution collaborate with the business or entrepreneurial community to enhance learning experiences in entrepreneurship?

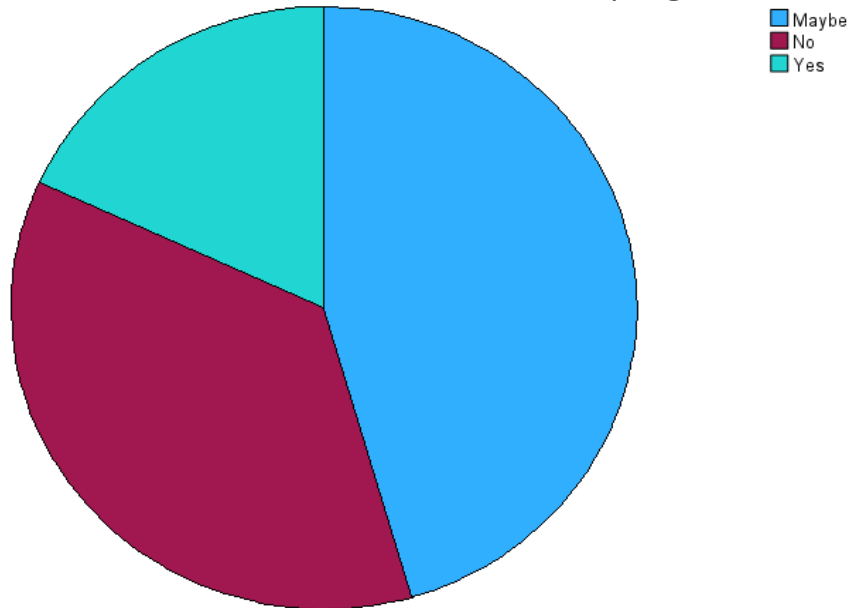


The provided table and pie chart summarizes responses to the question ***"Does your institution collaborate with the business or entrepreneurial community to enhance learning experiences in entrepreneurship?"*** Here, "Yes" was the most popular answer on the pie chart, representing the 81.8% of respondents who indicated that their institution collaborates with the business or entrepreneurial community. The "No" segment is smaller, representing the 18.2% of respondents who reported that their institution does not collaborate in this manner. In summary, the pie chart visualizes a strong positive trend in institutions collaborating with the business or entrepreneurial community to enhance learning experiences in entrepreneurship. ***The insights gained from this visualization can guide universities in further strengthening their collaborative efforts and exploring opportunities for continuous improvement. However, the quality of this cooperation, the measurable results achieved and its contribution to future development should be discussed.***

4.7 Has your institution conducted any follow-up studies to assess the impact of entrepreneurship education on students' career choices and successes post-graduation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maybe	5	45.5	45.5	45.5
	No	4	36.4	36.4	81.8
	Yes	2	18.2	18.2	100.0
	Total	11	100.0	100.0	

4.7 Has your institution conducted any follow-up studies to assess the impact of entrepreneurship education on students' career choices and successes post-graduation?



The provided table summarizes responses to the question *"Has your institution conducted any follow-up studies to assess the impact of entrepreneurship education on students' career choices and successes post-graduation?"* Here, "Maybe" is the largest segment, representing 45.5% of respondents who are uncertain about whether their institution has conducted follow-up studies. "No" is the second-largest segment, representing 36.4% of respondents who explicitly state that their institution has not conducted follow-up studies. Finally, "Yes" is the smallest segment, representing 18.2% of respondents who affirm that their institution has conducted follow-up studies. In summary, the pie chart visualizes a notable level of uncertainty among respondents regarding whether their institution has conducted follow-up studies on the impact of entrepreneurship education. ***This uncertainty presents an opportunity for institutions to enhance communication, improve awareness, and potentially consider implementing or improving follow-up studies to assess the long-term impact on students' career choices and successes post-graduation.***

5 Pathways for Entrepreneurs

Pathways for entrepreneurs play a pivotal role in raising awareness of the value and importance of developing entrepreneurial abilities equally among both staff and students. These pathways contribute to a culture that recognizes entrepreneurship as a valuable skill set, fostering an environment where individuals are inspired and encouraged to explore their entrepreneurial potential.

Statistics								
		5.1 The university raises awareness of the value/importance of developing entrepreneurial abilities amongst staff and students.	5.2 The university actively encourages individuals to become entrepreneurial.	5.3 The university provides opportunities to experience entrepreneurship.	5.4 The university provides support for individuals and groups to move from entrepreneurial ideas to action.	5.5 Mentoring by academic and industry personnel is available.	5.6 The university facilitates access to private financing for its potential entrepreneurs.	5.7 The university provides access to business incubation facilities.
N	Valid	11	11	11	11	11	11	11
	Missing	0	0	0	0	0	0	0
Mean		3.45	3.27	3.55	2.82	2.82	2.18	2.27
Median		4.00	3.00	3.00	3.00	3.00	2.00	2.00
Mode		4	3	3	3	2	2	2
Std. Deviation		.934	.786	.934	.982	1.168	.982	1.191
Range		3	3	3	3	4	3	3

The table presents analysis on statistics related to several questions (5.1 to 5.7) that inquire about various aspects of the university's efforts in fostering entrepreneurship among its staff and students. ***The question 5.1 investigates whether the university raises awareness of the importance of developing entrepreneurial abilities amongst staff and students.*** For this question the average rating is 3.45, indicating a positive perception of the university's efforts to raise awareness about the importance of developing entrepreneurial abilities. The mode is 4, indicating that 4 is the most frequently occurring response. The low standard deviation of 0.934 suggests a relatively narrow spread of responses, indicating a degree of agreement among respondents.

As for the question 5.2, the average rating is 3.27, reflecting a positive but slightly lower perception compared to Question 5.1. The median is 3.00, suggesting that while a majority of respondents provided positive ratings, there is some variability in responses. The mode is 3, indicating that "neutral" is the most frequently occurring response.

Question 5.3 asks if the university provides opportunities to experience entrepreneurship. Here the average rating is 3.55, suggesting a positive perception of the university providing opportunities for experiencing entrepreneurship, where the median is 3.00, indicating some variability in responses. The standard deviation is 0.934, much like that of Question 5.1, indicating a moderate level of agreement among respondents.

For question both 5.4 and 5.5 the average rating is 2.82, reflecting a somewhat less positive perception compared to the previous questions. When it comes to question 5.6 where it is investigated if the university facilitates access to private financing for its potential entrepreneurs, the average rating is 2.18, reflecting a less positive perception compared to the previous questions. For question 5.7 the average rating is 2.27, suggesting a moderate perception of the availability of business incubation facilities. In general, when analyzing questions from 5.1 to 5.6, it seems that participants have a positive perception. The universities generally receive positive ratings in terms of raising awareness, encouraging entrepreneurship, and providing opportunities to experience entrepreneurship. However, there is a variability in support services. Lower ratings in financing, mentoring, and business incubation facilities suggest potential areas for improvement or increased communication about existing resources. The institutions may benefit from further exploring the reasons behind the variability in responses for services such as mentoring, financing, and business incubation facilities. This can guide targeted improvements and enhancements in these areas to better support entrepreneurial initiatives among staff and students.

In conclusion, the analysis of survey responses (questions 5.1 to 5.7) indicates an overall positive perception of the universities' efforts in fostering entrepreneurship among staff and students. While there is strong agreement on the awareness-raising initiatives and the provision of opportunities for experiencing entrepreneurship, there is some variability in ratings for specific support services such as financing, mentoring, and business incubation facilities.

University – business/external relationships for knowledge exchange

University-business and external relationships for knowledge exchange play a vital role in fostering entrepreneurial activities within universities. These relationships create a symbiotic partnership where academia and industry collaborate to share expertise, resources, and insights.

Statistics						
		6.1 The university is committed to knowledge exchange with industry, society and the public sector.	6.2 The university demonstrates active involvement in partnerships and relationships with a wide range of stakeholders.	6.3 The university has strong links with incubators, science parks and other external initiatives, creating opportunities for dynamic knowledge exchange.	6.4 The university specifically supports staff and student mobility between academia and the external environment.	6.5 The university links research, education and industry (wider community) activities together to affect the whole knowledge ecosystem.
N	Valid	11	11	11	11	11
	Missing	0	0	0	0	0
Mean		3.36	3.82	3.00	3.45	2.91
Median		4.00	4.00	3.00	4.00	3.00
Mode		4	4	4	4	3
Std. Deviation		.809	.751	1.342	.934	.944
Range		2	2	4	3	3

Following paragraphs provides analysis of statistical information on five different aspects related to the university's commitment to knowledge exchange with industry, society, and the public section. For question 6.1, the mean score of 3.36 indicates a positive perception of the university's commitment to knowledge exchange. The median of 4.00 suggests that, on average, respondents consider this commitment to be quite strong. The mode being 4 indicates a concentration of responses around a high level of commitment. The relatively low standard deviation (0.809) and a narrow range of 2 suggest a general consensus among respondents regarding the commitment to knowledge exchange.

Question 6.2 is related to active involvement in partnerships and relationships and the mean score of 3.82 here indicates a relatively high level of perceived active involvement in partnerships and relationships with various stakeholders. The median and mode being 4.00 suggest a consistent view that the university is actively engaged with stakeholders. The low standard deviation (0.751) and a narrow range of 2 indicate a high level of agreement among respondents regarding the university's active involvement.

As for question 6.3, strong links with incubators, science parks, and external initiatives, the mean score of 3.00 suggests a moderately positive perception of the university's links with external initiatives. The median of 3.00 and mode of 4 indicate some variability in responses.

The higher standard deviation (1.342) and a wider range of 4 suggest that there is more diversity in opinions about the strength of these links.

Question 6.4 is about support for staff and student mobility. Here, the mean score of 3.45 indicates a positive perception that the university supports mobility between

academia and the external environment. The median and mode being 4.00 suggest a consistent view that the university actively supports staff and student mobility. The standard deviation of 0.934 and a range of 3 indicate some variability in responses, but overall, the agreement is relatively high.

Finally, question 6.5 asks participants about integration of research, education, and industry activities. The mean score of 2.91 suggests a moderately positive perception of the university's integration of research, education, and industry activities. The median of 3.00 and mode of 3 indicate some consistency in responses, but there is also a degree of variability. The standard deviation of 0.944 and a range of 3 suggest that opinions about the integration of activities vary among respondents.

In general, some universities are perceived positively in terms of commitment to knowledge exchange, active involvement in partnerships, and support for staff and student mobility. There is some variability in opinions regarding the strength of links with external initiatives and the integration of research, education, and industry activities. The high median and mode values across questions indicate a consistent perception of positive engagement and commitment to knowledge exchange within the university community.

However, some issues can be discussed along with these positive notes. Because the high level of cooperation between universities and industry should also show itself in other indicators. Other academic studies have shown that this is not proven in measurable data such as the number of patents obtained by academic staff, the rate of scientific articles published in high-impact scientific journals, and the share of revenues obtained as a result of collaboration with industry in the university budget.

6 The Entrepreneurial University as an international institution

Internationalization is a central component of the university's entrepreneurial strategy, as reflected in its explicit support for the international mobility of both staff and students, including those pursuing PhDs. The institution actively seeks and attracts international and entrepreneurial staff, encompassing roles in teaching, research, and doctoral programs. This commitment to internationalization extends to the university's approach to teaching entrepreneurship, demonstrating a global perspective in its curriculum. Moreover, the university, along with its departments and faculties, plays an active role in various international entrepreneurial networks, contributing to a broader ecosystem of collaboration and knowledge exchange on a global scale.

The provided tables present analysis on statistics for questions related to internationalization and the university's entrepreneurial strategy. In terms of question 7.1, the average rating is 3.64, indicating a generally positive perception that

internationalization is a key part of the university's entrepreneurial strategy. The median is 4.00, suggesting that a significant number of respondents provided higher ratings for this question. The standard deviation is 1.027, suggesting a moderate level of variability in responses which means the participants had a consensus. As for question 7.2, the average rating is 4.09, reflecting a strongly positive perception that the university actively supports the international mobility of its staff and students. The median is 4.00, suggesting a high level of agreement among respondents.

Statistics						
		7.1 Internationalisation is a key part of the university's entrepreneurial strategy.	7.2 The university explicitly supports the international mobility of its staff and students (including PhD students).	7.3 The university seeks and attracts international and entrepreneurial staff (including teaching, research and PhDs)	7.4 The university demonstrates internationalization in its approach to teaching entrepreneurship.	7.5 The university, its departments and faculties actively participate in international entrepreneurial networks.
N	Valid	11	11	11	11	11
	Missing	0	0	0	0	0
Mean		3.64	4.09	3.36	3.00	3.18
Median		4.00	4.00	4.00	3.00	4.00
Mode		4	5	4	3	2 ^a
Std. Deviation		1.027	1.044	1.362	.894	1.401
Range		3	3	4	3	4

a. Multiple modes exist. The smallest value is shown

In terms of question 7.3, the average rating is 3.36, indicating a moderately positive perception that the university actively seeks and attracts international and entrepreneurial staff. Similarly, the average rating for question 7.4 is 3.00, suggesting a moderate perception that the university demonstrates internationalization in its approach to teaching entrepreneurship. The same can be said for question 7.5, where the mean is 3.18, indicating a moderately positive perception that the university and its departments actively participate in international entrepreneurial networks.

Generally, it can be concluded that respondents perceive internationalization as a key part of the university's entrepreneurial strategy, and there is strong agreement that the university actively supports the international mobility of its staff and students. While there is a positive perception that the university seeks and attracts international and entrepreneurial staff, there is more variability in responses compared to the previous questions. Further exploration of factors influencing this variability may provide insights. The perception of internationalization in the approach to teaching entrepreneurship receives a moderate rating, indicating that there may be areas for improvement in the university's approach to internationalizing its teaching practices. Participation in international entrepreneurial networks receives a moderately positive rating with a notable level of variability. Exploring the factors contributing to this variability could help the university refine its strategies for international networking.

7 Integration of Entrepreneurship in research activities

The integration of entrepreneurship in research activities is of paramount importance in fostering entrepreneurial activities within universities. This integration brings key benefits that contribute to the overall entrepreneurial ecosystem of the academic institution.

Statistics

8.1 How would you rate the level of collaboration between research activities and the entrepreneurial sector at your institution?

N	Valid	11
	Missing	0
Mean		3.00
Median		3.00
Mode		4
Std. Deviation		1.095
Range		3

Following paragraph provide an analysis for a survey question 8.1 asking respondents to rate the level of collaboration between research activities and the entrepreneurial sector at their institution. Here the mean rating is 3.00 which suggests that, on average, respondents perceive the collaboration between research activities and the entrepreneurial sector to be moderate. The mode is 4 which means that a significant portion of respondents has a relatively positive perception of the collaboration. A lower standard deviation implies that there is less variability among the responses, suggesting a certain level of agreement among the respondents.

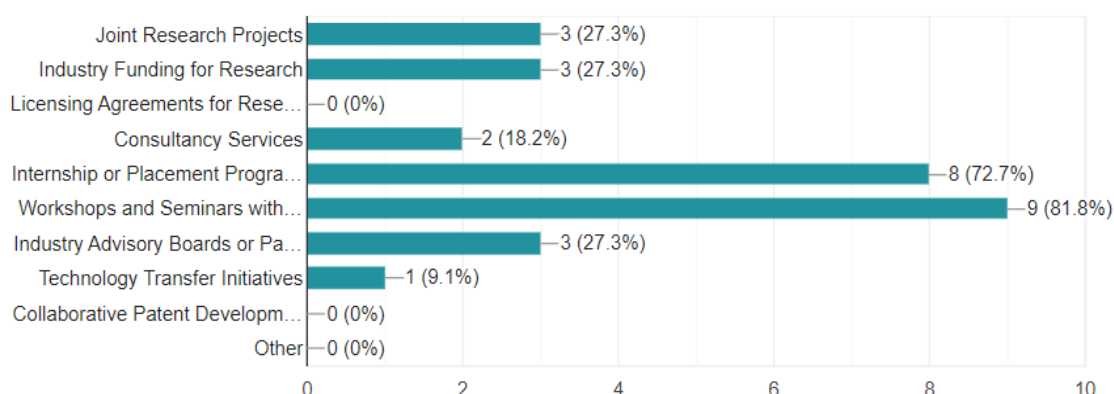
The university employs various strategies to identify and align research projects with high entrepreneurial potential (8.2). Initiatives include small workshops and training sessions aimed at fostering an entrepreneurial mindset among students and academic staff. While some respondents express that alignment is currently weak or that they lack specific experiences in this area, others highlight the pivotal role of specialized units such as the Technology Transfer Office and Industry Partnership. These units actively engage in identifying, protecting, and commercializing intellectual property generated by university research. Projects with startup potential undergo a thorough screening process involving consultations with departments like the Innovation and Research Centre. Despite limited experience in some cases and resource constraints, the university is making strides in collaborating with industry representatives to better understand development needs. The focus is on fostering an environment that supports the successful transition of research into commercially viable ventures,

acknowledging challenges in the transformation of research results into tangible industry applications.

8.3 How does your university collaborate with industry partners to leverage and implement research findings?



11 responses

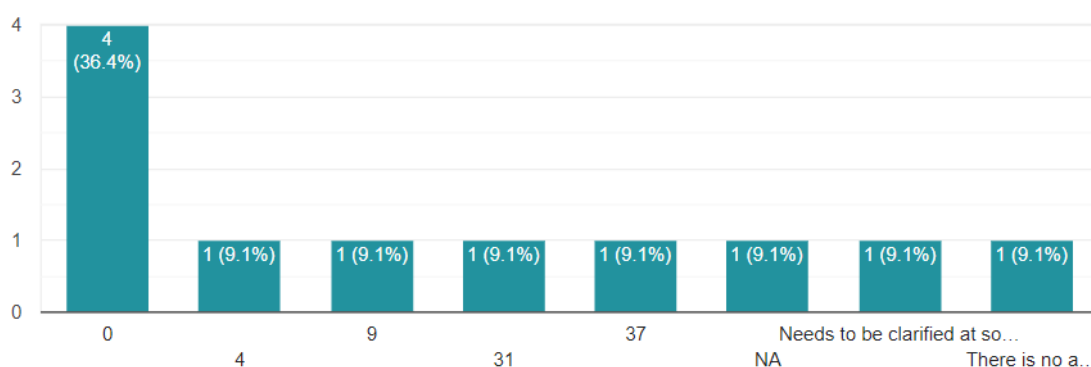


For question 8.3 which is about university collaborating with industry partners, respondents said that Workshops and Seminars with Industry Partners and Internship or Placement Programs for Students are the most frequent collaboration methods. Joint Research Projects, Industry Funding for Research, and Industry Advisory Boards or Panels are the means which have an average rating. Participants think that Technology Transfer Initiatives are the means of collaboration that happens rarely.

8.4 Please indicate the exact number of patents for last 5 years



11 responses



In terms of question 8.4, which asks about the number of patents for the last 5 years, there are huge differences in the numbers. Here, 31 and 37 are the highest numbers. One university said they have 9 patents, while two other university said 4 patents which is the smallest number here.

For question 8.5 which asks about the overall income generated from the commercialization of the patent, all the participants said either no income generated, or

zero income generated. Similarly, for question 8.6 which investigates the number of spinoff companies, the respondents said zero.

In terms of question 8.7, which is about the number of startup companies, one university said 8, the other said 3, yet another indicated 1. The rest said that there are not such startups at the universities.

8 Measuring the impact of the Entrepreneurial activities

Measuring the impact of entrepreneurial activities in entrepreneurial teaching and learning across the institution is a multifaceted process that involves assessing various dimensions to gauge effectiveness and outcomes.

In terms of question 9.1, Impact Assessment of Strategy on Entrepreneurship, the mean score of 2.64 indicates that participants had moderately positive perception of the impact assessment. The median of 3.00 suggests that the majority of respondents stayed neutral and responses are centered around this value. The low standard deviation (0.674) and a narrow range of 2 suggest a relatively consistent view among respondents. For example, almost all participants chose either disagree or neutral option when it comes to the university's assessment of the impact of its strategy on entrepreneurship across the institution.

Statistics						
		9.1 The university assesses the impact of its strategy on entrepreneurship across the institution.	9.2 The university assesses the level of engagement in entrepreneurial teaching and learning across the institution.	9.3 The university regularly assesses the impact of entrepreneurship teaching and learning.	9.4 The university carries out regular monitoring and evaluation of the universities' knowledge exchange activities.	9.5 The university carries out regular monitoring and evaluation of the impact of start-up support.
N	Valid	11	11	11	11	11
	Missing	0	0	0	0	0
Mean		2.64	2.82	2.45	2.82	2.36
Median		3.00	3.00	2.00	3.00	3.00
Mode		2 ^a	2	2	4	3
Std. Deviation		.674	.874	.820	1.168	.809
Range		2	2	3	3	2

a. Multiple modes exist. The smallest value is shown

As for question 9.2, assessment of engagement in entrepreneurial teaching and learning, the higher mean of 2.82 suggests a slightly more positive view compared to question 9.1. The median and mode being 3.00 and 2, respectively, indicate a relatively

central and consistent answers. The standard deviation of 0.874 and a range of 2 suggest some variability but not as much as in Question 9.1.

When it comes to question 9.3, impact assessment of entrepreneurship teaching and learning, the mean score of 2.45 is slightly lower than the previous two questions, indicating a somewhat less positive view. The median of 2.00 and mode of 2 suggest a concentration of responses toward the lower end. The standard deviation of 0.820 and a range of 3 indicate moderate variability in responses.

For question 9.4, monitoring and evaluation of knowledge exchange activities, the mean score of 2.82 is similar to question 9.2, suggesting a generally positive perception of the participants.

The mode being 4 indicates a different pattern of responses, and the higher standard deviation (1.168) and a wider range of 3 suggest more variability.

In terms of question 9.5, monitoring and evaluation of impact of start-up support, the mean score of 2.36 is the lowest among the questions, indicating a somewhat less positive view compared to others. The median of 3.00 suggests a central tendency, but the mode being 3 indicates a shift in the distribution. The standard deviation of 0.809 and a range of 2 suggest moderate variability in the answers.

In general, this analysis provides an understanding of how the university is perceived in terms of entrepreneurship strategy, teaching and learning engagement, impact assessment, and monitoring activities. Question 9.2 and Question 9.4 have relatively higher mean scores, indicating a more positive perception of engagement in entrepreneurial teaching and learning and monitoring knowledge exchange activities. Question 9.5 has the lowest mean, suggesting a less positive view of monitoring the impact of start-up support. The variability in responses is noticeable in Question 9.1, Question 9.3, and Question 9.4, suggesting diverse opinions within the university community.

In regard of the most significant challenges your institution faces in enhancing its entrepreneurial support system, the university representatives have indicated massive number of challenges and various aspects. Enhancing the entrepreneurial support system at our institution faces several significant challenges. Financial constraints pose a major hurdle, limiting the development and expansion of support programs. Additionally, resistance to change among faculty and staff, coupled with a lack of real-world entrepreneurial experience, presents obstacles in leading and teaching entrepreneurship programs. Encouraging a cultural shift towards entrepreneurship within the academic community is met with resistance, as traditional academic values may conflict with entrepreneurial principles. Student engagement proves challenging, as some students may prefer more secure career paths, and balancing academic requirements with extracurricular entrepreneurial initiatives requires ongoing effort. Resource and infrastructure challenges include the establishment of incubators and accelerators, while funding limitations, difficulty in accessing capital, and talent retention further impede progress. Measuring the impact of support programs and addressing geographical disparities in resource access present additional complexities. Overcoming bureaucratic delays, fostering an entrepreneurial mindset, sustaining long-term commitment, and establishing effective

industry collaborations emerge as key hurdles. Limited focus on research and innovation, insufficient resources, networking limitations, time constraints for academicians, and a lack of IT support and specialists further contribute to the multifaceted challenges in advancing our institution's entrepreneurial ecosystem. Suggestions for conducting interviews or roundtables to gain a clearer understanding of these issues are recognized as valuable insights for potential improvement.

9 Conclusion

In conclusion, the comprehensive analysis of survey responses illuminates the multifaceted landscape of entrepreneurial development within higher education institutions. While the overall sentiment is moderate, several critical gaps and opportunities for improvement emerge. The absence of a designated figure on the management board for entrepreneurial activities and the lack of specific indicators for monitoring and implementing entrepreneurial objectives signal potential deficiencies in organizational structures and strategies. **Addressing these gaps is imperative for creating a more supportive environment conducive to fostering entrepreneurial initiatives. The inclusion of entrepreneurship-related objectives in strategic plans is acknowledged as pivotal, underscoring universities' commitment to instilling an entrepreneurial spirit within their academic fabric.**

Examining organizational capacity, people, and incentivization reveals a positive trend with a consensus on dedicated structural units coordinating entrepreneurial activities. This indicates proactive support for entrepreneurship within higher education institutions. However, the varying degrees of autonomy among faculties and units underscore the need for a balanced approach, allowing for flexibility while maintaining a centralized effort to bolster entrepreneurship institution-wide. The study provides valuable insights that can guide further investigations and strategic decisions, empowering institutions to fortify their entrepreneurial initiatives and seamlessly integrate them into overarching strategies.

Additionally, the survey highlights the nuanced dynamics of entrepreneurship development concerning teaching staff, staff development investments, and the integration of entrepreneurship into teaching and learning. The call for more comprehensive data collection methods to quantify the entrepreneurial expertise within academic institutions aligns with the identified variability in responses. While the moderately positive perception of investment in staff development signals an openness to enhancing teaching staff capabilities, areas for improvement in communication and alignment between staff perceptions and university objectives are evident. **Leveraging collaborative efforts with the business or entrepreneurial community, as depicted in the results, presents an opportunity to further enrich learning experiences in entrepreneurship.**

Furthermore, the survey underscores the importance of follow-up studies on the impact of entrepreneurship education, revealing a notable level of uncertainty among respondents. Strengthening the measurement and assessment of the

long-term impact can provide valuable insights for universities to refine their strategies and better support the career trajectories of graduates. Despite the positive perception of universities' efforts, identified areas of variability and uncertainty emphasize the need for a more standardized and effective approach to ensure comprehensive and impactful entrepreneurship development within academic settings.

In summary, the statistical analysis offers a holistic perspective on the strengths and challenges faced by universities in their commitment to knowledge exchange, internationalization, collaboration with the entrepreneurial sector, and the impact of entrepreneurial activities. While positive aspects are evident, challenges in measuring impact, addressing financial constraints, and fostering cultural shifts within academic communities require strategic consideration. The suggested strategies, including targeted financial investments, faculty development programs, and streamlined processes, can guide universities in cultivating a more robust and effective entrepreneurial ecosystem. The academic community's commitment to continuous improvement, evidenced by the suggestion of interviews or roundtables, reflects a dedication to adapting strategies and advancing entrepreneurship support within higher education institutions.



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the European Union**

Work package 1

Benchmarking Report on Entrepreneurial Ecosystems in Selected European HEIs

Enhancing Sustainable Entrepreneurial Ecosystem in Higher Education of Azerbaijan (ENGAGE)

101083269, ERASMUS-EDU-2022-CBHE

[Http/www.engage.edu.az](http://www.engage.edu.az)

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2. Tallinn University of Technology, Estonia				
3. Universitat Politècnica de Catalunya, Spain				
4. University of Lisbon, Portugal				
5. WSG University in Bydgoszcz, Poland				

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Executive Summary

This summary represents information related to the study visits of the Erasmus+ project “Strengthening the sustainable entrepreneurship ecosystem in Azerbaijan higher education institutions” (ENGAGE) project which took part in 5 EU partner universities, KTH Royal Institute in Technology, UPC, TALTECH, ULISBOA and Poland. Representatives of Azerbaijan higher education institutions are Mingachevir State University, Baku Business University, Azerbaijan State Agricultural University, Azerbaijan State University of Culture and Arts, Azerbaijan Tourism and Management University, Azerbaijan Technical University, Baku Higher Oil School, Ganja State University, Odar Yurdu University, and Azerbaijan State University of Economics.

The visit aimed to learn best practices about the institutional approach to entrepreneurship from widely experienced Universities in Europe and to transfer the best suitable insights to the Azerbaijan HEIs.

The first visit took part in Stockholm, Sweden between 21-25 August 2023 at KTH Royal Institute in Technology, with 25 representatives from 10 Azerbaijan universities. It involved a diverse group of participants from Azerbaijan HEIs, 2 rectors, 2 vice-rectors, and 21 heads of various departments. It provided an opportunity to gain KTH’s experience in promoting entrepreneurship, Collaboration with industry partners, providing incubator and accelerator programs for entrepreneurship development, commercialization of research outputs, and overall management of entrepreneurial activities in the university.

The second visit took place in Tallinn, Estonia between 28 August – 1 September 2023 at Tallinn University of Technology. 28 representatives from 10 Azerbaijan universities participated in 5 days of training sessions at Taltech. It involved a diverse group of participants from Azerbaijan HEIs, 5 rectors, 4 vice-rectors, and 19 heads of various departments. The Study visit started with a meeting of the Rector who gave a brief introduction about the university’s strategic approach to entrepreneurship and how strategic decisions are made and followed through, including how the university diversifies its income streams and de-centralizes its management. In addition, during the study visit representatives of Azerbaijan HEIs learned the best practices of Taltech about commercializing intellectual property, access to grant funding, and collaboration with industry. It followed with a visit to Taltech Mektory Incubator Center to better understand the industry-university collaboration and a field trip to the Ministry of

Education and Research to better understand how policy and regulations are made to nudge the higher educational institutions in Estonia. Another visit was made to WISE company to better understand how startups function in a given economic and social ecosystem in Estonia.

The third visit was held to the Universitat Politècnica de Catalunya (UPC) between 25-29 September 2023 in Barcelona, Spain. 2 rectors, 7 vice-rectors, and 18 heads of various units of 10 HEIs of Azerbaijan participated in 5 days of training sessions at UPC. Also, a representative of the Azerbaijan Women Entrepreneurship Development Association was involved in the group of visitors. During the training session, the representatives had a chance to explore various aspects of UPC's practices and strategies, particularly focusing on entrepreneurship. The program covered introductions to UPC and university management, emphasizing entrepreneurial roles, universities' entrepreneurship practices and policies. The flexible entrepreneurship ecosystem at the government level and access to research funding were also covered during the visit.

The fourth study visit was organized in Lisbon, Portugal, between 23-28 October 2023 by Instituto Superior Técnico (ULISBOA). The diverse group of participants from Azerbaijan HEIs, 2 rectors, 5 vice-rectors, 23 heads of various departments 30 representatives of 10 HEIs, and a representative of the Azerbaijan Women Entrepreneurship Development Association participated in 5 days of training sessions at ULISBOA. The training sessions covered a wide range of topics related to managing entrepreneurial activities, teaching and learning entrepreneurship skills, commercialization of innovation, collaboration with industry, and working with entrepreneurship programs. The tour also included visits to Beato's Creative Hub, VWGS Portugal.

In conclusion, all participants were actively engaged with study tours, identifying gaps and assessing the feasibility of adopting EU's practices and all of them recommended adopting those practices at their home universities, acknowledging the positive impact on entrepreneurship and research development. Participants expressed satisfaction, highlighting the benefits of key practices and successful programs.

Summary of EU practice on entrepreneurial ecosystem

KTH entrepreneurship ecosystem:

KTH's entrepreneurship ecosystem is marked by a comprehensive and integrated approach, serving as a blueprint for fostering innovation within the academic landscape. A crucial aspect involves the integration of entrepreneurial-based subjects into study programs, ensuring that students gain not only theoretical knowledge but also practical skills essential for navigating the complexities of the business world. KTH emphasizes the establishment of innovation centers as coaching and mentoring hubs, fostering a culture of openness to innovation. Furthermore, the institution actively engages in partnerships with organizations promoting entrepreneurship, leveraging mentorship programs and available resources. KTH's model also underscores the significance of government support, aligning funding programs and policies with national interests to accelerate ecosystem development. By incorporating these key aspects, Azerbaijan HEIs can lay a strong foundation for nurturing entrepreneurship, innovation, and economic development, creating a thriving ecosystem that prepares students for real-world challenges.

TalTech entrepreneurship ecosystem:

TalTech's entrepreneurship ecosystem is characterized by a multifaceted approach that integrates various strategies to foster innovation and entrepreneurial spirit within the academic community. One of its key aspects is the organization of startup competitions, projects, and networking events, providing a dynamic platform for the exchange of ideas and collaboration. Additionally, TalTech recommends the appointment of a Vice-Rector for Entrepreneurship and the establishment of a dedicated research group, signaling a clear institutional commitment to prioritizing entrepreneurial initiatives. These leadership structures facilitate the integration of entrepreneurship into the academic fabric, ensuring a coordinated and strategic focus. The combination of events and dedicated leadership creates an environment that not only stimulates the development of innovative projects but also nurtures a culture of entrepreneurship among students and staff. TalTech's entrepreneurship ecosystem serves as a model for Azerbaijan HEIs, encouraging the cultivation of creative thinking, collaborative endeavors, and a proactive approach to addressing real-world challenges.

UPC entrepreneurship ecosystem:

UPC's entrepreneurship ecosystem is characterized by a strategic and holistic approach that can significantly inspire Azerbaijan HEIs. The establishment of specialized entrepreneurship centers within HEIs is a key aspect, serving as focal points for aspiring entrepreneurs by providing resources, mentorship, and collaborative spaces. Moreover, mentorship initiatives connecting students with experienced entrepreneurs and industry professionals contribute to

fostering an entrepreneurial mindset and providing practical guidance. UPC's emphasis on internship programs within incubation centers or startup venues bridges the gap between academic knowledge and real-world entrepreneurial challenges, offering students valuable hands-on experience. Actively seeking partnerships with industry players, government entities, and research organizations is also a highlighted aspect, ensuring the relevance of academic initiatives and creating pathways for technology transfer. By adopting these suggestions, Azerbaijan HEIs can actively contribute to the development of a robust innovation and entrepreneurship ecosystem, positioning themselves as key drivers of economic and societal development.

ULISBOA entrepreneurship ecosystem:

ULISBOA's entrepreneurship ecosystem, as outlined in the summary, showcases a multifaceted strategy that can serve as a valuable model for Azerbaijan Higher Education Institutions. A key aspect involves promoting collaboration between universities and industry through joint research projects, fostering practical solutions and innovations beneficial for both academic institutions and the industrial sector. The emphasis on interdisciplinary programs is noteworthy, encouraging collaboration between different fields of study and providing students with a broader perspective to apply their knowledge innovatively. ULISBOA's approach also highlights the importance of tailoring entrepreneurship initiatives to the specific needs and conditions of the local economy and engaging with local businesses and industry leaders for alignment. By incorporating these aspects, Azerbaijan HEIs can enhance their capabilities for innovation and industry interaction, contributing to the development of a dynamic entrepreneurial ecosystem that addresses local challenges and fosters meaningful collaborations.

Summary for Azerbaijan HEIs Suggestions

Based on the summaries provided for HEIs in Azerbaijan, drawing inspiration from KTH, TalTech, ULISBOA, and UPC, the following remarks and suggestions can be made to enhance innovation and entrepreneurship in Azerbaijan HEIs:

1. Integration of Entrepreneurship Education: There is a need to include entrepreneurial-based subjects in study programs to equip students with practical skills. This way the HEIs will prepare students for the dynamic challenges of the real world. By incorporating entrepreneurial-

based subjects into study programs, HEIs will also be able to equip students with practical skills essential for navigating the complexities of the business landscape. This integration ensures that students not only acquire theoretical knowledge but also gain hands-on experience in problem-solving, innovation, and strategic thinking.

2. Establishment of Innovation Centers and Collaboration: Based on the European experience, there is a need to develop innovation centers as coaching hubs to foster a culture of openness to innovation. In addition, through these centers, the HEIs in Azerbaijan need to actively seek partnerships with private sector and other organizations to promote education in entrepreneurship. Such as, collaboration with organizations like Lotfizadeh Innovation Center, SABAH.HUB, INNOLAND, and KOBIA and others.

3. Practical Aspects: Based on the EU experience, there is a need to address the practical aspects of entrepreneurship education for optimizing the learning experience within Azerbaijan HEIs. Such as, scheduling trainings during regular periods ensures maximum participation, enabling a broader student engagement. Orienting content towards case-based and practical learning further enhances the educational value by connecting theoretical knowledge to real-world applications. Moreover, providing opportunities for students to observe the actual process of creating or improving entrepreneurship centers within universities offers invaluable insights into the practical aspects of establishing and managing such initiatives.

4. Faculty Development: According to the EU practice, faculty development plays a pivotal role in fostering an environment of innovation and entrepreneurship, therefore the need is critical for Azerbaijan HEIs. Based on the experience of the European universities, a key emphasis should be placed on enhancing subject literacy for teachers, ensuring they possess a profound understanding of entrepreneurship concepts and methodologies. This knowledge equips educators to effectively convey the intricacies of entrepreneurship to their students, instilling a robust foundation of understanding. Additionally, adopting flexible and debatable methods of presenting material not only encourages a dynamic and engaging classroom environment but also stimulates critical thinking and creative problem-solving skills among students. By empowering faculty members with the necessary subject expertise and encouraging innovative teaching approaches, HEIs can create an ecosystem that nurtures an entrepreneurial mindset.

Summary report on the visit to KTH Royal Institute of Technology

This summary represents information related to the first study visits of Erasmus+ project “Strengthening the sustainable entrepreneurship ecosystem in Azerbaijan higher education institutions” (ENGAGE) project which took part in Stockholm, Sweden between 21-25 August 2023 at one of the leading universities in the world: KTH Royal Institute in Technology in terms of quality of education and the most important- entrepreneurship.

The training at KTH involved a diverse group of participants from not only Azerbaijan HEI’s, (members of the administrative and academic staff) but also employees from Bydgoszcz University of Economics in Poland.

Such international collaborations and training programs are instrumental in sharing the best practices and knowledge to foster entrepreneurship and innovation in higher education. It provided an opportunity to gain experience from experienced institutions like KTH. The visit is a commendable effort in promoting education, research, and innovation in the region as a part of the ENGAGE project.

Local Azerbaijan universities who participated in the study visit are: Mingachevir State University (MSU), Baku Business University (BBU), Azerbaijan State University of Culture and Arts (ASUCA), Azerbaijan Tourism and Management University (ATMU), Nakhchivan State University (NDU), Azerbaijan Technical University (AzTU), Baku Higher Oil School (BHOS), Ganja State University (GSU), Odar Yurdu University (OYU) and Azerbaijan State University of Economics (UNEC).

The questions which were provided by the coordinator are given below. Summary for each question answers based on Reflection reports submitted by universities are demonstrated.

- 1) How do you evaluate the KTH experience on integration of entrepreneurship in education? Please give some examples from KTH case and analyse them. Are they applicable for Azerbaijan case? (min. 250 words)

According to the report findings all universities agrees upon KTH’s innovation and entrepreneurship structure is a model for other universities, demonstrating how a holistic and collaborative approach, combined with strategic leadership, academic excellence, and real-world partnerships, can cultivate a thriving entrepreneurial ecosystem.

The KTH Royal Institute of Technology in Sweden stands out as a beacon for innovation and entrepreneurship, employing a multifaceted strategy to create a thriving ecosystem for these

endeavors. At the heart of this success lies KTH's commitment to providing students with a robust academic foundation in technical and scientific disciplines, ensuring they are well-prepared to tackle real-world challenges.

Collaboration with industry partners is a key driver of KTH's innovation structure. The university's research and innovation centers actively engage with external stakeholders, creating opportunities for students and researchers to contribute to cutting-edge solutions. KTH's partnerships with startup incubators and accelerators further enhance this collaborative environment, offering vital resources like physical space, financial support, and mentorship to nascent companies.

The KTH's leadership plays a pivotal role in promoting entrepreneurship, with a strategic focus on co-operation, partnerships, and entrepreneurship development. This commitment is reflected in KTH's mission and strategic plan, making entrepreneurship a common practice across all faculties.

The university's innovative approach extends to its infrastructure, exemplified by the KTH Innovation lab—a startup incubator providing crucial support to individuals seeking to transform ideas into viable businesses. KTH's commitment to commercializing research, solid industry ties, and a wealth of networking opportunities further enrich the entrepreneurial landscape.

- 2) How do you evaluate the KTH experience on integration of entrepreneurship in education? Please give some examples from KTH case and analyze them. Are they applicable for Azerbaijan case? (min. 250 words)

The KTH Royal Institute of Technology stands out as a global model for successfully integrating entrepreneurship into education, providing valuable insights applicable to Azerbaijan Institutions according to the report findings.

KTH's approach involves embedding entrepreneurship courses throughout its curriculum, enabling students to concurrently develop technical and entrepreneurial skills. This strategy is particularly evident in master's programs where compulsory courses like Technology-based Entrepreneurship, Technology-based Opportunity Development, and Technology-based Venture Realization emphasize practical, hands-on learning.

KTH promotes interdisciplinary collaboration and engagement with external stakeholders, reflecting real-world entrepreneurial dynamics. Partnerships with organizations like Inicio, which focuses on enhancing digital skills and applied learning, demonstrate KTH's

commitment to supporting entrepreneurial initiatives. This collaboration aligns with the broader European trend of integrating entrepreneurship education into higher education institutions (HEIs)

The success of KTH's integration lies in its holistic ecosystem, featuring entities like incubators that support startups and provide mentorship. Events, job fairs, and skill development activities contribute to a vibrant entrepreneurial culture, fostering an environment where students, alumni, and faculty members can exchange ideas and experiences.

KTH recognizes the importance of faculty development in entrepreneurial teaching. While acknowledging the expertise of industry professionals, there is a call for a more structured approach to enhance teaching skills. This suggests that the success of entrepreneurship education relies not only on industry experience but also on effective pedagogical methods. For institutions like ASUCA, BHOS, UNEC and others in Azerbaijan, adopting elements of KTH's model could prove beneficial. Incorporating technology-based entrepreneurship courses, creating interdisciplinary collaborations, and establishing supportive entities like incubators align with entrepreneurial mindset. However, a key consideration would be tailoring these approaches to the local context, taking into account the unique characteristics and needs of the Azerbaijan academic and entrepreneurial landscape.

3) How do you evaluate in the integration of entrepreneurship in research regarding the KTH case? Why KTH is so successful in research and innovation? (min. 250 words)

KTH's integration of entrepreneurship in research and education serves as a perfect model. One key aspect is the inclusion of entrepreneurship-based courses at all levels of the curriculum, emphasizing technology-based entrepreneurship. The master's level offers compulsory courses such as Technology-based Entrepreneurship, Opportunity Development, and Venture Realization, demonstrating a commitment to nurturing entrepreneurial skills in students.

Challenge-based learning promotes teamwork, real-world problem-solving, and solution creation. The semester-long projects require collaboration and address challenges, fostering a practical understanding of entrepreneurship. KTH's Innovation Readiness Model assesses startups comprehensively, covering critical areas like funding, customer engagement, technology readiness, business viability, team dynamics, and intellectual property rights.

KTH's global perspective on entrepreneurship, evident through international partnerships and exchange programs, provides exposure to diverse entrepreneurial environments.

The hands-on involvement of KTH Innovation in projects, offering personalized guidance from idea generation to pitching supports for early-stage startups. The Innovation Center's role in fostering collaborations with various stakeholders, including government, industry, and civil society, emphasizes a quadruple helix approach that contributes to a thriving entrepreneurial ecosystem.

Overall, KTH's comprehensive strategy, blending academia with real-world experience, support networks, business collaborations, and a global perspective, offers valuable insights for Azerbaijan's universities to foster innovation and entrepreneurship effectively.

- 4) How do you evaluate the level of awareness on entrepreneurship and innovation at KTH among staff and students? Do you think that it is well integrated into the strategic management and operations of the university? Please defend your ideas based on examples from KTH (min 250 words).

The university's success is attributed to a strategic combination of project-based research, practical importance, and a relationship between academia and the business world.

A key factor in KTH's success is its adherence to Key Performance Indicators (KPIs) for academic staff. Beyond traditional academic metrics, KPIs emphasize active involvement in research-based grant projects, ensuring faculty members actively contribute to innovation and research outcomes.

Sweden's innovation culture, driven by the necessity for resource management in a geographically resource-scarce context, contributes significantly to KTH's success. This cultural emphasis on innovation, deeply ingrained in Swedish society, positions KTH as a leader in addressing real-world challenges across sectors such as energy, technology, and healthcare.

KTH's commitment to practical and project-based research is evident in master's theses, which prioritize real-world applications over theoretical aspects. The university's research activities are aligned with addressing practical issues. Initiatives such as the KTH Innovation lab and partnerships with industry leaders demonstrate KTH's commitment to translating research into tangible solutions. The university's approach to entrepreneurship and research is dynamic, evident in the establishment of the KTH Live-In Lab—a collaborative platform for research and education in the realm of intelligent buildings.

In summary of all reports, KTH's success in integrating entrepreneurship into research is grounded in a multifaceted approach, combining practical, project-based research, strategic

KPIs, industry collaboration, and a cultural emphasis on innovation. While the specific context of KTH's success may not be directly replicable in Azerbaijan, elements of its approach, such as project-based research and strong industry ties, offer valuable insights for institutions aiming to enhance their integration of entrepreneurship into research activities.

- 5) How do you evaluate the general support mechanism of innovation and entrepreneurship at KTH? How do they attract and support the students? Which instruments can be relevant for Azerbaijan? (min. 150 words)

The level of awareness on entrepreneurship and innovation at KTH among staff and students is quite successful. The KTH Innovation Center plays a pivotal role in actively encouraging and supporting young talents, making everyone at KTH eligible for assistance.

Strategically, KTH places significant emphasis on nurturing an entrepreneurial mindset among its members, evident in tailored programs such as the Bicky Chakraborty Entrepreneurship Program. This program not only broadens participants' understanding of entrepreneurship but also connects them with experienced mentors and provides funding opportunities.

The Pre-Incubator Program offers networking and learning opportunities, fostering rapid development. The KTH Innovation Brighter Program prepares participants for the global market, offering exposure to innovation hubs worldwide. The Test Drive Deeptech Program supports researchers in testing market potential, promoting innovation in cutting-edge fields.

These support mechanisms at KTH can serve as relevant models for Azerbaijan. Implementing similar programs, such as pre-incubators, mentorship initiatives, and global exposure programs, can empower Azerbaijan students, fostering entrepreneurship and innovation. Additionally, replicating KTH's emphasis on interdisciplinary programs, experiential learning, and incubators could contribute to the development of entrepreneurial ecosystem in Azerbaijan. The commitment of KTH to digitalization, sustainability, and strategic partnerships provides an opportunity for Azerbaijan higher education institutions seeking to enhance awareness and integration of entrepreneurship and innovation.

- 6) Considering the quadruple helix model how do you evaluate the relation among KTH and other actors? Please support your ideas with real KTH examples. (min. 150 words)

The quadruple helix model is effectively implemented at KTH, demonstrating strong collaboration among academia, industry, government, and civil society. KTH actively engages with various stakeholders, fostering an innovative culture and contributing to sustainable development.

In terms of academics, KTH promotes cooperation among different departments and faculties. For example, collaborations between the School of Industrial Engineering and Management and the School of Electrical Engineering and Computer Science demonstrate KTH's commitment to multidisciplinary research initiatives. These collaborations focus on areas such as smart cities and environmentally friendly technologies.

KTH's interactions with industry players are robust, with notable partnerships by the KTH Transport Platform. Collaborations with organizations like Scania, Volvo, Stockholm Region, and The Swedish Transport Administration highlight KTH's commitment to addressing real-world challenges in environmentally friendly transportation. These collaborations facilitate technology transfer from academia to industry, contributing to practical solutions.

Government support is integral to KTH's success, as evidenced by financial backing and support for research and innovation. The Swedish government's investments in research and higher education organizations, including KTH, play a crucial role in fostering an environment conducive to cutting-edge research and innovation.

Civil society engagement is another facet of KTH's commitment to the quadruple helix model. Through outreach initiatives, free lectures, and open forums, KTH actively interacts with the public, encouraging communication and knowledge exchange. Participation in public conversations on sustainability and technology ethics demonstrates KTH's dedication to societal concerns.

The quadruple helix model at KTH is further exemplified by its involvement in various projects, such as the Urban Analytics and Transitions Center. Collaborative efforts on projects like InteGrid, LocalLife, and Smart Energy City showcase KTH's commitment to multidisciplinary collaboration, involving governmental and non-governmental bodies. These initiatives align with Sweden's vision for sustainable development, contributing significantly to Sustainable Development Goals (SDGs).

7) Your remarks and suggestions for Azerbaijan HEIs based on KTH examples.

To promote innovation and entrepreneurship in Azerbaijan higher education institutions (HEIs), drawing inspiration from KTH's successful model is crucial. The integration of entrepreneurship education is a key recommendation, emphasizing the inclusion of entrepreneurial-based subjects in study programs. This ensures students gain practical skills and knowledge, preparing them for real-world challenges.

Establishing innovation centers is another vital step. Learning from KTH's approach, these centers can serve as coaching and mentoring hubs, fostering a culture of openness to innovation. Collaboration is essential, and Azerbaijan HEIs should actively seek partnerships with organizations promoting entrepreneurship, leveraging mentorship programs and available resources. Information sharing plays a significant role in the success of entrepreneurship initiatives. Azerbaijan HEIs should actively collect information about training and support programs and establish close relationships with institutions sharing similar goals. Institutions like Lotfizadeh Innovation Center, SABAH.HUB, INNOLAND Incubation and Acceleration Center, and KOBIA can serve as valuable partners.

Adapting best practices from KTH, Azerbaijan HEIs should also consider government support. Promoting government funding programs and policies that encourage entrepreneurship and innovation within HEIs can accelerate ecosystem development. Aligning government support with national interests is crucial for sustained success.

Additionally, addressing practical aspects is essential. Trainings should be scheduled during regular periods to ensure maximum participation, and the content should be oriented towards case-based and practical learning. Providing opportunities to observe the actual process of creating or improving entrepreneurship centers within universities can offer valuable insights.

A focus on subject literacy for teachers and a more flexible and debatable method of presenting material are essential components. Azerbaijan HEIs should incorporate discussions on university policy, drawing inspiration from KTH's academic discussions.

In conclusion, by implementing these recommendations inspired by the successful case of KTH, Azerbaijan HEIs can lay a strong foundation for fostering entrepreneurship, innovation, and economic development. These measures collectively create an environment conducive to the growth of a thriving entrepreneurial ecosystem within Azerbaijan HEIs.

8) Your remarks and suggestions for better management of the visits:

The feedback from participants highlights the positive impact of training. However, the material presented lacks sufficient examples of practical implementation. To address this, participants suggest a more interactive approach, involving discussions with both teachers and students, to gain a clearer assessment of the entrepreneurship education system at KTH University.

Incorporating reflection group sessions at the end of each training session is proposed. These sessions, lasting about 10 minutes, aim to deepen participants' understanding of the content

learned and enhance knowledge retention. The reflection groups encourage participants to discuss key takeaways, insights gained, and how they plan to apply the lessons in their contexts.

Despite some repetitive questions, the participants acknowledge the effort put into organizing the sessions. To enhance the effectiveness of future visits, the incorporation of practical examples, interactive discussions with students and teachers, and the adjustment of timing to avoid holidays are recommended. Additionally, the proposed reflection group sessions can contribute to a more comprehensive and engaging learning experience during training visits.

Summary report on the visit to Tallinn University of Technology

This brief summarizes the practice of Taltech through the eyes of 10 local universities of Azerbaijan. The university representatives were asked 7 questions to better understand their take away from 5 days training sessions at Taltech. The training sessions covered a wide range of topics including, introduction to Taltech and the management of the university which highlighted the role and practice of entrepreneurship on it. The meeting the Rector of Taltech was another highlight helped to better understand how strategic decisions are made and followed through, including how university diversifies its income streams and de-centralizes its management. In addition, access to grant funding, introduction to Taltech Mektory Incubator Center to better understand the industry- university collaboration. The field trip to Ministry of Education and Research to better understand how policy and regulations are made to nudge the higher educational institutions in Estonia. Another field trip was made to WISE company to better understand how startups function in a given economic and social ecosystem in Estonia. These and other best practices of Taltech were introduced and discussed with the representatives of Azerbaijan universities.

In addition, Azerbaijan university representatives shared the practice and policy of their respective home universities on the field of entrepreneurship identifying gaps with Taltech and feasibility of Taltech practice in the educational ecosystem in Azerbaijan.

The summary reflects on each question specifically, summarizing the feedback from all participants. In overall, participants are satisfied with the experience of Taltech and highly recommend such practice to be adopted at their home universities. Some highlights from the participants are: existence of Vice Rector for Entrepreneurship that ensures development and expansion of entrepreneurship and related research; the operation of Mektory Center that fosters university-industry collaboration; Edu ja Tegu 1 program, which fosters entrepreneurship at the

Estonian universities; flexible ecosystem for entrepreneurship in a government level and access to research funding, such as local grants and Horizon Europe programme.

Local Azerbaijan universities who participated in the study visit are: Mingachevir State University (MSU), Baku Business University (BBU), Azerbaijan State Agricultural University (ASAU), Azerbaijan State University of Culture and Arts (ASUCA), Azerbaijan Tourism and Management University (ATMU), Azerbaijan Technical University (AzTU), Baku Higher Oil School (BHOS), Ganja State University (GSU), Odlaq Yurdu University (OYU) and Azerbaijan State University of Economics (UNEC).

Below is the individual reflection of each question developed by the coordinator:

- 1) How do you evaluate the innovation and entrepreneurship structure in TalTECH? Do you think that it fosters the entrepreneurship and how?

All universities valued TalTech's approach to imparting entrepreneurial knowledge through its curriculum, practical work, and collaboration with industry partners, and one university specifically highlighted the Mektory research center as a valuable hub for students, researchers, and entrepreneurs to collaborate, thereby fostering entrepreneurship. Specifically, five of these universities highlighted the existence of a Vice-Rector for Entrepreneurship at TalTech, recognizing this as a strong indicator of the university's commitment to entrepreneurship. According to these universities, having a Vice-Rector for Entrepreneurship plays a crucial role in developing a modern management system that prioritizes knowledge transfer to industry and fosters entrepreneurship within the university.

- 2) How do you evaluate the TALTECH experience on integration of entrepreneurship in education? Please give some examples from TALTECH case and analyse them. Are they applicable for Azerbaijan case? (min. 250 words)

The universities noted that TalTech ensures its students acquire comprehensive business competencies through an efficient and effective teaching and learning process, aligning with the requirements of employers and society. This equips graduates to specialize in overseeing crucial processes in both local and international enterprises and empowers them to pursue entrepreneurial endeavors, further advancing their careers. Five of the universities recognized the significance of TalTech's hub and innovation centers in fostering students' practical skills, enabling them to engage with experts and entrepreneurs. They emphasized the importance of replicating this valuable experience within local universities. Furthermore, two universities pointed out that TalTech's MBA program and summer school could be effectively implemented

in Azerbaijan, offering a convenient solution for entrepreneurial students who frequently need to travel. Four universities have taken note of another significant aspect of TalTech's strategy, which involves facilitating the implementation of startup competitions and organizing entrepreneurship-related activities in local universities. They believe that this approach will not only increase students' interest in entrepreneurship but also attract potential investors. One of the universities strongly endorses TalTech's approach of making entrepreneurship a mandatory subject in the curriculum, alongside elective subjects, for students in local universities. This ensures that students, irrespective of their major, acquire fundamental knowledge about entrepreneurship.

- 3) How do you evaluate in the integration of entrepreneurship in research regarding the TALTECH case? Do you think that TALTECH is successful in research and innovation? (min. 250 words)

TalTech's commitment to integrating entrepreneurship with research gained widespread appreciation from the participants. Such as, through the establishment of collaboration frameworks that bridge university faculty and industry partners, TalTech enables a seamless exchange of knowledge, expertise, and resources, culminating in the development of innovative solutions to real-world challenges. The tangible outcomes of such partnerships stand as a testament to the effectiveness of this approach.

Furthermore, the presence of dedicated research centers, such as Mektory, and innovation hubs at TalTech underscores the institution's unwavering dedication to research that directly benefits society. These centers act as catalysts for diverse partnerships, fostering an environment that nurtures groundbreaking discoveries and technological advancements.

Three of the universities highlighted TalTech's active involvement in Horizon Europe projects, resulting in valuable research contributions. One university has specifically noted TalTech's programs that encourage students and researchers to undertake startup projects as part of their academic coursework. Notably, successful startup projects can evolve into fully-fledged businesses, with Skype serving as an exemplary case.

Another university has brought to our attention the existence of a specialized research group focused on entrepreneurship at TalTech. This group brings together scientists from various fields to investigate the activities of entrepreneurial companies. According to the participant, this model should be considered for adoption in Azerbaijan universities as well.

- 4) How do you evaluate the level of awareness on entrepreneurship and innovation at Taltech among staff and students? Do you think that it is well integrated into the strategic management and operations of the university? Please defend your ideas based on examples from Taltech (min 250 words).

All participants credit TalTech for fostering entrepreneurship awareness among its faculty and students. They also acknowledge the inclusion of entrepreneurship as a subject in the curriculum, the university's organization of hackathons and startup competitions, the existence of entrepreneurship and innovation centers, and collaborations with industries. These elements collectively contribute to the acquisition of new knowledge, the sharing of experiences, and the facilitation of meaningful discussions.

In reference to these events, one university places a special emphasis on the Starter Tallinn program hosted at TalTech and highlights those similar initiatives should be implemented in Azerbaijan universities. Because these programs offer opportunities for students who don't have a team yet. In such cases, students can either bring their own ideas or join a team that aligns with their interests. These events are also open to early-stage researchers and teams working on advanced technology solutions, providing them with a fantastic opportunity to connect with potential team members and gain fundamental knowledge about entrepreneurship. When it comes to incorporating entrepreneurship into the strategic management and operations of the university, two universities emphasize the significance of appointing a Vice Rector for Entrepreneurship.

In the perspective of another university, one example of integrating entrepreneurship into the strategic management and operations of the university is the incorporation of entrepreneurship metrics into the university's key performance indicators (KPIs). This reflects a systematic approach to quantifying and evaluating the impact of entrepreneurial initiatives on the overall academic landscape. The university also highlights the potential for enhancing communication methods and outreach programs to effectively convey information about entrepreneurial opportunities, despite their ongoing collaboration with industry partners. Maintaining continuous feedback with stakeholders can provide valuable insights that can be leveraged to enhance and broaden entrepreneurial initiatives.

- 5) How do you evaluate the general support mechanism of innovation and entrepreneurship at Taltech? How do they attract and support the students? Which instruments can be relevant for Azerbaijan? (min. 150 words)

All universities unanimously acknowledge TalTech's strong commitment to fostering innovation and entrepreneurship, which effectively attracts students. According to participants, TalTech actively promotes entrepreneurial development through its comprehensive curriculum that includes entrepreneurship courses and a wide range of programs and resources. These resources encompass startup incubators, entrepreneurship courses, and networking events. Notably, TalTech's Innovation and Business Center and centers similar to Mektory play pivotal roles in providing students with mentorship and financial support, facilitating the exploration of their entrepreneurial ideas. Implementing these initiatives in Azerbaijan promises significant advancements in entrepreneurship.

Four universities specifically mentioned the Mektory Center, the organized startup competitions, the StarterTall program, and the importance of introducing similar programs in Azerbaijan. Remarkably, this program is accessible to all students, including those in higher education, vocational institutions, and secondary education institutions, at no cost. Participants are encouraged to join with their initial ideas or projects and can easily find like-minded teammates, gaining valuable hands-on experience in entrepreneurship.

Furthermore, another university highlighted TalTech's provision of co-working spaces for prospective student entrepreneurs. For instance, they offer classrooms within the TalTech Library for registered readers, providing students with dedicated spaces to collaborate and conduct research with their team members.

- 6) How do you evaluate the systematic development of entrepreneurship and entrepreneurial education at national level? How successful is Estonia to apply Edu ja Tegu 1 program? Which instruments can be relevant for Azerbaijan?

According to the university participants, the Edu Ja Tegu program plays a pivotal role in democratizing entrepreneurship within the country. This program actively promotes the integration of entrepreneurship into the educational curriculum across all levels, from kindergarten to secondary schools. Consequently, both children and students gain exposure to entrepreneurship from an early age and practical opportunities to apply this knowledge in real-life scenarios. University participants believe that introducing such programs in our country would significantly boost entrepreneurship.

As an illustrative instance of nationwide entrepreneurship promotion, one university pointed to the Estonian government's provision of temporary start-up visas to entrepreneurs. They

emphasized that adopting a similar policy in Azerbaijan would represent a crucial step in attracting foreign investors.

7) Your remarks and suggestions for Azerbaijan HEIs based on TalTECH examples.

All universities are in favor of implementing TalTech's strategies aimed at fostering entrepreneurship within Azerbaijan universities. Notably, three of these institutions stressed the significance of universities organizing startup competitions, projects, and networking events to inspire and engage both students and staff. Two universities in addition, suggested that appointing a Vice Rector for Entrepreneurship and establishing a dedicated research group focused on entrepreneurship could yield positive outcomes. This approach would help to prioritize and enhance entrepreneurial initiatives within the academic community. Another university highlighted the importance of providing entrepreneurship training not only for students but also for educators (ToT) within local universities. By equipping teachers with this knowledge, they can effectively convey it to a broader audience, thereby expanding the reach of entrepreneurship education

8) Your remarks and suggestions for better management of the visits:

Overall, the participants expressed satisfaction with the organized meetings. However, one university proposed that future meetings be scheduled at more convenient times, as some institutions were unable to attend due to the timing, especially given the start of the academic year. Additionally, another university stressed the importance of facilitating more group work, as this approach is likely to encourage active participation among the attendees.

Summary report on the visit to ULISBOA

This summary represents information related to the visits of the Erasmus+ project "Strengthening the sustainable entrepreneurship ecosystem in Azerbaijan higher education institutions" (ENGAGE) project which was organized in Lisbon, Portugal, between 23-28 October 2023 by Instituto Superior Técnico (ULISBOA).

In the study visit at ULISBOA had participated diverse group of participants from Azerbaijan HEI's, (members of the administrative and academic staff): Mingachevir State University (MSU), Baku Business University (BBU), Azerbaijan State University of Culture and Arts (ASUCA), Azerbaijan Tourism and Management University (ATMU), Nakhchivan State University (NDU), Azerbaijan Technical University (AzTU), Azerbaijan State Agrarian

University(ADAU), Baku Higher Oil School (BHOS), Ganja State University (GSU), Odar Yurdu University (OYU) and Azerbaijan State University of Economics (UNEC)

The training sessions covered a wide range of topics related to managing entrepreneurial activities, teaching, and learning entrepreneurship skills, commercialization of innovation, collaboration with industry, working with entrepreneurship programs, and visits to Beato's Creative Hub, VWGS Portugal.

Summary for each question based on Reflection reports submitted by 10 universities except BBU.

- 1) How do you evaluate the innovation and entrepreneurship structure in ULISBOA? Do you think that it fosters the entrepreneurship and how? (min. 150 words)

In the evaluation of the ULISBOA we can see that all universities mentioned that the workshops, events, university-industry collaborations, and offering courses and programs on entrepreneurship play a crucial role in the entrepreneurship ecosystem of the university. **Volkswagen Group Services at the Beato Creative Hub was mentioned as a successful example of university-industry collaboration, which encourages innovation by involving students and researchers in solving process of real-world problems. Two of the universities highlighted the importance of the organization of the annual "Innovation Week" and advised to adapt this model to Azerbaijan HEI.**

- 2) How do you evaluate the ULISBOA experience on integration of entrepreneurship in strategy? Please give some examples from ULISBOA case and analyse them. Are they applicable for Azerbaijan case? (min. 250 words)

Universities mentioned the following things as a ULISBOA experience on integration of entrepreneurship in strategy.

- **Course and degree programs emphasized Entrepreneurship education.**
- **Having specific units for entrepreneurial activities, such as Technology Transfer office, iStartLab and Techlabs incubation services.**
- **Support for acceleration of Startup projects for integration to the real market**
- **University-industry partnership. Innovation & Engineering Hub of Volkswagen Group Services at Beato Creative Hub has shown as an example.**

- **Funding Availability: aiding students and graduates to find financial resources for their start-ups.**
- **Entrepreneurship Challenges and Competitions: hackathons, innovation challenges, or competitions in entrepreneurship as a tool to inspire students to find creative solutions.**

Almost all the above-mentioned points are applicable to adapting Azerbaijan HEIs. However, most of the universities offered university-industry collaboration as the most important method.

One of the universities viewed it from a historical perspective and mentioned that the situation in Portugal 20-30 years ago was close to the situation in modern Azerbaijan. Right now, research activities at universities, commercialization of scientific results, and university-industry cooperation are not at the desired level in Azerbaijan. To bring changes in this area we need to start changing the perspective of the university administration. **Mandatory research obligations for faculty members and structuring and institutionalization of the relevant units can be shown as an example to these changes.**

ULISBOA values (Intellectual freedom and respect for ethics, Societal innovation and development, Democratic participation, and Social and environmental responsibility) were also mentioned by one of the universities. As we can see innovation is one of the core values of the university. Azerbaijan universities can include innovation and entrepreneurship in their mission, vision and values.

- 3) What insights did you gain from the interactions with entrepreneurs (student, researchers, academic staff) during the training session? How can these insights be leveraged to foster a culture of entrepreneurship within your organization? What specific ideas or practices from entrepreneurs do you believe are applicable to our current project? (min. 250 words)

Interacting with entrepreneurs during the training session provided valuable insights into the entrepreneurial ecosystem developed in institution. We can highlight most valuable insights which can be leveraged to foster a culture of entrepreneurship in Azerbaijan universities and can be applicable for current project:

Mindset: Entrepreneurs are driven by a passion to solve problems and create value. Encouraging your organization's members to think creatively, take calculated risks, and seize opportunities can instill this mindset. From innovation point of view, entrepreneurs are

comfortable with risk and embrace innovation. Azerbaijan Universities can encourage a culture where calculated risk-taking is seen as an opportunity for growth, not failure.

Environment: Having a creative environment instead of bureaucratic concerns, highlights a culture that encourages experimentation and risk-taking. This approach fostered a supportive environment where entrepreneurs felt empowered to explore unconventional solutions and approaches.

Collaborative Culture: Entrepreneurs demonstrated a high level of collaboration, emphasizing the importance of well-established timelines, milestones, and objectives. The support system provided to emerging projects was particularly noteworthy, showcasing a conducive environment for innovative ventures. To host networking events, conferences, and seminars that bring together students, faculty, and professionals from innovation hubs. This facilitates knowledge exchange, idea sharing, and potential collaborations between academia and industry.

Building Confidence: Engaging with ULISBOA professors contributed significantly to building confidence in our ideas. The exchange of ideas and insights with seasoned professionals instilled a sense of belief in the feasibility and potential success of our entrepreneurial endeavours.

Risk takers: Entrepreneurs often face failures before achieving success. Hearing about these experiences, it was interesting to know that failure is a part of the learning process. The important point is adaptability and also resilience. During the seminars and training sessions, we have been encouraged to embrace change, learn from setbacks, and pivot, when necessary, which can be invaluable for project success.

Independent approach: Current legal regulations limit universities to a certain extent in being entrepreneurial universities. For this reason, universities need to be independent in decision-making processes. Another issue, as mentioned above, is the necessity of universities to have an appropriate structure in this direction. This should start with the establishment of relevant units and the creation of the ecosystem.

Networking: Entrepreneurs often face failures before achieving success. Hearing about these experiences was interesting to know that failure is a part of the learning process. The interaction with entrepreneurs showed us how much is vital to have networking opportunities. Interacting with entrepreneurs and academia provides with the chance to expand universities' professional network. Fostering collaborations between the university and local or regional industries,

especially those with strong innovation hubs. It will encourage joint projects, research initiatives, and internships that allow students and faculty to work closely with industry professionals.

- 4) What did you find most interesting or valuable about the Beato's Creative Hub? Were there any unique features or practices that stood out to you as particularly effective? (min. 250 words).

Establishing such a kind of HUB centre in Azerbaijan can be very useful to enhance entrepreneurship and can commit for fostering entrepreneurship culture among all interested parts of the community. Several Interesting and valuable features of Beato's Creative Hub can be particularly effective to adopt in Azerbaijan.

Government support: The BCH project was defined by Startup Lisboa. It is a large area which is provided about 50 thousand square meters distributed over 18 buildings for companies and entrepreneurs. The municipality ensures the provision of infrastructure (water and sewage network, electricity, communications, etc.) and the rehabilitation of outdoor spaces.

Having a clear target for economic growth: HCB plans to be one of the largest entrepreneurship hubs in Europe and is estimated to create 3 thousand new jobs among the companies. **The Hub is the nest of a Unicorn Factory – an eight-million-euro investment to support 20 scale-ups per year, doubling the support to startups. The mission is “to bring innovation to this part of the city”, and also to position Lisbon in the panorama of “entrepreneurial, technological, sustainable and creative cities”.**

Interdisciplinary collaboration: It appears that the hub promotes interdisciplinary collaboration given the existence of initiatives in a variety of sectors, including medical algorithms and coding for people with impairments, etc. The diversity of talents and backgrounds allows for fresh perspectives and creative collisions. Fostering collaborative environments proves to be remarkably successful. **Moreover, Beato's Creative Hub allows innovative and entrepreneurial companies to open their headquarters at the hub. So, all interested parties are coming together to handle specific problems of industry and society through entrepreneurial activities with cutting-edge innovations.**

Entrepreneurial Ecosystem: HUB offers an atmosphere that is favourable to entrepreneurship based on its assistance for startups. Encouraging and providing various services for early-stage firms is essential to converting creative concepts into workable solutions and profitable enterprises. Having incubators and accelerators plays a pivotal role. These initiatives offer

essential aid and assets to startup ventures and visionary individuals, assisting them in realizing their concepts. This expedites the expansion of inventive enterprises, thereby fostering economic progress and the generation of employment opportunities.

Physical space: One particularly effective feature was the physical design of the space. The innovative layout, incorporating collaborative workspaces and flexible areas for networking, contributed to a stimulating environment.

Specific programs: The Clean Future acceleration program was created to support the creation and development of technological solutions that foster sustainability to create smart cities in areas such as construction, mobility, retail, etc. These initiatives aim to contribute to the development of new technologies and services to boost sustainability in cities, with the Hub Criativo do Beato (HCB) being its experimentation space in the city of Lisbon, to transform it into a smart campus.

By being a partner of this kind of hub in Azerbaijan, universities can create an environment that not only supports entrepreneurship but also actively engages with the surrounding innovation ecosystem, contributing to regional economic development and technological advancement.

Moreover, the engagement with leading partners in their respective areas brings specialized expertise to address complex issues. Involving partners with domain-specific knowledge ensures a well-rounded and informed approach to sustainability challenges. This collaborative model is a valuable practice that can be emulated by Azerbaijan's organizations and institutions looking to address multifaceted issues through interdisciplinary cooperation.

- 5) How do you evaluate the general support mechanism of innovation and entrepreneurship at ULISBOA? How do they attract and support the students? Which instruments can be relevant for Azerbaijan? (min. 150 words)

The general support mechanism for innovation and entrepreneurship at ULISBOA reflects a comprehensive approach to developing successful entrepreneurial ventures. ULISBOA has the 2 most important support services for entrepreneurship activities of students and academicians. One of them is iStartLab, and another is Techlabs, which is situated in the Faculty of Science.

The iStartLab is the innovation laboratory of Instituto Superior Técnico (IST) with the mission of promoting innovation and the entrepreneurial spirit of its students, researchers and professors. The iStartLab organizes activities related to innovation and entrepreneurship and aims to be the contact point between IST and the entrepreneurial ecosystem, including, among

others, incubators, accelerators, investors, and the industry. Techlabs is Science and deeptech Incubator with a lively ecosystem within the Faculty of Science. Providing incubation programs with space and facilities. It has its methodology, which is called ScienceIN2Business; it is an innovative methodology that we developed to promote and stimulate innovation and entrepreneurship topics and activities by bringing science and business knowledge together to transfer it into innovation.

Within those services the institution effectively attracts and supports entrepreneurs and students through several methods which can be very useful for Azerbaijan:

Industry Partnerships: To attract students, university creates an environment that emphasizes collaboration between academia and industry.

Working spaces: It is especially crucial to have dedicated spaces at the university to support students' entrepreneurial initiatives. It is also extremely important that these spaces are equipped with the necessary new technology.

Funding possibilities: To assist students and researchers in transforming their creative ideas into successful businesses, Ulisboa provides access to grants, competitions, and funding possibilities.

Networking Events: Through events, workshops, and collaborations with industry experts, students have the chance to network, cooperate, and gain practical insights.

Entrepreneurial Education: Creating non-formal and formal courses in entrepreneurial education in Azerbaijan universities, as well as pre-incubation programs.

Mentorship Programs: Create mentorship programs that link students to the industry with participants of real successful entrepreneurs.

Overall, regarding the experience of ULISBOA, Azerbaijan universities have to extend support to students' entrepreneurship initiatives through incubation and acceleration programs by using the above-mentioned tools and methodologies, aiming to transfer students' projects to viable businesses.

These programs will encompass mentorship, access to resources, and opportunities for securing funding. The university actively encourages connections between students and the broader entrepreneurial community.

- 6) How do you evaluate the entrepreneurship program for students? Do you think this program may enhance the entrepreneurial capacity of the students? (min. 150 words)

The Schools of the University of Lisbon offer programs in entrepreneurship and innovation, and the program includes subjects such as Science Entrepreneurship, Entrepreneurship and Innovation, Project Management and Entrepreneurship, Technology-Based Entrepreneurship, Entrepreneurial Mindset etc. TechLab provides formal and nonformal education to the students of faculty. They have eight available optional courses to learn more about innovation and entrepreneurship in a project-based, learning-by-doing, creative, and gamified way. As a Non-formal education, TechLab regularly organizes workshops and seminars on various topics related to innovation and entrepreneurship in the faculty and other Schools of Ulisboa.

Based on the experience of ULISBOA, several factors were mentioned in the evaluation of entrepreneurship programs for enhancing the capacity of students.

Content of Curriculum: The curriculum is aligned with current trends and challenges in the entrepreneurial landscape. The program covers both theoretical and practical aspects of entrepreneurship, including topics such as idea generation, business planning, marketing, finance, legal considerations, and so on.

Practical Experience: The program cultivates a hands-on understanding of entrepreneurship, fostering a mindset where students not only acquire knowledge but also gain practical skills by having classes which are closely engaged with real-world scenarios and interactions with industry professionals, creating a comprehensive learning environment.

Industry involvement: It provides interactions with successful entrepreneurs through mentorship programs, guest lectures, and internship opportunities in the industry.

Project-based learning: Entrepreneurship programs often involve real-world projects, business simulations, or even the creation of actual start-ups.

In conclusion, we would say that entrepreneurship programs serve as powerful tools for enhancing students' entrepreneurial capacity. The programs should be designed to help students become better entrepreneurs. The programs provide a mix of theoretical knowledge and practical skills, giving students a solid understanding of how to succeed in startups and business. They equip participants with the knowledge, skills, and confidence necessary to tackle the challenges of entrepreneurship, empowering them to transform innovative ideas into viable businesses.

7) How can we foster the entrepreneurial mindset via teaching practices? Please refer to Luís Caldas de Oliveira presentation (min 150 words)

As emphasized in Lus Caldas de Oliveira's presentation, fostering an entrepreneurial attitude in teaching techniques is crucial for ensuring that students are ready to succeed in a world that is always changing and competitive. Those techniques focused on helping student organisations to succeed, promoting co-creation, promoting acceptance of failure, providing a physical hub, keeping investors involved by using its talents(students) by using competitive advantages, and startup creation.

We can see several instruments are developed to promote this approach:

Building an innovation mindset through:

- Changing the methodology of teaching staff by adopting new ways of teaching and promoting innovation. Developing and implementing Interdisciplinary curriculum, which includes the related subjects of entrepreneurship and innovation by using the methodology of case studies, simulations, and problem-based projects.
- Changing students' mindsets by involving them in real-world problems and preparing them for them. Students work on the real creative projects as a team during the studies based on the real problems of industry or society. Invite guest speakers and industry experts to share their entrepreneurial experiences with students in additional value for creating students' mindsets.
- Creating an innovation lab for promoting and supporting entrepreneurship. University provides different programs to the students to support them in creating startup ideas for real products and allows them to make the team by involving students from various disciplines.

Encourage Critical Thinking: Designing activities that require students to analyze, evaluate, and synthesize information. Posing open-ended questions that stimulate discussion and debate and assigning projects that challenge students to think critically about real-world problems. Providing opportunities for brainstorming sessions and idea generation and Encouraging experimentation and the exploration of alternative solutions.

Develop Problem-Solving Skills: Designing activities that present real-world problems for students to solve. Emphasizing the importance of identifying problems and finding effective solutions.

Teamwork and Collaboration: Encouraging teamwork and collaboration on projects assigning group activities that require students to leverage diverse skills and perspectives and emphasizing the importance of networking and building professional relationships. Promoting teamwork and collaboration among the students and staff at Azerbaijan Higher Education Institutions. Startups often involve working with other people such as students or researchers.

Risk-taking approach: Another approach could be encouraging risk-taking among the students of Azerbaijan universities. Students and staff need to be taught that it is fine to take calculated risks and learn from failures. They need to celebrate failures as learning opportunities, and understand the importance of resilience and perseverance.

Teach Financial Literacy: Including lessons on budgeting, financial planning, and basic economic principles. Introducing concepts related to funding, investment, and financial management.

Project-based learning: Collaborative projects that involve students from various disciplines can simulate the entrepreneurial ventures. At the same time, encouraging students to constantly put forward their own ideas and discuss these ideas will motivate them in this process.

Guest lecturers: Moreover, inviting guest speakers and industry experts to share their entrepreneurial experiences can provide real-world insights and role models for students. Learning via practical applications, inspiring students to develop an entrepreneurial mindset.

While referring to speech of Prof Luís Caldas de Oliveira it makes more important that bringing in accomplished entrepreneurs and industry experts to share their experiences and insights with students is highly valuable. Real-life stories can serve as both inspiration and practical examples of the entrepreneurial journey.

- 8) Why do you think that Innovation & Engineering Hub of Volkswagen is located in Lisbon? How do you evaluate their cooperation with universities, and will it be applicable for Azerbaijan HEIs to cooperate such giant companies? (min. 150 words)

Lisbon is becoming a creative and tech startup hub in Portugal and Europe as well. The number of accelerator findings, tech incubators and co-working spaces is growing here. The Innovation and Engineering Hub of Volkswagen is one of the most important hubs to accelerate this process. Lisbon is home to a number of research institutes and universities that offer a consistent stream of highly qualified graduates and possible joint research opportunities. The ability to do research and development in close proximity to academic institutions. Collaborating with

universities gives access to the research resources and a database of talented graduates, making sure there's continuous information vague of new ideas.

For Azerbaijan's Higher Education Institutions working with big companies like Volkswagen could bring lots of benefits. Such partnerships offer students practical experience and exposure to industry standards. It also helps connect academic knowledge with real-world industry needs. This kind of partnership could help boost Azerbaijan's tech sector and provide great chances for students, lecturers and researchers.

Working together with big businesses can give researchers and students in Azerbaijan the chance to acquire knowledge and experience that will improve their employability.

- HEIs can gain by working with businesses on research projects, which can result in improvements in a number of disciplines.
- HEIs can gain access to funds, cutting-edge technologies, and resources by partnering with international enterprises.
- Through innovation and the development of jobs, partnerships with large corporations can boost the local and national economies.
- Students and researchers can establish beneficial networks and contacts in their respective professions by interacting with leaders in the business.

9) What specific challenges do you anticipate in implementing these ideas, and how do you plan to overcome them? (min. 150 words)

Implementing innovation and entrepreneurship in Azerbaijan universities can be a transformative and challenging process for several reasons. We can count several specific challenges in this context and give some solutions, regarding.

9.1 One of the greatest problems that de-motivate scientists to pursue the path of entrepreneurship is that their intellectual property may not be properly protected, and the scientists will not have the motivation to establish a business.

To address these challenges, governments, international organizations, and local communities need to collaborate with universities in creating appropriate environments.

9.2 One potential challenge is aligning the local context and regulatory frameworks in Azerbaijan. The bureaucratic processes and the local conditions are also one of the struggles.

Therefore, first of all, legal obstacles for universities to engage in entrepreneurship in Azerbaijan should be completely solved. Then, the university administration should give importance to this issue and change its mindset.

9.3 Insufficient funding and resources can hinder the development of entrepreneurship programs, available infrastructure, appropriate laboratories, and specific workplaces are among them.

The universities must provide some capital for the development, seek external funding, collaborate with industry partners, and explore cost-effective solutions, such as online resources and partnerships with other institutions.

9.4 Building a culture of entrepreneurship may require expertise that is not readily available within the institution.

Address this challenge by attracting or collaborating with experienced entrepreneurs and industry representatives; Inviting guest lecturers from specialized areas of industry can be another solution.

9.5 Encouraging students to actively participate in entrepreneurship programs is another challenge for Azerbaijan institutions.

Creating incentives, such as grants, competitions, and internship opportunities, to motivate students to get involved in entrepreneurial programs is one of the best practices that can be adopted in Azerbaijan. HEIs.

9.6. The municipality and other executive public bodies do not ignore but somehow hesitate to support the new-born businesses from academia.

The managers of the higher institutions, government, and industry members should create a council or some kind of structure to learn the situation and support the entrepreneurs from academia.

9.7 Faculty and students may lack the essential entrepreneurial skills needed to translate research into viable commercial products or services.

Implementing targeted training programs, workshops, and mentorship initiatives is crucial. Encouraging interdisciplinary collaboration can bring together individuals with diverse expertise, fostering a holistic approach to entrepreneurship.

9.8 Universities and industries may have different organizational cultures, making collaboration challenging.

Azerbaijan HEIs can foster a culture of collaboration by promoting open communication and understanding between academic and industry partners and encouraging joint training programs, workshops, and shared experiences to bridge the cultural gap.

10) Your remarks and suggestions for Azerbaijan HEIs based on ULISBOA examples.

Taking inspiration from the experience of ULISBOA, together with our colleagues who visited to ULISBOA, several suggestions can be put forward to help Azerbaijan Higher Education Institutions (HEIs) improve their capabilities for innovation and their interactions with the industry. For example, to boost collaboration between universities and industry through the promotion of joint research projects. Such initiatives can yield practical solutions and innovations that prove advantageous for both academic institutions and the industrial sector.

Another factor that ULISBOA pays attention to is interdisciplinary which promotes innovation and as such entrepreneurship. Similarly, one suggestion to Azerbaijan HEIs could be developing interdisciplinary programs: Designing and implementing interdisciplinary programs would encourage collaboration between different fields of study. In this way, these programs can provide students with a broader perspective and enable them to apply their knowledge to a wide range of challenges, and in this way lead to innovation.

Other suggestions of Azerbaijan HEIs.:

Experiential learning: Promoting experiential learning opportunities such as internships, apprenticeships, co-op programs, and recruiting lecturers from prestigious business entities would allow students to gain real-world skills and insights into entrepreneurship.

Curriculum Integration: UPC's incorporation of entrepreneurship-related courses into its curriculum is a good model. Azerbaijan HEIs should consider integrating entrepreneurship and innovation courses into various disciplines.

Innovation Labs and Centers: Establishing innovation labs and centers, like those at UPC, can provide students with physical spaces for creative problem-solving, prototyping, and collaboration.

Access to Funding: Provide access to funding sources, grants, and competitions to incentivize students and faculty to pursue entrepreneurial projects. Support for research and development can spur innovation.

Networking and Events: Organize networking events, entrepreneurship challenges, hackathons, and innovation competitions to create a vibrant ecosystem and expose students to entrepreneurial opportunities.

Local Relevance: Tailor entrepreneurship initiatives to the specific needs and conditions of the local economy and community. Engage with local businesses and industry leaders to ensure alignment.

11) Your remarks and suggestions for better management of the visits:

Overall, all participants said that the event was well-organized and expressed their gratitude to the management of the visit and there were 4 suggestions.

First suggestion is about informing participants in advance about changes and unforeseen delays through multiple channels, such as email or text messages.

Second suggestion is about minimizing technical issues and having back-up plan for any disruptions.

Third suggestion are about ensuring that the presenters involved are relevant and capable people and taking into account the contribution of the topic into project in the process of visit planning. Visits also should have defined goals such as acquiring knowledge, forming partnerships, or showing a particular location in order to facilitate its planning and evaluation.

Last suggestion is about having more interactive workshops and seminars and give opportunities to give opportunity to participants to share their feedback.

Summary report on the visit to Universitat Politècnica de Catalunya

This brief encapsulates the insights gained by 10 Azerbaijan universities during their study visit to UPC, Spain. The representatives engaged in 5 days of training sessions, exploring various aspects of UPC's practices and strategies, particularly focusing on entrepreneurship. The program covered introductions to UPC and university management, emphasizing entrepreneurial roles.

Azerbaijan representatives actively shared their universities' entrepreneurship practices and policies, identifying gaps and assessing the feasibility of adopting UPC's practices. Participants expressed satisfaction, highlighting the benefits of key practices and successful programs. The flexible entrepreneurship ecosystem at the government level and access to research funding

were also praised. In conclusion, the participants recommended adopting UPC's practices at their home universities, acknowledging the positive impact on entrepreneurship and research development. Participating Azerbaijan universities included Mingachevir State University, Baku Business University, Azerbaijan State Agricultural University, Azerbaijan State University of Culture and Arts, Azerbaijan Tourism and Management University, Azerbaijan Technical University, Baku Higher Oil School, Ganja State University, Odlar Yurdu University, and Azerbaijan State University of Economics.

Below is the individual reflection of each question developed by the coordinator:

- 1) How do you evaluate the innovation and entrepreneurship structure in UPC? Do you think that it fosters the entrepreneurship and how? (min. 150 words)

The innovation and entrepreneurship structure at UPC is highly commendable, fostering a comprehensive ecosystem for entrepreneurial development. Through a systematic approach, UPC has established various programs and bodies dedicated to different activities, ensuring a holistic support system. The UPC creation spaces provide essential tools and environments for prototyping within university labs, promoting hands-on innovation. Incubation UPC plays a crucial role in preparing and screening corporate acceleration projects, facilitating knowledge exchange, and creating synergies among projects, incubated companies, and the UPC community.

The sectorial acceleration programs, whether owned or shared, contribute significantly to the proper development of entrepreneurship. These programs enable startups to validate their business models rapidly, access broader customer segments, enhance brand positioning, and explore new markets. Overall, UPC's innovation and entrepreneurship structure is effective in nurturing entrepreneurship by providing resources, mentorship, and collaborative platforms that empower individuals to transform innovative ideas into successful businesses.

- 2) How do you evaluate the UPC experience on integration of entrepreneurship in strategy? Please give some examples from UPC case and analyse them. Are they applicable for Azerbaijan case? (min 250 words)

The UPC's approach to integrating entrepreneurship into its strategy reflects a comprehensive commitment grounded in the principles of the triple and quadruple helix models. By fostering robust collaboration among the university, industry, government, and society, particularly at advanced stages, UPC has established a thriving ecosystem for entrepreneurial development.

Notably, their centers and incubators serve as catalysts, providing resources and mentorship to students and faculty engaged across academia, government, civil society, and industry. A standout example is the Empren UPC program, which demonstrates a systematic integration of entrepreneurship. This initiative offers training sessions, including the Empren UPC brand, a pre-incubation program supporting potential entrepreneurs within the UPC community. Barcelona Activa, a government-sponsored agency, further enhances the entrepreneurial ecosystem by ensuring ongoing support for startups, fostering sustainability, and creating a long-term bond between project initiators and the university. The equity gained by UPC from providing pre-seed investment becomes a foundation for sustaining the university's budget, fostering collaboration and loyalty.

These strategies can serve as valuable examples for Azerbaijan. By establishing similar entrepreneurship support centers and programs, Azerbaijan universities can cultivate a conducive environment for entrepreneurial initiatives. This could lead to enhanced collaboration between academia, industry, and government, driving economic development and innovation. However, the adaptation should consider Azerbaijan's specific context, incorporating local industry needs and aligning initiatives with national development priorities. Overall, the UPC's experience provides a solid framework that, with appropriate adjustments, could contribute significantly to Azerbaijan's entrepreneurial landscape.

- 3) What insights did you gain from the interactions with entrepreneurs (student, researchers, academic staff) during the training session? How can these insights be leveraged to foster a culture of entrepreneurship within your organization? What specific ideas or practices from entrepreneurs do you believe are applicable to our current project? (min 250 words)

A notable incident occurred during a robotics demonstration, where representatives from different projects actively engaged and provided input, highlighting a collaborative and supportive environment. The overall design of the facility, featuring innovative workspaces and a friendly atmosphere, was acknowledged as a subtle yet impactful contributor to productivity and innovation.

The consistent and impressive presentation abilities of the entrepreneurs were recognized as a key factor, likely nurtured through well-established training programs by host institutions like UPC and Barcelona Activa. The insights gained from these interactions can be leveraged to foster a culture of entrepreneurship within the organization. Emphasizing unity, collaboration, and a supportive atmosphere, mirroring the observed practices, can encourage a similar sense

of community within the home organization. Additionally, investing in training programs that enhance presentation skills and professional communication can contribute to the overall success of entrepreneurial initiatives.

Specifically, adopting the practice of shared breaks, where individuals from different projects come together, can promote cross-project collaboration and knowledge exchange. The design of workspaces can also be reconsidered to create an environment that encourages interaction and idea-sharing. Overall, the visit provided valuable insights into the cultural aspects and collaborative practices of successful entrepreneurial ecosystems, offering tangible ideas for enhancing the organization's entrepreneurial culture and project development.

- 4) What did you find most interesting or valuable about the UPC entrepreneurship space visit? Were there any unique features or practices at UPC's entrepreneurship space that stood out to you as particularly effective? (min 250 words).

The visit to UPC's entrepreneurship space was characterized by several intriguing and valuable features. A standout aspect was the seamless integration of diverse resources and possibilities within a designated physical area. The entrepreneurship center at UPC effectively served as a dynamic ecosystem, bringing together students, researchers, and entrepreneurs to create an atmosphere of creativity and cooperation.

A particularly noteworthy observation was the accessibility of mentors and advisors with extensive expertise. The presence of experienced experts offering practical insights and assistance to potential entrepreneurs proved to be immensely valuable. The mentorship program not only imparted technical skills but also served as a catalyst for inspiration and motivation.

Overall, the UPC entrepreneurship space stood out for its ability to create a collaborative environment, where individuals from different backgrounds could converge, share ideas, and work towards common goals. The combination of physical infrastructure, mentorship programs, and a culture of cooperation contributed to the effectiveness of the space. This integrated approach, fostering both technical skills and inspiration, was a key takeaway from the visit, providing valuable insights into creating a successful entrepreneurial ecosystem.

- 5) How do you evaluate the general support mechanism of innovation and entrepreneurship at UPC? How do they attract and support the students? Which instruments can be relevant for Azerbaijan? (min 150 words)

The innovation and entrepreneurship support mechanism at UPC is highly commendable, characterized by a comprehensive ecosystem that effectively motivates and supports students

in their entrepreneurial endeavors. Specialized entrepreneurship centers and programs serve as central hubs, offering resources such as coaching, financing opportunities, and networking events. The university's internship programs in these incubation centers and startup venues are instrumental in skill development for students and provide startups with cost-effective project execution. The Super Computing Centre on the university campus acts as an additional incentive, attracting both students and renowned professors. This center supports various projects, serving as a valuable resource for research and investigations. For Azerbaijan, relevant instruments could include establishing specialized entrepreneurship centers and programs that provide resources, coaching, and networking opportunities. Facilitating internship programs and creating research centers with advanced facilities can enhance the practical experience for students. Additionally, incentivizing collaboration between academia and industry, as exemplified by UPC, can further stimulate innovation and entrepreneurship within Azerbaijan universities.

- 6) What specific challenges do you anticipate in implementing these ideas, and how do you plan to overcome them?

Implementing entrepreneurial ideas within an academic institution is a dynamic undertaking that comes with a set of specific challenges. Foremost among these challenges is the need to cultivate an entrepreneurial mindset among students and faculty. Overcoming resistance to change and fostering a culture that embraces risk and learning from failure is crucial. To address this, mentorship programs, role models, and awareness campaigns will be essential to inspire and instill the entrepreneurial spirit.

Financial support and funding pose another significant challenge, requiring strategic partnerships with the government and private sector. This is particularly pertinent in contexts like Azerbaijan, where low research and development expenditure and challenges in forming industry partnerships prevail. Seeking sustainable funding models, exploring grant opportunities, and aligning initiatives with the university's strategic goals will be crucial in overcoming this hurdle.

The landscape of academia often grapples with a lack of interest in producing practical innovations applicable to industry. Encouraging applied research, creating incentives for researchers to engage in commercially viable projects, and fostering collaborations with industry partners are integral steps to address this challenge. Finally, ensuring the sustainability of entrepreneurship programs poses a perennial challenge, especially when they rely on external funding or face inconsistent support from university leadership. Developing a sustainable

funding model, integrating entrepreneurship into the long-term strategy of the university, and securing ongoing commitment from leadership through demonstrated impact will be key in overcoming this challenge.

7) Your remarks and suggestions for Azerbaijan HEIs based on UPC examples.

Based on the exemplary practices observed at UPC, several key remarks and suggestions are proposed for Higher Education Institutions (HEIs) in Azerbaijan to enhance their approach to innovation and entrepreneurship: Consider creating specialized entrepreneurship centers within Azerbaijan HEIs. These hubs can serve as focal points for aspiring entrepreneurs, providing resources, mentorship, and collaborative spaces. Develop mentorship initiatives to connect students with experienced entrepreneurs and industry professionals. This can inspire an entrepreneurial mindset and provide practical guidance. Establish internship programs within incubation centers or startup venues to offer students hands-on experience. This can bridge the gap between academic knowledge and real-world entrepreneurial challenges. Actively seek partnerships with industry players, government entities, and research organizations. Strong collaborations can ensure the relevance of academic initiatives and create pathways for technology transfer. By adopting these suggestions, Azerbaijan HEIs can actively contribute to the development of a robust innovation and entrepreneurship ecosystem. These initiatives not only empower students and researchers but also position the institutions as key drivers of economic and societal development in Azerbaijan.

8) Your remarks and suggestions for better management of the visits:

The well-crafted itinerary and thoughtful selection of institutions provided us with valuable insights into innovative practices and entrepreneurship strategies. The interactive sessions, engaging discussions, and practical demonstrations created a dynamic learning environment that resonated positively with all participants. This personalized approach enhanced the relevance of the experience for each participant, fostering a deeper understanding of how the lessons learned can be applied in our respective contexts.

Conclusion

Insights for cultivating a resilient entrepreneurial ecosystem within higher education institutions (HEIs) in Azerbaijan have been gleaned from the study visits conducted by representatives of ten Azerbaijani universities to five preeminent European universities (KTH, UPC, TalTech, ULISBOA, and Poland's Bydgoszcz University of Economics).

By integrating entrepreneurship education, research, and support mechanisms, this report has conducted an exhaustive analysis of the best practices observed at each university and

provides detailed recommendations for higher education institutions in Azerbaijan, drawing from these insights:

Entrepreneurship-focused curriculum development and implementation.

Forming alliances with pertinent organizations and establishing innovation centers.

Engineering education to emphasize its more applicable and useful components.

Interdisciplinary knowledge and inventive pedagogical approaches are utilized to foster faculty growth.

For collaborative innovation, implement the quadruple helix model.

By diligently executing these suggestions, higher education institutions in Azerbaijan can establish a robust framework that promotes innovation, entrepreneurship, and economic progress. As a result, future generations of innovators and entrepreneurs will be empowered and the entrepreneurial ecosystem will flourish within the nation.

Additional research into prospective obstacles and prospects, approaches to allocating resources, and the wider societal ramifications of these endeavors are also duly recognized in the report. For the successful implementation of these recommendations and, ultimately, the development of an entrepreneurial ethos in Azerbaijan, this ongoing examination will be integral.

How do you evaluate the entrepreneurial ecosystem at WSG University (min 150 words)

Entrepreneurial ecosystem at WSG University is highly developed because University is participated in city life in different sectors, such sport, tourism, construction and etc. Also, for Entrepreneurial ecosystem at WSG University affects belonging to the holding which owns different businesses, creating cooperation between university and business. During 04-08 December 2023, when ENGAGE project partners visited WSG University, in Bydgoszcz, Poland, we observed that University have Key Elements of an Entrepreneurship Ecosystem:

- Supportive Policy Environment: A conducive policy framework, including favorable regulations, tax incentives, and intellectual property protection, encourages entrepreneurial activities and facilitates the establishment and growth of businesses.

- Access to Finance: The availability of various funding sources, such as venture capital, angel investors, government grants, and bank loans, is essential to provide entrepreneurs with the necessary capital to launch and scale their ventures.
- Entrepreneurship Education and Training: Comprehensive educational programs, training workshops, and mentorship initiatives equip aspiring entrepreneurs with the requisite skills, knowledge, and guidance needed to navigate the complexities of business management and innovation.
- Incubators and Accelerators: Incubation centers and accelerators provide startups with access to resources, infrastructure, mentorship, and networking opportunities, enabling them to refine their business models and accelerate their growth trajectory.
- Research and Development (R&D) Support: Collaboration with research institutions and access to R&D facilities facilitate the development of innovative products, technologies, and solutions, fostering a culture of continuous innovation and technological advancement.
- Networking and Collaboration: Networking events, industry conferences, and collaborative platforms create opportunities for entrepreneurs to connect with industry peers, potential investors, and key stakeholders, fostering knowledge exchange and collaboration within the ecosystem.
- Support Services: Access to business support services, such as legal advice, marketing assistance, and accounting services, enables entrepreneurs to address operational challenges effectively and focus on core business activities.
- Market Access and Global Connectivity: Integration into global markets and access to international networks provide entrepreneurs with a broader customer base, enhanced visibility, and opportunities for international expansion and collaboration.\
- Cultural Mindset and Perception: A supportive cultural mindset that celebrates risk-taking, innovation, and resilience encourages individuals to pursue entrepreneurial endeavors and fosters a positive perception of entrepreneurship within society.

How do you evaluate the activities Leveraging Educational Innovations and Gamification for Sustainable University Funding and Enhanced Classroom Engagement?

We evaluate the activities Leveraging Educational Innovations and Gamification for Sustainable University Funding and Enhanced Classroom Engagement as very important part in education in WSG University. We had excellent presentation showing that even having

historical background you can create interests for students in learning these courses through gamification. This approach is making education exciting and engaging. Incorporating Gamification in Education is making Learning Fun. Advantages of learning with gamification:

- **Enhancing Learning with Gamification.** In today's fast-paced digital world, traditional teaching methods are becoming less effective in engaging students and fostering a love for learning. This is where gamification comes into play. By incorporating elements of games into the educational process, educators can make learning more fun, interactive, and engaging for students.
- **Creating a Sense of Adventure.** One of the key benefits of gamification in education is that it creates a sense of adventure for students. Just like in a video game, students are presented with challenges, levels, and rewards, which motivates them to actively participate in the learning process. For example, in a language learning app, students can earn points and unlock new levels by correctly answering questions or completing tasks. This not only makes the learning experience more enjoyable but also encourages students to strive for improvement.
- **Competition and Collaboration.** Gamification also introduces healthy competition and collaboration among students. By incorporating leaderboards or team-based challenges, students can compete against each other or work together towards a common goal. This fosters a sense of camaraderie and encourages students to push themselves to perform better. For instance, in a math class, students can participate in a timed quiz where they compete to solve problems correctly in the shortest amount of time. This not only adds an element of excitement but also helps students develop essential problem-solving and critical thinking skills.
- **Personalized Learning Paths.** Another advantage of gamification in education is the ability to create personalized learning paths for students. Each student has their own unique learning style and pace, and gamification allows educators to cater to these individual needs. For example, an adaptive learning platform can adjust the difficulty level of questions based on a student's performance, ensuring they are constantly challenged but not overwhelmed. This personalized approach not only keeps students engaged but also maximizes their learning outcomes.
- **Immediate Feedback and Progress Tracking**
- Gamification also provides students with immediate feedback and progress tracking, which is essential for their growth and development. Through interactive quizzes, puzzles, or simulations, students receive instant feedback on their performance, allowing them to identify

areas for improvement. Additionally, progress tracking tools enable students to visualize their learning journey, giving them a sense of accomplishment and motivating them to continue their educational pursuits.

In conclusion, incorporating gamification in education can revolutionize the way students learn by making it more enjoyable, interactive, and personalized. By creating a sense of adventure, promoting healthy competition and collaboration, and providing immediate feedback and progress tracking, educators can make learning a fun and engaging experience for students. So, let's embrace gamification and embark on an exciting educational journey!

How do you evaluate the University-business cooperation at WSG (min 150 words)

The university is not an institution that could live alone in society, separated from the other actors. Universities generate impact, and at the same time are influenced by the public and private sectors, at both local level and national-international one. The awareness about this mutual relationship has been growing over the last decades. Nowadays, universities recognise that they have a third mission, other than education and research: “the generation, use, application and exploitation of knowledge with external stakeholders and society in general”[1]. The promotion, management and strengthening of cooperation between universities and businesses is a crucial part of this mission.

The Engagement Readiness Monitor project aims to increase universities’ readiness to engage with businesses. For this reason, a deep understanding of how business and university cooperate is needed. The first part of the project’s desktop review focuses on Why and How cooperation occurs.

WSG University is a part of business entity and main important factor is that business owners understand the necessity of cooperation University and business. We observed this cooperation during the visit of different structures of University which were the part of owners business. Motivation drivers that encourage universities and businesses to collaborate, which benefits they earn in the short and long term. Businesses become more competitive, improving their production activities and quality, but also improving their knowledge absorptive capabilities. Universities can apply their theoretical knowledge to real-world cases, improving their skills, and acquiring more resources (funding, but also data and equipment). Furthermore, the collaboration creates a contaminated environment in which new ideas, new knowledge and new research questions arise.

The forms in which collaboration occurs, exploring channels and mechanisms. University - business cooperation occurs through a continuous interaction in which both actors learn from each other, sharing already existing knowledge and obtaining new one. The interaction can be direct or indirect, formal or informal, institutionally or individually driven. It can occur through bi-directional channels (such as joint R&D projects), commercial channels (such as patents and incubators), service channels (such as consultancy and training staff) or traditional channels (such as conferences and publications). Cooperation occurs in three possible forms: educational collaboration, university entrepreneurship, and research related collaboration. For each of them, universities and businesses need mechanisms that enhance trust and boundary spanning. Otherwise, their differences in purposes and management cannot be bypassed.

Many possible barriers can hinder university-business collaboration, affecting both the Why and the How. A really common motivation related barrier is the lack of incentives from the university's side: collaboration does not help academics in career advancement. There are many misalignment barriers due to the cognitive and cultural distance between university and business: they have different goals, expectations, time management and priorities. Sometimes, it does not even exist a network between local actors and researchers, or there is a lack of acknowledgement about the value generated by university-business collaboration (contextual barriers). Governance related barriers are important too: they can delay decision making, generate communication problems, or do not support enough the third mission itself. Even when all the above-mentioned barriers are removed, collaboration could be obstructed by the lack of funds, time or skills (capability related barriers).

To bypass these barriers, universities, businesses and state governments have to actively mitigate the cognitive gap and reduce the social and geographical distance, promoting an entrepreneurial culture to foster engagement, improving the bureaucracy flexibility and providing incentives and resources. Crucial actors that can facilitate this process are Knowledge Transfer Offices (KTOs), university incubators or accelerators, Collaborative Research Centres and Hybrid Autonomous Organisations.

“Discovering Entrepreneurial Mindset” why is this important to enhance the entrepreneurship (min 150 words)

Having an entrepreneurial mindset can help you succeed – not only in business but in life in general. Having an entrepreneurial mindset is about taking ownership, being creative, being action-oriented and have resilience. These are all values that will help you reach your goals and become more successful. An entrepreneur is someone who identifies an opportunity and

chooses to act on that opportunity. Most business ventures are innovative variations of an existing idea that has spread across communities, regions, and countries, such as starting a restaurant or opening a retail store. These business ventures are, in some ways, a lower-risk approach but nonetheless are entrepreneurial in some way. Many entrepreneurs start a new venture by solving a problem that is significant, offering some value that other people would appreciate if the product or service were available to them. Other entrepreneurs, in contrast, start a venture by offering a “better mousetrap” in terms of a product, service, or both. In any case, it is vital that the entrepreneur understand the market and target segment well, articulate a key unmet need (“pain point”), and develop and deliver a solution that is both viable and feasible. In that aspect, many entrepreneurs mitigate risks before they launch the venture.

„Accessibility Lab and inclusive business mindset” how is it helping for the development of social entrepreneurship? (min 150 words)

During the visit, we were in Accessibility Lab and really saw the educational process in this Laboratory. Their activity in this Laboratory have real impact to social entrepreneurship. Social entrepreneurship is an approach by individuals, groups, start-up companies or entrepreneurs, in which they develop, fund and implement solutions to social, cultural, or environmental issues. This concept may be applied to a wide range of organizations, which vary in size, aims, and beliefs. For-profit entrepreneurs typically measure performance using business metrics like profit, revenues and increases in stock prices. Social entrepreneurs, however, are either non-profits, or they blend for-profit goals with generating a positive "return to society". Therefore, they use different metrics. Social entrepreneurship typically attempts to further broad social, cultural and environmental goals often associated with the voluntary sector in areas such as poverty alleviation, health care and community development.

At times, profit-making social enterprises may be established to support the social or cultural goals of the organization but not as an end in themselves. For example, an organization that aims to provide housing and employment to the homeless may operate a restaurant, both to raise money and to provide employment for the homeless. The aim of WSG laboratory is assisting for disabilities to get access all social services in Bydgoszcz, Poland.

There is a wide global attention to social entrepreneurship. However the social entrepreneurship theory is still in the stage of

conceptualization as different countries have different social entrepreneurship coverage specifics and attitudes to social entrepreneurship initiatives.

Which examples maybe applied in Azerbaijan HEIs? (min 150 words)

It is possible using WSG University experience on integration of entrepreneurship in strategy, because they have:

- Course and degree programs emphasized Entrepreneurship education,
- Having specific units for entrepreneurial activities,
- Support for acceleration of Startup projects for integration to the real market,
- University-industry partnership,
- Funding Availability: aiding students and graduates to find financial resources for their start-ups,
- Entrepreneurship Challenges and Competitions: hackathons, innovation challenges, or competitions in entrepreneurship as a tool to inspire students to find creative solutions.
- Gamification of Education, Accessibility Lab and other projects(programs) can be applied in Azerbaijan, but in the beginning we should create cooperation between University – Business – Government, because this cooperation requires involvement not only University and Business. Higher education institutions (HEIs) or universities can make important contributions to sustainable development of Azerbaijan if they structure their teaching, research, and operational tasks to be sustainable. In keeping with a whole institution approach, the initial focus is on the internal relationships within the organization and adding new programs and projects which creates sustainable development for the country.