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UNIVERSITY STARTUP ECOSYSTEM IN AZERBAIJAN

Abstract

This study explores the current state of university startup ecosystems in Azerbaijan, highlighting the challenges and opportunities faced by student-led ventures. Although the findings reveal a growing interest in entrepreneurship among students, significant challenges exist, including limited access to funding, mentorship, and market opportunities. While some universities have already initiated support programs, analysis shows that these initiatives often lack the resources and expertise. The study concludes by offering recommendations for universities to strengthen university-industry collaborations, enhance entrepreneurship education, improve access to funding and mentorship, and foster a more supportive entrepreneurial culture within the Azerbaijani context.

Keywords: university startup ecosystem, Azerbaijan, student entrepreneurship, incubation programs, technology transfer offices, peer-to-peer learning.

INTRODUCTION

Startups are a new phenomenon in the business environment. They are recognized as lucrative business models that have been a critical driver of economic growth around the world. Unlike large corporations, startups need external support to survive in fierce competition.

The concept of startup ecosystems has been strongly emphasized in recent years as the importance of startups has been much more prominent in economic development and innovation. Startup ecosystems are characterized by a social network of actors, including entrepreneurs, investors, and investment organizations such as venture funds, business angel clubs, angel investors, various communities, service providers, and innovation centers. These actors work together to build a self-sustaining and conducive environment for startups (Carayannis et al., 2016). Startup ecosystems help nascent technological ventures increase their success rate, reduce their time to market, and bring new connections to further develop their ideas (Gomes et al., 2018). Another research indicates that the success of the startup is highly dependent on its relationship with ecosystem players such as institutions, partners, and others (Marcon and Duarte Ribeiro, 2021).

Within this context, universities are of paramount importance in developing vibrant ecosystems. In light of the government, public-private, and university triangle, the role of universities' startup ecosystem is becoming more important. Startups can also generate new income sources for universities through licensing, technology transfer contracts, and spin-offs (Jansen et al., 2015). Universities serve startup ecosystems as key drivers of talent development, knowledge creation, and new venture establishment. Having said this importance, the primary objective of this study is to explore the current stage of startup ecosystems at Azerbaijani universities by assessing support mechanisms, identifying challenges, and highlighting opportunities.

The importance of this study stems from numerous factors. First of all, Azerbaijan is actively pursuing economic diversification and modernization beyond the oil and gas sector, and the startup

and innovation ecosystem is a crucial part of this transformation. Therefore, investments in those areas have skyrocketed in the last 3 years in Azerbaijan. In the light of these developments, a need for a vibrant ecosystem occurs. Secondly, global practice shows that universities are the main source of innovation and entrepreneurship. They are increasingly integrating necessary resources, infrastructure, and support mechanisms into their ecosystems to foster entrepreneurship and venture formation. In this regard, it is important to analyze Azerbaijani universities and their roles in local startup ecosystems. This paper aims to provide a comprehensive analysis of university startup ecosystems. In the end, recommendations will be provided for universities to enhance the effectiveness of their support systems.

LITERATURE REVIEW

Overview of Startup Ecosystems:

Mason and Brown (2014), as a result of a comprehensive literature review, defined startup ecosystems as the combination of entrepreneurial actors, organizations, and various institutions in a geographic community. According to the same study, these parties come together to boost the performance of local entrepreneurship communities. These ecosystems are formed by aspiring and current entrepreneurs, startups and scale-ups, large organizations, venture funds, business angels, universities, public agencies, research organizations, mentorship providers, startup program providers, and government bodies among others (Pandey, 2018). The interaction between ecosystem players leads to knowledge and experience exchange, startup formation and development, and mutually beneficial collaboration opportunities. A recent research indicates that startup ecosystems increase the accessibility of startups to various resources, including funding, mentorship, and market relations (Cavallo et.al, 2021).

Role of Universities in Startup Ecosystems:

Knowledge-driven societies pushed universities to adopt the rapidly changing global context and approach other activities beyond teaching and research. So, they started to be actively involved in the startup ecosystems, especially in new venture formations and technology spin-offs (Scuott et al., 2019). Siegel and Wright (2015) explored that in addition to academic entrepreneurship, which faculty members have mainly pursued, student entrepreneurship is a new tendency at universities. It states the increase in the number of startups and ventures made by students.

First of all, they have a very large talent pool consisting of several aspiring entrepreneurs. Entrepreneurship courses play a pivotal role in the establishment of aspiring entrepreneurs as they equip students with essential skills to become successful startup founders. Elert et.al, (2015) explored that entrepreneurship education increases students' chances to start their ventures and gain more entrepreneurial income. In addition, most universities have their own support structures such as co-working spaces, incubators, or accelerators to provide a nurturing environment for startups (Jansen et al., 2015). Those are vibrant areas where new startups are born and can get the support they need. Technology transfer offices are also very important models in university startup ecosystems. Those offices have been of paramount importance in research commercialization. Students can access to university's research facility, test their ideas, and even collaborate with industry leaders. It is also important to mention that universities are an organic hub for networking. Several workshops, seminars, and conferences are held at universities where students get a great chance to meet like-minded fellow, industry professionals, investors, serial entrepreneurs, expand their network, and establish long-lasting relationships. Slotte-Kock and Coviello (2010) argue the importance of networking at universities in terms of access to essential resources. Researchers claim that social networks enable students to get access to knowledge, experience, partners.

Despite its potential benefits, university-startup collaboration often faces various challenges. Most of those challenges comes from lack of understanding of startups needs and constraints. Therefore, several universities do not have the right environment to nurture new ventures.

Startup Landscape in Azerbaijan:

In Azerbaijan, entrepreneurship and innovation have experienced a growing interest in the last 2 decades. While the startup ecosystem is still in its initial stages in Azerbaijan, the government has implemented various initiatives to create a favorable environment for startups. Startup certification, technopark, and other legislative frameworks create a tax heaven for technological startups. Since 2022, Azerbaijan has established its first three venture funds, collectively managing a total of \$50 million to support the country's growing startup ecosystem. Several startup competitions, incubation, and acceleration programs resulted in the emergence of new startups, leading to the first success stories in the country. Now, several local startups have expanded into foreign countries. Universities have also started to be a part of this journey. However, further research is needed to understand the specific challenges and opportunities in the current state of this area in Azerbaijan.

DISCUSSION

This section provides the key findings of this research, based on the data collected via secondary data available in public resources as well as direct contact with universities. The findings are then discussed concerning a broader context of university startup ecosystems in Azerbaijan.

Assessment of University Support for Startups:

While some universities have taken initial steps to support startups, significant gaps still remain in this area. First of all, only a few universities have started to provide large-range support to startups while the majority of the startups have not even started. In the existing structures, supports by universities are almost always backed by government support, showing less interest from the private sector towards it. In addition, the existing support structures lack the necessary resources, infrastructure, and expertise to effectively deliver the value.

Some universities have dedicated organizational bodies to support student ventures at universities. French-Azerbaijan University, Azerbaijan State Economic University, Azerbaijan State Oil and Industry University, Azerbaijan Architecture and Construction University, ADA University, Azerbaijan Technological University, Azerbaijan State Agricultural University, and Baku Higher Oil School have their innovation centers to foster entrepreneurial activities. Technoparks are the form of organizational bodies at Baku Engineering University and Azerbaijan Technical University to provide essential resources and opportunities for students.

The overview of the Azerbaijani startup ecosystem can be summarized as follows:

• Innovation Programs:

Azerbaijan State Economic University, Baku Engineering University, Khazar University, Azerbaijan Architecture and Construction University, and French-Azerbaijani University have established incubation programs, providing workspace, mentorship, and access to resources for student startups. The “Ignite” program initiated by French-Azerbaijani University has already supported 20 startups in two cohorts. More than startups participated in the “Bootstart” program at Azerbaijan State Economic University. However, these incubators often face challenges such as limited funding, inadequate physical space, and a lack of experienced mentors. Universities do not seem interested in providing the necessary resources for those activities. Consequently, this kind of program only takes place with the support of external, mostly government, support. Despite incubation programs, hackathons are very popular at universities. The majority of them have at least one hackathon each year as it does not require ongoing support and high costs for them to do.

• Technology Transfer Offices:

Research can be monetized at technology transfer offices. Commercialization of research developments, patenting, licensing, and contracting processes have to be handled by those offices which will bring additional income sources to universities. However, The majority of Azerbaijani universities lack dedicated technology transfer offices. Consequently, university spin-offs still do not exist in Azerbaijan. In addition to physical amenities, universities lack skillful experts to follow processes in this context.

• Entrepreneurship Education:

While some universities offer entrepreneurship courses and workshops, these initiatives are often limited in scope and may not adequately prepare students for the challenges of starting and running a business. Sabah.Hub plays a crucial role in entrepreneurship education in its collaboration with the world-known IE Business School. Since 2021, Sabah.Hub has supported more than 2100 students in 7 universities. As a result, 230 teams were established, of which 70 teams were passed to the incubation programs.

Challenges Faced by Student Entrepreneurs

Student entrepreneurs in Azerbaijan face a multitude of challenges, including:

- **Financial Constraints:**

Access to finance remains a crucial issue not only in universities but also in entire startup ecosystems. Startups need financial resources for product development, software licenses, marketing, and other operational activities. Access to venture capital and angel investors is limited in Azerbaijan, and conventional bank loans are often difficult to obtain due to the high-risk nature of startups in addition to the lack of students' credit background. The university-venture capital relationship is non-existent in this context too. Only a few incubation programs have some awards upon completion in exchange for zero equity which is still not effective for scale-up of startup ventures.

- **Lack of Mentorship and Guidance:**

Access to experienced entrepreneurs, mentors, and business advisors is limited, which consequently causes challenges for the development of crucial business skills and networks. Faculty and alumni support is relatively low in university startup ecosystems. Universities cannot provide access to cutting-edge technologies and infrastructure in their internal ecosystems too. This lack of guidance can lead to costly mistakes and increased risk of failure. Universities should organize various train-the-trainer programs to equip instructors with the necessary skills to support the startups. Moreover, the establishment of innovation centers gains more importance in the modern startup dynamics.

- **Market Access:**

As the market size is small in Azerbaijan, startups face fierce competition from industry leaders and other competitors. Connecting with potential customers, suppliers, partners and investors can be challenging for students due to limited market awareness and networking opportunities. Small market size also hinders startups' ability to scale rapidly inside the country and start to consider global expansion. Speaking about global expansion, limited resources and experience cause challenges for student-led startups to grow outside the country.

- **Bureaucratic Hurdles:**

Navigating the legal and regulatory environment for a nascent business can be complex and time-consuming. Bureaucratic procedures, such as obtaining licenses and permits, can be challenging and hinder the growth of startups. Various challenges are also faced in business formation and organizational procedures due to difficulties in understanding legal frameworks. Legislative assistance is not provided by universities to student-led startups, resulting in costly mistakes in organizational structures.

- **Lack of a Supportive Entrepreneurial Culture:**

A lack of awareness and understanding of entrepreneurship, innovation, and startup development among students, faculty, and the wider university community can create significant barriers to growth. Only a few people can understand the dynamic and rapidly changing market landscape of startup ecosystems. This can lead to a lack of support and encouragement for student entrepreneurs, increasing the likelihood of failure. Training programs and mentorship are not available to trigger entrepreneurial spirit.

CONCLUSION

This study investigated the current state of university startup ecosystems in Azerbaijan, focusing on the challenges and opportunities faced by student-led ventures. The findings reveal a growing interest in startup ecosystems among students at local universities. However, the existing

university support systems, while showing some promising initiatives, require significant improvements to effectively support student-led startups.

Key Findings and Implications

The findings of this study reveal a gap between the growing entrepreneurial aspirations of students and the limited resources and support available to them. While some universities have established incubation and innovation centers, and offer entrepreneurship courses, these initiatives and supports are often incomplete due to limited funding opportunities, inadequate infrastructure and technology centers, a lack of experienced mentors and networking opportunities, and a disconnect between research and commercialization due to the absence of technology transfer offices. The findings also underscore the critical challenges faced by student entrepreneurs, including limited access to funding, lack of mentorship, difficulties in market access, bureaucratic challenges, and lack of entrepreneurial culture. These challenges create significant barriers for startups to scale rapidly and increase the likelihood of startup failure.

Recommendations for Universities

Based on the findings of this study and literature review, the following recommendations are proposed:

1. Strengthen university-industry collaborations:

Universities should foster stronger partnerships with industry to provide students with valuable industry experience, access to resources, and opportunities for market entry. It is important to attract investment and industry knowledge to support research and venture formation processes by students. The university-industry relationship creates an environment for students to understand the challenges in the industry and acquire advice from industry leaders (Longva, 2021).

2. Develop comprehensive entrepreneurship education programs:

Universities should integrate entrepreneurship education into the curriculum across various disciplines, incorporating practical experience, case studies, and mentorship opportunities. In the case studies at Massachusetts University of Technology (MIT), and Utrecht University, Jansen *et al.* (2015) revealed the importance of product development. The positive role of business plan courses was indicated in the founder's product management and presentation skills. In addition, the same study emphasized that these courses are pivotal for students to find co-founders and teammates.

3. Establish or strengthen technology transfer offices:

Universities should create dedicated offices to facilitate the commercialization of university research and innovation. Technology transfer offices are regarded as one of the main generators of income for universities. They bridge the gap between industry challenges and research perspectives. Licensing, patents, industry investment can create additional income sources for academic institutions. Unfortunately, local universities do not pay close attention to this matter. First of all, Azerbaijani universities need capacity-building training to build essential skills for tech transfer offices among students and faculty members. Then, physical infrastructure with adequate laboratory environment should be provided.

4. Invest in resources and infrastructure for incubators:

This part is about providing adequate funding, physical space, and experienced mentors to support student-led startups within university incubators. Students might be the best mentors for other students (Haneber and Aaboen, 2020). Peer-to-peer learning (p2p) enables students to learn from students to gain more practical and relevant guidance for their entrepreneurship journey while also highlighting success stories and role models from previous founders (Jansen *et al.*, 2015). Our findings indicate that p2p learning is not actively practiced in local university ecosystems. Therefore, universities should create learning environments where this practice can be pursued. Faculty members are another kind of actors who should be very active in university incubators (Jansen *et al.*, 2015). Haneberg and Aaboen (2020) found that university incubators are successful in they pursue a need-driven approach. It means instead of having one-size-fits-all programs, universities should pursue flexible approaches to support students in incubators. However,

considering the current stage of university startup ecosystems and the scarcity of resources, Azerbaijani universities may have strong institutional accountability issues in this regard.

5. Foster a culture of entrepreneurship within the university:

Collaborative environments and networking opportunities are of paramount importance for startup growth. Events, workshops, and competitions should be organized to promote entrepreneurship and provide students with opportunities to network and learn from successful entrepreneurs. Competitions are essential for the generation of new ideas and ventures. Even though several hackathons are hosted at Azerbaijani universities, post-program support does not exist, leading the established ideas at hackathons to fail after that. Furthermore, networking is the most frequent type of support at global university ecosystems which is mostly triggered by networking events. Networking enables student startups to acquire new teammates for their startups while finding potential customers to test their ideas and provide valuable feedback (Haneber and Aaboen, 2020). The role of professors and other faculty members should be emphasized here. Jansen *et al.* (2015) found that MIT professors encouraged students to start their ventures while some of them were also participating as co-founders in newly established startups. Universities should pay more attention to enabling networking opportunities among students and faculty members. A strong emphasis should be put on student clubs, a place for students' personal and professional growth. Students not only network with others at these clubs but also acquire practical skills for further development. Unfortunately, Azerbaijani university ecosystems lack student entrepreneurship and startup clubs to provide an environment for creativity and collaboration.

Limitations and Future Research Directions

It is important to consider that this study has some limitations. First of all, it is primarily limited to the student perspective. Subsequent research should explore the perspectives of faculty members, wider university communities, and industry partners to gain a holistic and broader understanding of the challenges and opportunities in university startup ecosystems. Nevertheless, this study provides valuable contributions to the literature about the current state of university startup ecosystems in Azerbaijan and suggests practical recommendations for universities to improve the support structures provided to student entrepreneurs. By implementing these recommendations, Azerbaijan can unleash the full potential of its student entrepreneurs and foster a thriving and dynamic startup ecosystem that contributes to socio-economic growth and innovation around the country.

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Xülasə

Məqələdə tələbələrin rəhbərlik etdiyi startapların üzləşdiyi çətinlikləri və imkanları vurğulayaraq, Azərbaycan universitetlərində startap ekosistemlərinin mövcud vəziyyətini araşdırır. Nəticələr tələbələr arasında sahibkarlığa artan marağı üzə çıxarsa da, məhdud səviyyədə maliyyələş əlçatanlığı, mentorluq və bazar imkanları kimi əhəmiyyətli problemlər qalmaqdadır. Bəzi universitetlər artıq dəstək proqramlarını həyata keçirənlər də, təhlillər göstərir ki, bu təşəbbüslər çox vaxt resurs və təcrübə cəhətdən məhdudiyyətlərə malikdir. Tədqiqat universitet-sənaye əməkdaşlığını gücləndirmək, sahibkarlıq təhsilini artırmaq, maliyyələşdirmə və mentorluq imkanlarını yaxşılaşdırmaq və Azərbaycan kontekstində daha dəstəkləyici sahibkarlıq mədəniyyətini yaratmaq üçün universitetlərə tövsiyələr verməklə yekunlaşır.

Açar sözlər: universitet sahibkarlıq ekosistemi, Azərbaycan, tələbə sahibkarlığı, inkubasiya proqramları, texnologiya transferi ofisləri, həmyaşd öyrənmə.

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Экосистема стартапов в азербайджанских университетах

Резюме

В статье рассматривается текущее состояние экосистем стартапов в азербайджанских университетах, а также подчеркиваются проблемы и возможности, с которыми сталкиваются стартапы, возглавляемые студентами. Хотя результаты свидетельствуют о растущем интересе к предпринимательству среди студентов, сохраняются и существенные проблемы, такие как ограниченный доступ к финансам, наставничеству и рыночным возможностям. Хотя некоторые университеты уже реализуют программы поддержки, анализ показывает, что эти инициативы часто имеют ограничения по ресурсам и экспертным знаниям. В заключении приводятся рекомендации для университетов по укреплению сотрудничества между университетами и промышленностью, совершенствованию предпринимательского образования, улучшению финансирования и возможностей наставничества, а также созданию более благоприятной предпринимательской культуры в азербайджанском контексте.

Ключевые слова: университетская предпринимательская экосистема, Азербайджан, студенческое предпринимательство, инкубационные программы, офисы трансфера технологий, взаимное обучение.