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Entrepreneurial Capacity – Building in HEIs – Smart Innovation for Sustainable Future

Sanja Popović Pantić[1], Nina Stojanović[2], Lidija Miletić[3], Milena Ilić[4], Nevenka Popović Šević[5*]
1 University of Belgrade, Institute Mihajlo Pupin, Science and Technology Policy Research Center, Belgrade, Serbia; email: sanjap.pantic@pupin.rs
2 University Business Academy in Novi Sad, Faculty of Contemporary Arts, Belgrade, Serbia; email: nina.stojanovic@fsu.edu.rs
3 Information Technology School – ITS, Belgrade, Serbia; email: lidija,miletic@its.edu.rs
4 University Business Academy in Novi Sad, Faculty of Contemporary Arts, Belgrade, Serbia; email: milena.ilic@fsu.edu.rs
5 University Business Academy in Novi Sad, Faculty of Contemporary Arts, Belgrade, Serbia; email: nevenka.popovic.sevic@fsu.edu.rs

Abstract

Motivating students, as well as teaching and non-teaching staff, at higher education institutions in the direction of developing innovation and entrepreneurship is extremely important both for improving the transfer of knowledge from entrepreneurial skills and for fostering entrepreneurial initiatives. Institutions of higher education have recognised a lack of pragmatic experience when it comes to transferring entrepreneurial skills to students and staff. In this sense, there is a strong interest in organising lectures, workshops, and other activities aimed at encouraging entrepreneurship in academic circles. Innovation and Entrepreneurship in Higher Education Institutions (SMART4FUTURE) is a project with the aim of building innovation capacities in the sphere of entrepreneurship for higher education, which was launched by the European Institute for Innovation and Technology (EIT). SMART4FUTURE aims to inspire participants (students, academic, and non-academic staff) to develop an entrepreneurial mindset. The consortium is made up of seven higher education institutions in partnership with a business incubator and an internationally recognised business. In this way, SMART4FUTURE generates sustainable innovative support for higher education institutions to strengthen the entrepreneurship segment by offering high-tech solutions. This paper will focus on the 'Lean Start-up Programme', 'Lead for Smart Change' and 'How to Fail Successfully', which supports students, academic and non-academic staff to acquire the necessary knowledge, expertise, and mindset to turn innovative ideas into business opportunities.

Keywords: Entrepreneurial education, HEIs, University-business collaboration, HEInnovate, Entrepreneurial intention.

1. Introduction

Entrepreneurship defines the process of developing ideas, but also identifying certain business opportunities on the market, and finally the application of a certain idea in immediate practice (Fueglistaller, 2004). Entrepreneurship is an important prerequisite for the economic development of any country and one of the factors of competitiveness. Entrepreneurship refers to a set of knowledge and skills that are associated with proactive and innovative business (Entrepreneurship Education, 2015). In addition to generating business success on the market, entrepreneurship has seen the opening of new markets, opportunities for a wider range of jobs, and the establishment of new legal entities. For entrepreneurship to adequately respond to the demands of the modern market, in addition to a clearly defined educational system in the field of entrepreneurship, continuous training is extremely important.

Higher education institutions are increasingly becoming key providers and initiators of programs focused on entrepreneurial education for students. In their practices, they employ a variety of curricula and co-curricular approaches aimed at developing entrepreneurial thinking and skills among students. These approaches include different teaching methods, organising ideathons, competitions in creating business plans, as well as collaboration with the industry, which represents an important resource for entrepreneurial practices. (Lv et al., 2021), (Hua et al., 2022).

There are three main focuses of entrepreneurial education (Suonpaa, 2013): learning for the purpose of entrepreneurial thinking (strengthening awareness and the necessity of developing entrepreneurial ideas), learning for the purpose of becoming an entrepreneur (special attention is paid to the skills necessary to start the business process) and learning to understand entrepreneurship (teaching students to understand the practical side of entrepreneurship and the flexibility of implementation in different industries).

Strategic planning of the state's national policy is necessary for universities to effectively direct their resources and priorities to the formation of an important entrepreneurial core (Towers et al., 2019). The mentioned implies the design of entrepreneurial learning and its incorporation into curricula, the development of cooperation between higher education institutions and the economy, as well as other significant educational institutions and scientific research centres. In this sense, entrepreneurial courses focus on the entrepreneurial mentality of students as well as learning flexibility when it comes to the

always turbulent market and business. In this sense, higher education institutions should encourage enterprising activities, initiatives, development of ideas and projects, solving problems, finding opportunities, but also nurturing self-confidence, which are the basis of future entrepreneurial careers.

Experience shows that various higher education institutions are traditional providers of entrepreneurship education, whose courses are not always relevant to humanities and arts for example (Mehlhorn et al., 2015). The most effective concept of entrepreneurial learning, it is believed, unites the tripartite contribution of staff, students, and partner organisations from industries (Shepherd, 2015).

Some authors believe that higher education institutions that have or develop entrepreneurship, do so through different innovative approaches, and prioritise resources (Guerrero et al., 2014). Through entrepreneurship, universities stimulate self-employment after graduation among students (Garavan et al., 2014). In this context, courses in the field of entrepreneurship, the orientation of the higher education institution as well as its staff, entrepreneurship support programs, and connections in the industry have quite an influence on the choice of faculty by students.

One group of researchers found that the university environment can have a stimulating effect on students' attitudes, self-confidence, and motivation, and can further encourage their entrepreneurial intentions (Garcia-Rodriguez et al., 2017). Other authors advocate for the development of various entrepreneurial activities even during studies that are based on innovations, i.e. the connection between industry and entrepreneurship (Maritz and Brown, 2013). In some higher education institutions, no distinction is made between the industries that will actively support entrepreneurial activities, because in parallel, they also develop support through entrepreneurially oriented staff (Bacigalupo et al., 2016).

The entrepreneurial orientation within higher education institutions can be observed through the establishment of subjects on the topic of entrepreneurship, but also through the development of entrepreneurial orientations of students, teaching staff, and finally the higher education institution itself (Franceško et al., 2018). It has been confirmed that entrepreneurial education, which builds on the basic postulates of education, is extremely important for subsequent interest in entrepreneurship. Higher education institutions have recognised a lack of pragmatic experience when it comes to transferring entrepreneurial skills to students and staff (Gonçalves et al., 2022).

The importance of entrepreneurship education at higher education institutions rests in the fact that, during the theoretical adoption of the basic postulates about entrepreneurship, students can encounter the possibilities of taking risks in business activities, possible problems, and strategic directions that entrepreneurship offers, but also the wide range of opportunities that entrepreneurship has (Hisrich et al., 2011).

However, in addition to entrepreneurial knowledge, entrepreneurial orientation is also necessary, especially among students who are expected to be the future generators of every social community. To achieve that, first, wholehearted educational support from the higher education institution and teaching staff is necessary, as well as their parallel orientation towards entrepreneurial activities. One study found that higher education institutions that have embraced entrepreneurship have a strong relationship between innovation and entrepreneurship (Gjerding et al., 2006). The same research indicated the need for financing entrepreneurial activities, assistance with the protection of intellectual property rights, and project management. The faculty's administrative support in terms of innovation and entrepreneurship is also important.

Entrepreneurship education is closely related to interactive learning that has business and social initiatives as its basis (Boon et al., 2013). Many industries in this sense may be interested in implementing them in the field of education, but also vice versa because of the learning that is based on practice and experience. In this context, we are talking about entrepreneurial education as a very dynamic category that is constantly subject to market changes. Entrepreneurial education is not only about teaching students how to start a business but also about fostering an entrepreneurial mindset, initiative, and innovativeness (Lv et al., 2021).

Some authors propose the introduction of various digital tools when it comes to entrepreneurial subjects (Fischbach and Guerrero, 2018), while other researchers emphasise the need to stimulate creativity when it comes to solving certain business problems in entrepreneurship (Sternquist et al., 2018), namely due to the fact that previous experiences have shown limited interest of students in access to the financing of certain projects as well as other types of business support.

For the teaching staff of higher education institutions, the process of designing and implementing courses in the field of entrepreneurship can be very challenging. It is mostly based on the so-called individualistic approach, ie. independent vision and its realisation with students, through their own prism of skills and experience. It is considered that at the level of higher education institutions, the individual courses within which the subject exists, the number of students, but also various creative workshops, guest appearances by entrepreneurs from direct practice, etc., have a noticeable influence on the possibilities of didactic design of entrepreneurship courses (Chauhan and Das, 2017).

2. Entrepreneurial Methods for Learning in HEIs

The SMART4FUTURE project consortium represents a collaboration between academic institutions, founders of higher education institutions, and business accelerators, such as Griffith College, University of Naples, Sabanci University, as well as the National University of 'Kyiv-Mohyla Academy' together with LINKgroup, Infobip, Mentortec and Algebra University. All the mentioned institutions are responsible for the creation of programs that support innovation and entrepreneurship in higher education institutions, including academic staff, non-academic staff, and students. Through the SMART4FUTURE project, smart technologies are being strengthened to start and implement entrepreneurship in the real market.

One of the basic initiatives of the aforementioned project, within eight work packages, is, among other things, the creation of materials that would serve as a basis for learning for the categories of users listed above, all with the aim of improving entrepreneurial skills and providing concrete tools for their immediate application. Within the three programs named *Lean Start-up, Lead for Smart Change*, and *How to Fail Successful*, we wanted to focus on the specific characteristics of innovation, entrepreneurship, and their mutual synergy.

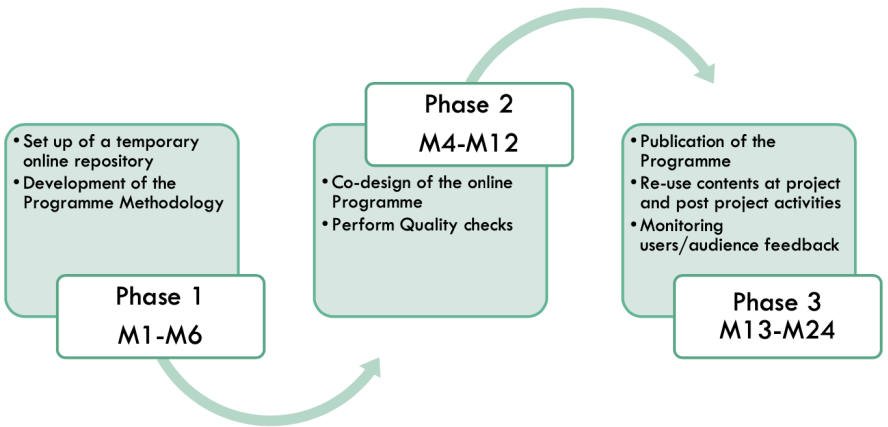


Figure 1 – Programme Development Phases (Source: Smart4Future project, EIT HEI Initiative)

The *Lean Start-up* program contains four essential phases through which program users are offered a clearly marked path through which they can direct their innovative ideas into sustainable and achievable entrepreneurial projects. Thanks to the stages they represent – raising awareness, empowerment, validation, and sustainable growth, the users of this project are in a situation where they can clearly define the mission and vision of their entrepreneurial idea but also shape the skills that will be essential for success in entrepreneurship. They will primarily achieve this during the preparation and implementation of the entrepreneurial solution, for which they are offered a wide range of educational tools.

Awareness-raising phase: This initial phase is crucial for raising user awareness about the entrepreneurial process and the possibilities of transforming ideas into effective projects. Key achievements include workshops and seminars designed to inspire and educate participants on the basics of entrepreneurship.

Empowerment phase: In this phase, participants receive tools and resources to further develop their ideas into more defined business models. Workshops focus on the practical aspects of entrepreneurship, including financial planning and market research.

Validation phase: Here, the emphasis is on testing the feasibility of business models through pilot projects and interaction with potential customers. Achievements include successfully launching pilot projects that confirm the viability of business ideas.

Sustainable Growth phase: The final phase focuses on strategies for long-term growth and business expansion. This includes mentoring sessions and connecting with industrial networks that help participants secure financial resources and other necessary resources for expansion.



Figure 2 – Main stages of the Lean Start-up Programme (Source: Smart4Future project, EIT HEI Initiative)

Lean Start-up represents a whole set of techniques that entrepreneurs can use for the purpose of their business ventures, which implies greater efficiency and lower prices. In addition to being applied in entrepreneurship, this approach to business also has its application in the sphere of entrepreneurial education (Blank and Engel, 2013). In the context of higher education, students evaluate the nature of business with their clients, demonstrate activities related to business results, but also evaluate customer reactions.

It is considered that the *Lean Start-up* program is extremely important for both intellectual and business progress, and in this sense, it is desirable as a subject at higher education institutions (Gedeon, 2013). The theory of the *Lean Start-up* program (Ries, 2011) is based on primary learning by customers who shape the offer through the demand process, but immediately before the sale, they start the production system. This theory advocates the importance of business development in the most efficient way possible, all in order to reduce the possible risk of failure. In this context, the basis of this theory is cost savings through a previously structured way of doing business. This approach advocates the practice of creating added value when placing products on the market.

The next program is *Lead for Smart Change*, which is focused on the rapid development of technology. This segment is divided into five phases, within which new technologies such as the Internet of Things, Big Data, and Artificial Intelligence are discussed, and areas such as Automation and Robotics, as well as Virtual Reality, have also found their place. Each of the mentioned phases gives users a detailed insight and understanding of technological domains, all with the aim of more efficient use of new technologies within their professional commitments.

The *Lead for Smart Change* program was created based on the importance of disruptive technology, characterised by its transformative impact on consumers, businesses, and industries. It is a phenomenon that challenges existing paradigms and encourages significant changes in market dynamics. Examples such as personal computers, online commerce, and ride-sharing applications illustrate its profound impact. Although its initial reception by incumbents is usually apprehensive, disruptive technologies have the capacity to revolutionise entire industries over time. This technology requires a distinction between mere technological progress and truly disruptive innovations, which must demonstrate a difference from existing market technologies, establish new markets or significantly change existing ones, and possess the ability to replace existing technologies or establish new market leaders.

In the first phase of the program, the focus is on the Internet of Things (IoT), which includes a wide variety of interconnected devices and objects with an Internet connection, facilitating data exchange and communication. The Internet of Things is poised to become massive due to the anticipated disparity between the number of connected "things" and the human population. As per Gartner (Mark, 2017), the current count stands at over 20 billion linked devices, indicating a significant expansion of this phenomenon in the future. By seamlessly integrating different technologies, IoT offers unparalleled insight into environments and processes, promising cost reductions, efficiency improvements, and improved customer service across industries.

Big Data works on huge amounts of unstructured or semi-structured data, helping the ongoing activities of collection and processing in a structured way. In the second phase, the program shows how platforms such as Facebook, Twitter, Instagram, and Amazon use Big Data, as well as their integral role in supporting everyday technologies. Leading global industries use big data technology to maintain competitive advantages and implement innovative systems, positioning it as a cornerstone of modern business strategies.

The reason for the third phase of the program is that AI, although already deeply integrated into everyday life, has yet to reach its full potential, with demand projected to increase across all industries over the next decade, as the market for AI software is expected to reach 90 billion dollars by 2025. Its appeal to both data scientists and business managers lies in its capacity to automate data analysis and improve overall organisational intelligence.

Finally, in the fourth phase, the program introduces us through four moguls to Robotics, a field that includes the design and use of mechanical robots, programmable machines capable of replicating or replacing human actions, encouraging the synergy between Artificial Intelligence and Robotics and the need to upgrade skills among workers. Industrial applications, such as delivery robots that move autonomously to serve customers, highlight the investment risk of implementing robots, but industries reap long-term benefits through precision and accuracy, which require a highly skilled workforce to maintain and operate.

As the SMART4FUTURE project recognises the possibility of partial failures during the implementation of entrepreneurial ideas, the *How to Fail Successfully* program is also offered. It focuses on recognising the stages of failure, but also on finding the path to revitalisation as quickly as possible with tools that practically explain which skills are necessary for recovery and achieving success in the long run. It is intended that the users of this program within the four phases presented through reaching failure, restarting, creating, and maintaining long-term success, have an insight into the complexity of failure, and provide themselves with all the necessary tools to be more resistant to it. They are offered strategic tools to overcome the phase of failure as efficiently as possible, which can be turned into success with wise management.

Today, organisations are facing a rising tide of unforeseen disasters, a trend noted by some respected authors (Petit et al. 2013). These events, once considered rare exceptions, have now become distressingly frequent occurrences. The aftermath of such disasters is often chaotic and unpredictable, wreaking havoc on numerous companies, as highlighted by Gotham and Campanella (2010). In this dynamic and turbulent environment, the ability to weather these storms and survive has become paramount. Traditional methods of prediction and forecasting are proving inadequate in the face of this volatility, as noted by Geldenhuys et al. (2020). The program *How to Fail Successfully* deals with these problems and provides answers and solutions through concrete examples from practice. Each unit comprises compelling modules with clear objectives, emphasising the

usage of entrepreneurial narratives, cases, and primary research interviews to offer diverse insights and foster resilience-building reflection. By normalising failure and providing scientific strategies for its management, the program empowers entrepreneurs to cultivate resilience, overcome setbacks, and advance toward their objectives.

Program *How to Fail Successfully* in Phase 1 focuses on understanding failure and developing mindset tools, while Phase 2 provides opportunities for restarting and re-planning with an emphasis on leadership and business planning skills. In Phase 3, participants work on revitalising their business ideas and building successful teams, while Phase 4 aims to fine-tune learning and support sustainable success by addressing challenges associated with business expansion. Throughout the course, practical tools and methodologies are used, and participants are encouraged to reflect, plan, and adapt to ultimately sustain success.

3. Conclusions

The aim of this article was to show how the lean start-up approach, as well as the approaches that lead to smart change and how to fail successfully, can be useful for the development and implementation of entrepreneurial programs in higher education institutions. In summary, the lean start-up approach provides exceptional support to beginners when it comes to launching a new product. Also, this approach offers a less risky business that has lower costs.

Certainly, monitoring of the participants within the program, whether they are non-academic or academic staff, i.e. students, is extremely important. It is necessary to analyse their initial entrepreneurial ideas and projects to observe the routine of performing the aforementioned approaches in the daily business process of their newly formed companies.

The *Lead for Smart Change* program encapsulates the transformative potential of disruptive technology, exemplified by its impact on various sectors, from personal computing to online commerce. Embracing the Internet of Things, Big Data, AI, and Robotics, the program delves into each realm, elucidating their significance and practical applications in today's dynamic landscape.

By normalising failure and providing strategic frameworks for recovery and success, the program *How to Fail Successfully* equips entrepreneurs with resilience-building tools crucial for navigating uncertainties and achieving sustainable growth. Through its structured phases, the program not only educates but also inspires individuals to embrace innovation, adaptability, and resilience as cornerstones of entrepreneurial success in an ever-evolving digital era.

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