ENTREPRENEURSHIP ECOSYSTEM IN TURKEY: ACCELERATORS & INCUBATION CENTERS

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Abstract

The main aim of this research is to examine the entrepreneurship ecosystem in Turkey and to make recommendations about needed training to develop innovative entrepreneurship.

The research method is based on qualitative analysis which in-depth interviews were made with 13 entrepreneurs. Entrepreneurs were asked a total of 7 questions about their demographic structure, socio-cultural experiences, and start-ups.

As a result of the study, an evaluation was made about the entrepreneurship training needed to increase innovative entrepreneurship. The most challenging stages are networking, finding customer, introducing product/service, testing product, and creating a team. The centers need to provide support focused on entrepreneurial needs to increase the start-up survival rate. The centers are concentrated in 3 provinces in Turkey. Considering each young people in all provinces has the potential for being an entrepreneur, it will be beneficial to provide remote education in these centers.

Entrepreneurship is an important factor for economic development in developing countries. Entrepreneurship should proceed parallel with innovation to a gain competitive advantage. For this reason, it is important that entrepreneurship centers spread across country provide support by targeting the areas where start-ups that will create innovation have difficulty. This paper aims to enriche the supports of accelerator and incubation centers by presenting in depth-understanding the needs of entrepreneurs in Turkey.

Keywords Entrepreneurship, Innovation, Incubation Centers, Accelerators, Education

TÜRKİYE'DE GİRİŞİMCİLİK EKOSİSTEMİ: HIZLANDIRICILAR VE KULUÇKA MERKEZLERİ

Özet

Bu araştırmanın temel amacı, Türkiye'deki girişimcilik ekosistemini incelemek ve yenilikçi girişimciliği geliştirmek için ihtiyaç duyulan eğitimler konusunda önerilerde bulunmaktır.

Araştırma yöntemi, 13 girişimci ile derinlemesine görüşmelerin yapıldığı nitel analize dayanmaktadır. Girişimcilere demografik yapıları, sosyo-kültürel deneyimleri ve start-up'ları hakkında toplam 7 soru sorulmuştur.

Çalışma sonucunda yenilikçi girişimciliği artırmak için ihtiyaç duyulan girişimcilik eğitimine ilişkin bir değerlendirme yapılmıştır. En zorlanılan aşamalar; ağ oluşturma, müşteri bulma, ürün / hizmet sunma, ürünü test etme ve ekip oluşturmadır. Girişimcilik merkezlerinin, start-up'ların hayatta kalma oranını artırmak için onların ihtiyaçlarına odaklanarak destek sağlaması gerekir. Merkezler Türkiye'de 3 ilde

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yoğunlaşmıştır. Tüm illerdeki her gencin girişimci olma potansiyeline sahip olduğu düşünüldüğünde, bu merkezlerde uzaktan eğitim verilmesi faydalı olacaktır.

Girişimcilik, gelişmekte olan ülkelerde ekonomik kalkınma için önemli bir faktördür. Rekabet avantajı elde etmek için girişimcilik inovasyonla paralel ilerlemelidir. Bu nedenle ülke geneline yayılmış girişimcilik merkezlerinin inovasyon yaratacak start-up'ların zorlandığı alanları hedefleyerek destek sağlaması önemlidir. Bu çalışmada, Türkiye'deki girişimcilerin ihtiyaçlarını derinlemesine anlayarak hızlandırıcı ve kuluçka merkezlerinin desteklerini zenginleştirmeyi amaçlamaktadır.

Anahtar Kelimeler: Girişimcilik, İnovasyon, Kuluçka Merkezleri, Hızlandırıcılar

1. Introduction

Entrepreneurship has existed since people started living as a community. In today's perspective, entrepreneurship is unlike trade as it contains innovation. However, the point to be considered that everything new does not constitute the fundamental dynamics of innovation. It creates innovations that turn into or transform into an economic and social added value (Uzkurt, 2010). Innovative entrepreneurship plays an important role in the development of the country to gain competitive advantage with gaining value in the global market.

Since entrepreneurship is one of the driving forces of economic growth, various studies are being carried out to develop entrepreneurship around the world. The entrepreneurship ecosystem is generally supported by education and economic policies.

Literature research demonstrated that entrepreneurship has a positive effect on economic growth and employment. However, the degree of this impact varies according to the socio-economic levels of the countries. Entrepreneurship contributes by creating innovation, creating difference, and creating competition for economic performance (Wong, Ho, & Autio, 2005). Socio-economic levels are measured into three levels: high, middle, and low. Socioeconomic levels are determined by people's socioeconomic status in a country based on income, education, and occupation.

Numerous researchs was found about entrepreneurship tendency in literature research. The most commonly purpose of these research is why some individuals are entrepreneurs while others are not an entrepreneur. The main reason of this question is individual differences. Even though individual characteristics are significate factors, individuals' behaviors also effect entrepreneurship. Unlike characteristic features, behavior can be learnt through formal and informal processes (Paço, 2015). According to Drucker (1993), entrepreneurship is a discipline, entrepreneurship can be evaluated as a learnable fact.

This study offers contributions that understand entrepreneurs' need and make advice entrepreneurial centers supports. Within the scope of this study, the ecosystem of entrepreneurship in Turkey will be analyzed to make suggestions to improve innovative entrepreneurship. In this study, in-depth interviews were made with innovative entrepreneurs to understand their needs. The entrepreneurs were selected according to the following criterias; having innovative product/service, offering a product or service that

is the first in Turkey or in the World, achieving the planned success, receiving award or investment, having multidisciplinary team. All entrepreneurs participating in the interview have at least one of these criteria. In interviews with entrepreneurs, questions regarding their demographic and socio-cultural structure and start-ups were asked. In this study, it is aimed to make suggestions about the supports that can be added to the entrepreneurship centers in Turkey that form the infrastructure of the entrepreneurship ecosystem.

2. Theoretical Background and Related Research

2.1. Entrepreneurial Tendency

Awareness of entrepreneurship and innovation in accordance with the general trend in public institutions in Turkey has increased considerably. Then, the factors affecting entrepreneurship started to be examined.

According to pre-Gartner researchers, entrepreneurial tendency based on theory of features, individuals with personality traits. With this approach, a person is born as entrepreneur or not because it is an innate characteristic (Gartner, 1989). In other words, it was argued that there is a relationship between personality and business building skills. Koppl and Minniti (2003) defined entrepreneurship as a dynamic process of change in which individuals, having in unusual degree certain personal or psychological characteristics, undertake innovative activities while Shane and Eckhardt (2003) defined as it is the sequential process of discovery, evaluation and exploitation of future goods and services.

According to Entrepreneurial personality traits, unlike the field approach, entrepreneurship is taken as a process (Kibuka, 2011). It is advocated by many studies that experiences gained in age, gender, family, and social environment effect entrepreneurial behavior.

In the year of 1996, Morris defined the entrepreneurship as the relationship between entrepreneurs and their surroundings and the role government plays in creating the economic, political, legal, financial, and social structures that characterize a society and give shape the environment for entrepreneurs (Morris and Sexton, 1996).

With the awareness of society against entrepreneurship, not only people with certain personality traits but those who want to learn this behavior can get involved in the entrepreneurship ecosystem through education and support.

People who have work experience may be more likely to adapt easily to the ecosystem. Having networking and working discipline increases the self-confidence of people. The Örenc (2019) study investigates the effect of applied entrepreneurship training on entrepreneurship tendency. Within the scope of the research, 15 people among the entrepreneurs who participated ISKUR entrepreneurship training in Çanakkale, been successful and established their business by using KOSGEB support were selected. Data were collected and analyzed by qualitative research technique. In-depth interviews were made with 15 entrepreneurs. 11 out of 15 people who participated in the research stated that the information they obtained in the entrepreneurship course was useful while developing their businesses. Most of the participants who previously worked in the private sector stated that they worked to save some money and provide the necessary infrastructure for their businesses.

In the study of Ayar (2019), the effects of entrepreneurship education on entrepreneurship tendency were also examined in terms of demographics features and which factors had more effect. After examination of age range, it was seen that the age ranges of 21-30 and 31-40, which are the most productive periods, corresponding to 72.6 percent in total. 63.1 percent of the participants are higher education graduates. Among the reasons for the participants to start their own business; the dreams that are desired to be realized, being the boss of his own business and creating innovation come to the fore. Even though the participants choose to receive grants and credit support in the first place, they preferred to develop themselves in the sense of entrepreneurship at a very close rate.

2.2. Innovation and Entrepreneurship

Even though entrepreneurship has existed in several ways since people began to live as a community, there is not a generally accepted definition for 'Entrepreneurship'. The scope of entrepreneurship has also changed over the years with the effect of technology and globalization. Entrepreneurship is now associated with innovation today.

According to Draheim (1972), Entrepreneurship is the act of founding a new company where none existed before. Churchill (1992) defined the entrepreneurship as 'uncovering and developing an opportunity to create value through innovation and seizing that opportunity without regard to either resources such as human and capital or the location of the entrepreneur – in a new or existing company''.

Drucker considered entrepreneurship as a managerial process and handles innovation in the form of managing information. In addition, he stated that if there is no such culture, the management should create it. Otherwise, it would not be called systematic innovation in a place without entrepreneurship (Drucker, 1993). According to Schumpeter, there are five types of innovation consist of new product, new method of production, new sourves of supply, exploitation of new markets, and new ways to recognize a business.

Entrepreneurship is enabled by innovation; entrepreneurship is guided by innovation for competitive advantage and develop the countries. European Cooperation in Education and Training has four strategic objectives which approved by the Council of the European Union in 2009; one of the strategic is enhancing creativity and innovation, including entrepreneurship, at all levels of education and training (Entrepreneurship in the EU, 2009).

When look at the examples from the World, the entrepreneurship education and culture existing in the United States have formed the basis of the strong infrastructure needed for the creation of worldwide organizations such as Microsoft, Oracle, Dell and Wal-Mart. On the other hand, the national welfare is increased such successful enterprises have created innovative products and services and strengthened the competitive advantage of the United States (Lee, 2005).

Turkey has studies to develop entrepreneurship according to the 10th Development plan. These studies are entrepreneurship training in university, high school, primary and secondary schools to the establishment of entrepreneurship discipline on young people. On the other hand, establishing

incubation centers, accelerator centers, generalizing entrepreneurship training via KOSGEB, ISKUR etc.

2.3. Factors that Affect tbe Innovative Entrepreneurship

According to the study of the World Entrepreneurship Platform by Babson College and London School of Economics, the factors affecting entrepreneurship are gathered in two main dimensions as country infrastructure and entrepreneurship infrastructure. Country infrastructure consists of economy outward openness, the role of the state, efficiency of the financial sector, technology density, physical infrastructure, management skills, flexible labor market, legal institutions, economic growth, and social, political, cultural environment. Infrastructure of entrepreneurship consists of finance, government policies, government programs, education, R&D transfer, commercial infrastructure, openness of the domestic market, physical infrastructure, and cultural norms to be effective in a country (Börü, 2006).

In the year of 1996, Morris defined the entrepreneurship as the relationship between entrepreneurs and their surroundings and the role government plays in creating the economic, political, legal, financial, and social structures that characterize a society and give shape the environment for entrepreneurs (Morris & Sexton, 1996).

In the GEM study made in 2016, 65 economies are classified according to WEF. According to this classification, Turkey is one of the efficient-driven economy. Efficiency-driven economies known as an economy have become more competitive with efficient production processes and increased product quality. The developed countries are in innovation-driven phase; businesses are more knowledge-intensive and the service sector expands.

The study of Turgut (2016) investigated the relationship between innovation and internationalization in Turkish young entrepreneurial firms based on data from Global Entrepreneurship Monitor for Turkey during the period of 2013-2014. According to the result of the study, demographic factors such as age, education and gender are also important as innovation for the internationalization process of firms. According to the results, %57 of entrepreneurs who have process innovation are more likely to be internationalized.

Aldrich and Wiedenmayer (1993) examined the socio-political environment may have positive or negative effects on entrepreneurship. External effects can determine the relationship between entrepreneurial behavior and performance. The supportive environment increases motivation to establish and growth an enterprise such as reducing legislation for the establishment of enterprises, providing training and mentoring, financial resources, supporting to prototype and the impact of entrepreneurship education in the region.

The Entrepreneurship 2020 Action Plan of the European Commission states that the return on investment in entrepreneurship education will be high. It has been demonstrated that middle school students included in the small company program in Europe may start their own businesses at a rate of 15 to 20 percent. Entrepreneurial courses provide to young people to develop entrepreneurship skills and behaviors, including business knowledge, creativity, taking initiative, perseverance, teamwork, risk

understanding and responsibility. This is a situation that enables ideas to turn into action and increases the employability of individuals.

Universities can play an important role in training the next generation of skilled workers who can create working areas in the future. On the other hand, universities prepare students to the global market with improving their skills through new technologies. Nowadays, with the incentives for the creation of 3rd generation universities or entrepreneurial universities, the training is given at universities have started to be sector oriented. In this way, the innovation creation in universities is supported to be implemented through entrepreneurship. The aim of entrepreneurship and innovation policies are to produce and implement new ideas, to provide the necessary incentives to facilitate its dissemination, commercialization and a favorable eco-system that should be created (Keskin, 2018).

As the universities' role is increasing in the entrepreneurial ecosystem, universities need to develop business and entrepreneurship as strategic goals. Universities that understand their role in entrepreneurship named as third-generation universities or entrepreneurial universities have started to establish resources, such as technology transfer offices (TTOs), pre-incubation and incubatiın centers, and technoparks.

The report that is 'Effects and Impact of Entrepreneurship Programs in Higher Education' published by the European Commission states that entrepreneurship education in higher education improves students' basic competence in entrepreneurship, reinforces students' entrepreneurial intentions, and increases the employability. Additionally, it is mentioned on the report that entrepreneurship education is disseminated to all disciplines and delivered through compulsory cources in universities, emphasizes that the post-education monitoring activities should be performed repetitively (European Comission, 2013).

It is emphasized on European Commission's Entrepreneurship 2020 Action Plan that entrepreneurial education and training to support growth and business creation. Investment in entrepreneurship education is evaluated as the highest yield return for Europe. Thanks to entrepreneurship education, whether students establish an enterprise or not, they can improve their business knowledge and basic attitudes and skills that include creativity, initiative-taking, decidedness, teamwork, risk taking, and sense of responsibility (European Comission, 2013).

The World Economic Forum publised the report named as 'Educationg the Next Wave of Entrepreneurs, Unlocking Entrepreneurial Capabilities to Meet the Global Challenges of the 21st Century ', it was focused on entrepreneurship education, states that there are a number of approaches which are being effectively utilized and which support the call to action to 'mainstream' entrepreneurship education. These approaches were listed as developing leadership and life skills, embedding entrepreneurship in education, taking a cross-disciplinart approach, utilizing interactive pedagogy, and leveraging technology. The basic factors of success in entrepreneurship education were considered as the entrepreneurial ecosystem, developing effective educators, curriculum development, engagement of business, advancing innovation, and sustainable funding (WEF, 2009).

2.4. University Incubation Centers

Entrepreneurship at the university level in terms of commercialization of information, collaborations with industry by transforming information into product, processes, and companies each acts as a mechanism of information flow (Mueller, 2006). Since, there are universities in every province in Turkey, the commercialization potential of information is high. According to Fritsch and Aamoucke (2013), the mere presence and size of local universities, regardless of their quality, has a positive effect on the creation of new innovative businesses.

Incubation centers may have different programs such as incubation programs focus on already established firms, including start-up and senior firms; pre-incubation programs concentrate on the ideas of potential entrepreneurs.

Universities have an important role in the economic team to win the match of growth through their effective participation in managing incubators, research and development, innovation, commercialization and formation of entrepreneurs in both developed and developing countries (Miner, 2001).

According to Chandra et al. (2012), university incubation centers have strong historical perspective with the provision of location, human expertise, funding source, fostering innovation and commercialization while the involvement of industry incubators in deficient. It is commonly accepted that university incubation centers are established to guide and support students who tend to be an entrepreneur. The success rate of an incubation center is measured by the opportunities provided by the university; these factors are mainly infrastructure, networking, human and technical support, faculty and staff and institutional reputation.

The first incubation center in the world is known as Batavia Industrial Center, New York at USA started operation in 1959 (Ryzhonkov, 2013).

USA is the first state to change its mission and become an information society from an industrial society. The USA has become a technology center with the world's leading incubation center with the positive results of the science and technology policies. Within the scope of National Business Incubation Association data in the USA, as of 1997, there were 550 company incubators, while in 2003 this figüre increased to 950. Since 2003, the number of incubations worldwide will be in 4000 (Lalkaka, 2003). Today, there are approximately 1400 incubation centers in the USA as of April 2019 (inbia.org, 2019).

Japan is one of the top countries in terms of technology and development. With Japan's transition to the information society, its economy and industry grew rapidly and became an important producer in terms of information technologies. In the research, while the success level of innovative companies in Japan is around %20, it is determined that it increases to 50% if university support is provided (Arı, 2019).

The world of incubation centers are periodically monitored by UBI Global, Stockholm-based data and advisory firm. According to World Ranking Report 19/20 of UBI Global, İTÜ Çekirdek has been placed among the top 5 in the entrepreneurship incubation centers ranking around the 82 countries. İTÜ Çekirdek is an early-stage incubation center has supported 2424 start-ups and 5432 entrepreneurs since 2012 (itucekirdek.com, 2020).

Pre-incubation programs are mainly pay attention on training and educational workshops or seminars with also supporting entrepreneurs with writing a project, reaching technical equipment, mentoring, networking, access to knowledge and financial capital. The first pre-incubation center in Turkey was established in 2004; the impact of these centers is getting important from day to day. Today, there are almost 30 pre-incubation centers. Since the pre-incubation centers provide support at the idea stage, it provides efficient benefits for university students who have not had any previous work experience and have not made any attempt. According to Kirby (2006) definiton of pre-incubation, it is a kind of facility for a very early stage of a start-up that has yet to formulate its business plans, develop a prototype, or establish an entrepreneurial team; the pre-incubator leads the embryonic business to an investment or market ready stage (Kepenek, 2016).In this way, students with entrepreneurial potential can adapt their ideas to the market without losing time and investment thanks to the right direction when they are still in the idea phase. From this perspective, pre-incubation centers are valuable in terms of including potential entrepreneurs in the entreprneurship ecosystem without dissapointment.

Evolved universities perform the functions of R&D; R&D culture is the essence of higher education to get the benefits of economic and social environment. Although developed countries are the main beneficiaries of R&D activities, developing countries are also give importance (Jamil, 2015). Patents and licenses are determined as the criterion of entrepreneurial activities.

The most difficut periods of start-ups are the foundation years. Because of that early stage incubation centers are important for entrepreneurs for various reasons. Although the product or service is innovative and technological, it may not survive. As can be seen from Eser and Kepenk (2016)'s research, the most prominent reason for entrepreneurs' failures is lack of harmony among group members by the percentage of 17. The second reason is unable to find financial resources, the third one is unable to focus on the market. These result show that, while preparing for the market, it will be advantageous to create a versatile team in addition to active training in the pre-incubation center.

Pointing out that the pedagogy in entrepreneurship education has changed in line with the expectations and demands of the market, Solomon (2002) states that interdisciplinary programs are a serious trend towards designing private cources related to entrepreneurship, especially considering students in the fields of arts, engineering, and science.

Until the early 2000s, innovation was the pattern adopted by companies in which their R&D centers were conducted solely in their own laboratories, using qualified professionals and significant resources. In the last decade, innovation openly emerged as a new model in which companies take advantage of the creativity of customers, suppliers, research institutes or independent inventors, especially universities. This allowed companies to offer more innovation more efficiently, more consistently and customer-oriented (Chesbrough, 2008). In this open model, companies need universities due to the high level of creativity and academic infrastructure.

2.5. Private Supported Organizations

As entrepreneurship gains importance, organizations supporting entrepreneurship have also been expanded. Acceleration centers, incubation centers are at the head of these types of organizations.

Private institutions that give entrepreneurs the opportunity to rent offices, mentoring, and education have also become widespread.

Co-working is also becoming widespread which means working in collaboration. This working model is also called 'independent but together'. The aim of this model is to create synergies for people with innovative thinking from different sectors, working together in independent working environments and shared common spaces. In this way, individuals or companies from different disciplines can work under the same roof in a more economic and social environment.

The services commonly provided in entrepreneurship support centers are as follows; membership to use offices, product & business development consultancy, technologic infrastructure support, mentor support, angel investor networks, networking, events, and trainings. Some additional supports vary from institution to institution. Distribution in Turkey of these centers is respectively as follows, Istanbul, Ankara, Izmir and other provinces.

3. METHODOLOGICAL APPROACH

The research method is based on qualitative analysis. In the first stage, qualitative analysis was used to get the factors for having entrepreneurial tendencies and needed supports in process of entrepreneurship by in-depth interviews with innovative entrepreneurs. In the interviews, the entrepreneurs were asked questions about their demographic features, educational status, start-up teams, and their opinions about innovation. As a result of the interviews with the entrepreneurs, the factors that affect their entrepreneurship intentions and which decisions play a role in their success are examined.

All individuals with the potential to be an entrepreneur and entrepreneur in Turkey are research universe. The universe of research has been limited by groups that could represent the universe were chosen following the purpose of the research.

The research questions are listed in Table 1.

Table 1. Research Questions

1	In what area does your organization operate? Why did you want to enter this sector?
2	The foundation year of your organization?
3	How many people was it established with? What is the educational status of the team members?
4	Have you received 'Entrepreneurship' cources during your university education? (If so, how much do you think it has an impact on actualizing your initiative today?)
5	Have you received 'Entrepreneurship' cources from outside the university? (If so, how much do you think it has an impact on actualizing your initiative today?)

6	Have you received financial support for your initiative? Where from?
7	What was the most challanging stage?

4. Data Analysis

Innovative entrepreneurs were selected for the research. Although sectors differ, many entrepreneurs concentrate on technological products. The product/services in which entrepreneurs operate and their innovative aspects are given in Table 2.

Table 2. Innovative aspects and foundation years of venture initiative

Code	Product / Service	Innovative Aspects	Foundation Year
E1	Personal Defense Device	"The device can take a picture, take the location of the scene, and sending emergency notification."	2015
E2	Sustainable Digital Marketing Services	"Companies can start their marketing processes by choosing the most suitable road maps for them. People working freelance earn money by having the opportunity to learn and practice for themselves along with application-based online training."	2019
E3	Digital Consultation	"Supplying connection with foreign relations in a short while."	2007
E4	E-commerce	"Removing barriers in fields of software, bank, cargo in front of people or institutions who want to e-commerce."	2015

E5	E-commerce	“Having first woman illustration used in the packaging of coffee in Turkey.”	2015
E6	Digital Platform	“Verifying technical abilities according to candidate’s data on social platforms, at the same time measuring their soft skills and matching them with the appropriate technology company.”	2018
E7	Blockchain	“Adapting blockchain to daily life.”	2018
E8	Medical Technologies	“Sending a photo to the dentist consultant through the application. Adding image processing technology on the application.”	2019
E9	Biotechnology	“Working in accordance with land and climate and make proven products.”	2019
E10	Sun Protection	“Production of sun protection cream with green tea.”	2019
E11	Hospital-type Sperm Software	“Doing a private test at home. And adapting image processing”	2017
E12	Heating Fabrics	“Developing smart textiles that emit heat and transforming them into products that can be	2016

		used in different applications that need heating."	
E13	Education Management	"Providing regular reports to HR, managers, and employees about employees' language developments."	2019

In the entrepreneurship ecosystem, the founder must have competence in many areas such as marketing, designing, finance, etc. Although all these competencies are not possible by a single person, it is advantageous to have experts in the field. In this study, it is argued that having team members from different disciplines is one of the success factors. For this purpose, entrepreneurs were asked about the academic backgrounds of the team members in many areas such as marketing and designing the product or service offered by the founder in the entrepreneurship ecosystem. Detailed information about the team members' academic background of the start-ups has given in Table 3.

Table 3. Team members' academic background of the start-ups

Code	Founders' Academic Background	Team Members' Academic Background
E1	Information Systems, Bachelor Degree	Computer Engineers, Designers, Electrical and Electronic Engineer, Software Engineer, Industrial Designer.
E2	Electronics and Communication Engineering, Bachelor Degree / MBA, Master Degree	Electonic Engineer, Advertising and Public Relations, Marketing, Sociology, Business Administration. And, there are over 120 team members as freelance having different backgrounds.
E3	Food Engineer, Bachelor Degree	The entrepreneur works alone. She has different teams to support. Disciplines vary in these teams.
E4	Computer Engineer, Bachelor Degree	Management Information Systems, Economics.

E5	Public Relations, Bachelor's Degree / E-commerce, Master's Degree	The entrepreneur works alone. There are 2 worker as freelance.
E6	Advertising Design and Communication, Bachelor's Degree	Mechanical Engineer, Computer Engineer.
E7	Financial Engineering, Master's Degree / Information Technology, Master's Degree	Computer Engineer, Business Analyst. But now the founder is working alone.
E8	Dentist, PhD Student	Mechatronics, Computer Engineering, Bio-medical.
E9	Business, Bachelor's Degree / Biotechnology, Master's Degree	Agricultural Technology and Microbial Fertilizers.
E10	Pharmacy, Doctorate Degree	Molecular biology, Genetics and Pharmacy.
E11	Biomedical Engineer, Master's Degree	Bio-medical Engineers. They received help from students as trainee from many different disciplines working in the background.
E12	Public Administration, Bachelor's Degree	Metallurgical and Materials Engineering
E13	Advertising, Bachelor's Degree	Management Information Systems, Business Administration.

The entrepreneur coded as E8 stated that they received short training about each other's fields to speak the same with team members. In addition, the entrepreneur coded as E11 stated that the founding team from the same discipline is effective in speaking the same language and work practical. E11 also stated that this was not enough and that the support given by students according to their interests was very effective.

Among the 13 entrepreneurs, 10 entrepreneurs have multidisciplinary team. As a result of the interviews, if there are no employees from different disciplines in the core team, they need human resources with options such as freelance, part-time, and interns. In addition, most of the entrepreneurs talked about the difficulties of managing the marketing and customer relations side while the company was in the growth phase. And in an ecosystem where a person is involved in many areas, the presence of people who are specialized in different disciplines is a factor that may affect their success. As a result of these findings, having a multidisciplinary team has an impact on start-up success.

Many of the entrepreneurs received grants from the TUBITAK 1512 program. Since this program is prepared for entrepreneurs to develop prototypes, it is not sufficient at the stage of establishment. Some entrepreneurs are preparing to apply for the ongoing programs of this program.

Table 4. Financial Support

CODE	**FINANCIAL SUPPORT**
E2	BTM
E4	Tübitak 1512
E5	KOSGEB
E7	Tübitak 1512
E9	Tübitak 1512
E11	Tübitak 1512
E12	Tübitak 1512

In addition, entrepreneurs who do not receive support explain the reason as follows; “supports arrive late than planned and they request a detailed report.”. Entrepreneurs state that these reports take a lot of time, and because there is no person to devote time to this, they are pushing them very much in the development process.

Whether entrepreneurs take entrepreneurship courses during their university education is examined in this section. They were also asked if they had received any training when they decided to become entrepreneurs. Table 5 has been prepared according to the responses received from the entrepreneurs.

Table 5. Entrepreneurship Cources

Code	Entrepreneurship Training in University	Entrepreneurship Training from Outside
E1	X	X
E2	X	X
E3	X	✓
E4	X	X

E5	✓	✓
E6	X	✓
E7	X	X
E8	X	X
E9	✓	X
E10	X	X
E11	X	✓
E12	X	✓
E13	X	X

As entrepreneurship started to become widespread in Turkey, entrepreneurial universities started to be created and special education programs were prepared. When Table 5 is analyzed, only two entrepreneurs seem to have received entrepreneurship training at the university.

When the responses of entrepreneurs are analyzed, it is observed that entrepreneurs have difficulties in finding customers in the market. In addition, it has been observed that new companies in the market have difficulties in explaining their products or services to customers. And, it has been observed that entrepreneurs receive negative reactions from their social environment. It has been observed that their social environments are worried because entrepreneurship is an uncertain way, riskier than a regular job.

Table 6. Challanges that entrepreneurs face

CODE	**CHALLANGES**
E2	Lack of training and mentoring
E3	Being a woman and finding customer
E4	To promote the service
E5	Time management
E6	Legislative problems
E7	Finding the customers and market

E8	To be able to speak the same language with the teammates and the reactions from social environment
E9	To convince people to sell
E11	Networking and legislative problems
E12	Testing the product
E13	Finding a good team

5. Discussion and Conclusion

5.1. Key findings

Incubation centers and acceleration program in Turkey were examined according to the challenges faced by entrepreneurs such as networking, finding customers, testing products, etc. In Table 7, the opportunities provided to entrepreneurs by private incubation centers and acceleration programs are examined. While conducting this research, information was obtained by asking questions via the website and e-mail of the centers. Since some centers are not responsive to the questions, the relevant fields are left blank.

Entrepreneurs also stated that they had difficulty in forming their teams at the idea stage. Accordingly, it has been investigated whether the centers must form a team for the application. Some centers accepting individual applications, they stated that they were able to establish their teams during the training thanks to the networking among entrepreneurs.

In Turkey, entrepreneurship centers mainly located in Istanbul, Ankara, and Izmir. This situation reduces the entrepreneurship rate in other cities. The cities of the entrepreneurship centers are in Table 7. It has been investigated whether these centers provide accommodation support or remote education. Table 7 was prepared by examining the active private centers in 2020. Supports without clear information are not marked. It was determined because of the research that the supports given by some centers changed periodically and the targeted sectors changed according to the agenda. Consequently, support types and target sectors may change periodically.

Table 7. Private supported accelerator and incubation Centers

Name	**Focus Sector**	**Location**	**Accomadation Support / Remote Education**	**Type**	**Require MVP/Prototype**	**Require to be a Team**	**Support for Validasyon / PoC**	**Pre-Grat**
Workup Entrepreneurship Program		Istanbul		Accelerator	√	√		

Türk Telekom PILOT		Istanbul	√ + Accomadation Support	Accelerator	√	√		
QNBEYOND		Istanbul		Accelerator			√	√
T3 Entrepreneurship Center		Istanbul		Accelerator		√		
Albaraka Garage	Financial Technology	Istanbul		Accelerator				
İSO Koza	IoT, Health Technologies, Enerji, Savunma Sanayii	Istanbul		Accelerator	√			
Lonca Entrepreneurship Center	Changing Periodically	Any Branch of Workinton		Accelerator			√	√
Zemin İstanbul		Istanbul		Accelerator	√	√		
BTM		Istanbul		Camp			√	
		Istanbul		Pre-incubation			√	
		Istanbul		Incubation	√ Company must be established	√	√	
Cube Incubation		Istanbul		Pre-incubation				
TechUP		Bursa / Eskisehir		Accelerator	√ Company must be established	√		

Garanti Partners		Istanbul		Accelerator	√			
Kapadokya Incubation Center		Istanbul		Pre-incubation / Incubation				
TEB Entrepreneurship		Istanbul / İzmir / Gaziantep / Denizli / Bursa / Mersin / Konya / Edirne / Konya / Edirne / Trabzon / Erzurum		Accelerator / Incubation				
Founder Institute		Istanbul						
Viveka		Ankara/ Istanbul/ Izmir/ Talinn		Pre-incubation / Incubation / Accelerator				

Sera Kuluçka Merkezi	Smart Life, Smart Urbanism, Mobile Applications, Robotics, Wireless Communication, Wearable Technologies, Health, Biotechnology, Biomedical, Intelligent Education, Renewable Energy Systems, Information Technologies and Software, Food Technologies	Kayseri		Pre-incubation / Incubation / Post-incubation / Accelerator			√	√
Classboom		İzmir		Pre-incubation / Incubation				
Plusa Ön kuluçka		Malatya		Pre-incubation				

Many of the incubation centers of universities provide the same supports. However, the supports provided vary depending on the possibilities of the university such as workshops, laboratories, etc. On the other hand, some universities have concentrated on specific sectors. Accordingly, the distribution of incubation centers according to cities and sectors was given in Table 8. Meanwhile, there are not any remote incubation centers in universities in Turkey.

Table 8. University Incubation Centers in Turkey

University	**Name**	**Focus Sector**	**Location**

Sabancı Uni	SUCOOL		Istanbul
Koç Uni	Kworks		Istanbul
ODTU	YFYİ		Ankara
ODTU	Atom	Game and animation technology	Ankara
Yıldız Technical Uni	Yıldız Kuluçka	Technology-oriented	Istanbul
İTÜ	İTÜ Çekirdek	Technology-oriented	Istanbul
Kadir Has Uni	INEO	Technology-oriented	Istanbul
Ege Uni	NüvEGE		Izmir
Aydın Uni	Incubation		Istanbul
Şehir Uni	incuba.city		Istanbul
Bilgi	Sosyal Kuluçka	Civil initiatives	Istanbul
Acıbadem	Kuluçka merkezi	Health	Istanbul
Yaşar Uni	Minerva Kuluçka Merkezi		Izmır
Nişantaşı Uni	NishNova		Istanbul
Dokuz Eylül Uni	Bambu		Izmır
İzmir Economics Uni	Embryonix	Technology-oriented	Izmır
Anadolu Uni	Anaç Kuluçka Merkezi		Eskişehir
Bahçeşehir Uni	BAUICE		Istanbul
Boğaziçi Uni	DreamBU	Technology-oriented	Istanbul
Boğaziçi Uni	BUBA Campus	Health, Agriculture, Fintech, Insurance, Maritime, Aviation, Transportation	Istanbul

Fatih Sultan Mehmet Vakfı Uni	Conqueror Kuluçka ve Girişim Hızlandırma Merkezi		Istanbul
Erzurum Teknik Üniv	ETÜ Kristal	Technology-oriented	Erzurum
Harran Uni	Tohum Harran	Technology-oriented	Şanlıurfa
ODTU	Growth Circuit		Istanbul / Ankara
Özyeğin Uni	Girişim Fabrikası	Technology-oriented	Istanbul

Entrepreneurship centers in the university can be more advantageous than other centers since they provide the opportunity to benefit from facilities such as laboratories, workshops, and academic support.

In the Table 9, there are grant support programs given by KOSGEB and TÜBİTAK. Programs are considered as early stage, advanced stage. It refers to attempts to develop an early-stage prototype. The advanced stage refers to the established start-ups and companies. Entrepreneurs can apply to all TÜBİTAK projects through implementing organizations. However, after training for KOSGEB supports, they can apply directly on behalf of their company. Implementing agencies may change in every call, and some organizations may be implementing organizations every year. At the same time, implementing agencies can choose a certain sector, only accept applications that develop products / services to this sector.

Table 9. Grant support programs given by KOSGEB and TÜBİTAK

Stage	Grant Programs	Sector	Support Type / Amount
Later Stage	KOSGEB - Advanced Entrepreneurship Program		Foundation Support: 5,000 - 10,000 TRY Performance Support: 5,000 - 20,000 TRY Certificate Support: 5,000 TRY

Later Stage	KOSGEB - Business Plan Award	Mining and Quarrying; Production; Electricity, Gas, Steam and Air Conditioning Production and Distribution; Water supply; Sewerage, Waste Management and Improvement Activities; Build; Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles; Transportation and Storage; Accommodation and Food Service Activities; Information and Communication; Finance and Insurance Activities; Professional, Scientific and Technical Activities; Administrative and Support Service Activities; Culture, Art, Entertainment, Recreation and Sports	Realized with higher education institutions: 15.000 - 25.000 TRY Performed within the scope of competitions organized by domestic / international institutions / organizations: 100.000 TRY Organized within the scope of award-wining / non-award wining national / international competitions for the business ideas of overseas enterprises: 100.000 TRY Business plan award organized by KOSGEB 100.000 TRY
Early Stage	KOSGEB - Traditional Entrepreneur Support		Foundation Support: 5.000 - 10.000 TRY Machinery, Equipment and Software Support: 100.000 - 300.000 TRY Mentoring Consultancy Support: 10.000 TRY Performance Support: 5.000 - 20.000 TRY Certificate Support: 5.000 TRY
Later Stage	1507 – SME, R&D Start Support Program	Information and Communication Technologies; Agriculture and Food; Automotive; Social and Humanities; Energy; Machine Manufacturing; Health; Mining; Advanced Materials Technologies; Chemistry	Upper Limit 600.000 TRY

Later Stage	1501 – Industry R&D Support Program	Information and Communication Technologies; Agriculture and Food; Automotive; Social and Humanities; Energy; Machine Manufacturing; Health; Mining; Advanced Materials Technologies; Chemistry	Each of the transfer payments to be made within the scope of the project. the support of the total project budget included in the scope of support, and of each partner in projects with partners. Twenty-five percent (25%) of the project budget covered and periodically by establishment. It cannot exceed 2.000.000 TRY. However, the total covered by the support For projects with a project budget of 100,000,000 TRY) and above, 2,000,000.- TRY upper limit does not apply.
Later Stage	1601 – Increase Capacity in Innovation and Entrepreneurship Areas Support Program (BIGG+)	Smart Transportation Energy and Clean Technologies Intelligent Production Systems (Digital Transformation in Industry) Communication and Digital Transformation Health and Good Life Sustainable Agriculture and Nutrition	The upper limit of the project budget that is supported by this program is 750.000 TRY This budget covers personnel expenses, service purchases and other expenses that is up to 15% of the periodic support amount.
Early Stage	1512- Tecno-Entreprise Capital Support Program (BIGG)		Upper Limit 200.000 TRY

Entrepteneurship centers in Turkey are given in Table XI as acceleration and incubation centers. The centers are classified as idea stage, early stage and advanced stage. The idea stage refers to projects that have not been developed as prototypes and not written projects. Early stage refers to projects that have developed MVP / Prototype. The advanced stage refers to the established start-ups. The sectors that the centers focus on change periodically. The sectoral distribution in the table was prepared by obtaining information from the current websites of 2020.

Table 10. Acceleration and Incubation Centers

Sectors	Stages	Centers
Technology-oriented without sector distriction	Idea Stage	Lonca Entrepreneurship Center
		Sera Kuluçka Merkezi
		SUCOOL
		Yıldız Kuluçka
		İTÜ Çekirdek
		INEO
		NüvEGE
		DreamBU
		Tohum Harran
	Early Stage	T3 Entrepreneurship Center
		İSO Koza
		Lonca Entrepreneurship Center
		Sera Kuluçka Merkezi
		SUCOOL
		Yıldız Kuluçka
		İTÜ Çekirdek
		INEO
		DreamBU
		Tohum Harran
	Later Stage	İSO Koza
		Sera Kuluçka Merkezi
		İTÜ Çekirdek

		DreamBU
Civil Initiatives	Idea Stage	Sosyal Kuluçka
	Early Stage	Sosyal Kuluçka
Defense Industry	Idea Stage	
	Early Stage	İSO Koza
	Later Stage	İSO Koza
Finance	Idea Stage	
	Early Stage	Albaraka Garage
	Later Stage	
Game and Animation	Idea Stage	Atom
	Early Stage	Atom
Health	Idea Stage	Kuluçka merkezi
	Early Stage	İSO Koza
		Kuluçka merkezi
	Later Stage	İSO Koza
		Kuluçka merkezi
Centers that do not focus on a particular sector	Idea Stage	Türk Telekom PILOT
		QNBEYOND
		BTM
		Cube Incubation
		Kapadokya Incubation Center
		TEB Entrepreneurship
		Viveka

		Classboom
		Pusula
		Kworks
		YFYİ
		Incubation
		incuba.city
		Minerva Kuluçka Merkezi
		NishNova
		Bambu
		Embryonix
		Anaç Kuluçka Merkezi
		BAUICE
		BUBA Campus
		Conqueror Kuluçka ve Girişim Hızlandırma Merkezi
		ETÜ Kristal
		Girişim Fabrikası
	Early Stage	Workup Entrepreneurship Program
		Türk Telekom PILOT
		QNBEYOND
		Zemin İstanbul
		BTM
		Cube Incubation

		Garanti Partners
		Kapadokya Incubation Center
		TEB Entrepreneurship
		Founder Institute
		Viveka
		Classboom
		Pusula
		Kworks
		YFYİ
		Incubation
		incuba.city
		NishNova
		Embryonix
		Anaç Kuluçka Merkezi
		BAUICE
		BUBA Campus
		ETÜ Kristal
	Later Stage	Workup Entrepreneurship Program
		Türk Telekom PILOT
		QNBEYOND
		BTM
		Cube Incubation
		TechUP

		Viveka
		Classboom
		Growth Circuit

5.2. Practical Implications

Entrepreneurship has gain momentum within recent years by the effect of globalization and technological developments. The concept of entrepreneurship has existed since people started living together, but its scope has improved over the years. Entrepreneurship has become more than just evaluating opportunities, it means creating opportunies and creating demands. Due to the potential of entrepreneurship such as developing new products / services, creating a new area in the market, gaining a competitive advantage in the global market, incentives have been rapidly created by countries. Entrepreneurship has advantages for especially developing countries such as creating scalable business areas and creating employment; countries have rapidly included entrepreneurship in their strategic and development plans. Considering the benefits it can provide to the country's economy, countries increase entrepreneurship by creating incentives through various institutions. Universities, private and public institutions have encouraged to increase the number of entrepreneurs.

Considering that innovative entrepreneurship will bring competitiveness in the global market, it is inevitable for young people to be more encouraged to entrepreneurship. Innovation and entrepreneurship are two elements that must proceed in parallel to create competitive advantage. This study aimed to make suggestions about the supports that can be given to developing innovative entrepreneurship.

When startup teams are examined, if it is observed that they do not have multidisciplinary teammates in the core, they need to get support from outside. All entrepreneurs agree that the multidisciplinary team is advantageous in this regard. Many entrepreneurs received financial support during the prototype and establishment phase. Entrepreneurs who did not receive support acted with their own capital accumulation. When the educational status of entrepreneurs is examined, they all have at least a bachelor's degree and received formal education. Only two of the entrepreneurs received entrepreneurship education at the university, entrepreneurship education has started to be given widely in recent years, and not being given in every department causes fewer students to take this education. Some of the entrepreneurs who decided to become entrepreneurs received training on their own from other organizations.

The areas where entrepreneurs think most challenging are as follows; networking, finding customers, introducing products, testing the products, and creating a team. According to the challanges faced by entrepreneurs, private entrepreneurial centers in Turkey were examined. Some centers require that a team must be established at the application stage. Entrepreneurship centers, which have not required a team as a condition, they also state that the presence of the team provides an advantage when choosing between candidates. All centers provide networking support and access to investor networks

after the product/service is ready for the market. There are few entreprenenurship centers that provide support to find customers and test products. All centers accept entrepreneurs at the early stage. Facilitating processes such as providing more support to entrepreneurs at the early stage, promoting the product, and testing the product through these centers will give entrepreneurs an advantage. In this regard, the centers need to provide more support to entrepreneurs. Especially at the stage where the prototype is developed, it is difficult for entrepreneurs to access facilities such as laboratories and workshops. Support is also required at these stages.

Training of entrepreneurs for marketing is another important issue. Interviews have shown that marketing is one of the most challenging areas for entrepreneurs. It is necessary to reach the right customer with the right channel, to offer the right product to the right market, and to do them with the right timing. It was observed during the interviews that there was a close relationship between innovative entrepreneurship and marketing. In cases where the correct marketing strategies of innovative products are not determined, the customer is not ready fort he product or service, and the use of the product or service cannot be described correctly, innovative studies cannot find a place in the martket. It is anticipated that intensive training to be given on this issue will positively affect the start-up successes.

On the other hand, entrepreneurship centers in Turkey are concentrated in Istanbul, Izmir, Ankara. There are fewer active centers in other provinces. Considering each young people in all provinces has the potential for being an entrepreneur, it will be beneficial to provide remote education in these centers. Remote incubation centers with the creation of access to potential entrepreneurs in different regions of Turkey, the number of innovative entrepreneurships can be increased. Entrepreneurs should be provided with the laboratory and workshop facilities where they can develop prototypes. Supports from the idea to the product stage will help bring more ideas to life. The chances of creating innovative products are also high in the university period when people's creativity is high. However, not every innovation can be transformed into a commercial product, so marketing education should be emphasized more while giving entrepreneurship training to students in different departments.

5.3. Limitations and Further Research

Entrepreneurship has been included in the education system in our country in recent years, so entrepreneurship education is not provided in all faculties. However, individuals who are not trained in entrepreneurship are aware of entrepreneurship incentives through various media channels. With the increase of awareness, the number of people who want to become entrepreneurs also increase. This study has a few limitations. Clear information could not be obtained from some entrepreneurship centers. Centers that do not have clear information are excluded, not included. In future research, more effective information can be collected through one-on-one interviews with center officials over a wider period. Secondly, the capacities of centers can be examined in future studies. It can be researched how many entrepreneurs can accept in which period intervals.

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