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The Power of Innovation: Entrepreneurship Ecosystem, Components, Research and Start-Up Approaches and the Development Process of the Entrepreneurship Ecosystem in Turkey

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ABSTRACT: This article, under the title "The Power of Innovation: Entrepreneurship Ecosystem, Components, Research and Start-up Approaches and the Development Process of the Entrepreneurship Ecosystem in Turkey", examines how Turkey's dynamic entrepreneurship environment is shaped by innovation and the important components in this process. While entrepreneurship has a critical role in economic development and social transformation, innovation stands out as the main driving force of this process. First of all, Turkey's young and educated population, increasing digitalization and access to technology strengthen the entrepreneurial culture and create new business opportunities. In the article, the basic elements of the innovation ecosystem in Turkey, namely the interactions between universities, public institutions, the private sector and entrepreneurs, are discussed in detail. Additionally, the difficulties faced by entrepreneurs in Turkey are analyzed through factors such as limited financial resources, inadequate mentoring and training opportunities. In this context, the effects of the state's innovation strategies, incentive mechanisms and entrepreneurship support programs are examined. For example, the contributions of the supports provided by organizations such as KOSGEB and TÜBİTAK to the realization of entrepreneurs' projects are emphasized. In the article, the contribution of international collaborations and foreign investments to Turkey's innovation ecosystem is discussed, thus focusing on its competitiveness potential in the global market. Additionally, successful domestic enterprise examples are supported by concrete data showing how innovation and entrepreneurship create synergy. As a result, the development of the entrepreneurship ecosystem in Turkey is directly linked to the power of innovation. In order to create a sustainable innovation environment, the need for continuous support, training and policy development comes to the fore. This article aims to provide readers with a comprehensive perspective by presenting the paths and strategies to be followed to maximize Turkey's entrepreneurial potential.

KEYWORDS: Entrepreneurship, innovation, Turkey, ecosystem, entrepreneurial culture, public policies, private sector, financial support programs, technology, university-industry cooperation, competitiveness, social transformation, entrepreneur supports, foreign investments.

INTRODUCTION

Entrepreneurship is considered one of the basic building blocks of modern economies. Entrepreneurs who stimulate economic growth, create employment and respond to social needs by producing innovative solutions are the most important actors that determine the competitiveness level of countries. In this context, innovation; It emerges as the driving force of entrepreneurship through the development of new products, services and processes. Innovation is critical not only for economic development but also for social transformation and sustainability. Turkey is on the way to having a remarkable entrepreneurship ecosystem with its young and dynamic population, increasing access to technology and a wide market potential. In recent years, entrepreneurial activities in Turkey have increased rapidly, and many entrepreneurs have begun to gain a foothold in the market with innovative business models and technologies. However, the difficulties and obstacles encountered in this process endanger the sustainability of entrepreneurship. Factors such as insufficient financing, lack of training and market uncertainties make it difficult for entrepreneurs to implement their innovative projects. The aim of this article is to examine in depth the relationship between innovation and the entrepreneurship ecosystem in Turkey. It is aimed to understand the dynamics of this ecosystem through components such as Turkey's current innovation strategies, public and private sector collaborations, and university-industry interaction. Additionally, the steps and suggestions necessary to increase Turkey's innovation potential will also be discussed. As a result, this study aims to reveal what an important role innovation plays in the development of Turkey's entrepreneurship ecosystem and to draw attention to the current

problems in this field. Supporting entrepreneurs and implementing innovative ideas will increase Turkey's competitiveness in the international market and make economic development sustainable.

AIM

The main purpose of this article is to examine in depth how the entrepreneurship ecosystem in Turkey interacts with innovation and the challenges encountered in this process. The determined objectives can be listed as follows:

Analysis of the Relationship between Innovation and Entrepreneurship: To emphasize the decisive role of innovation on entrepreneurship by examining the innovative approaches of entrepreneurs in Turkey and the economic effects of these approaches.

Evaluation of Ecosystem Components: By analyzing the basic components of the innovation ecosystem in Turkey (universities, public institutions, private sector and entrepreneurs), understanding how the interactions between these actors work.

Identification of Difficulties Encountered: To identify the main problems that entrepreneurs face in implementing their innovative projects, such as lack of financing, lack of education and market uncertainties, and develop suggestions to overcome these difficulties.

Role of Public Policies: To examine the state's policies that support entrepreneurship and innovation, evaluate the effectiveness of these policies and offer improvement suggestions when necessary.

Examining Success Examples: To support the effects of innovation on entrepreneurship with concrete data by analyzing successful enterprise examples in Turkey and to evaluate the repeatability of these successes.

Strategies for Sustainable Development: To determine the strategies necessary to increase Turkey's innovation potential and to make suggestions to ensure the sustainability of the entrepreneurship ecosystem.

In line with these aims, the article aims to provide an in-depth analysis of Turkey's entrepreneurship ecosystem's relationship with innovation, aims to raise readers' awareness on this subject and guide future research.

METHOD

In this study, the literature review method was used to understand the relationship between innovation and the entrepreneurship ecosystem in Turkey. Literature review is a widely used research method to compile, analyze and interpret existing information and data on a particular topic. This method was carried out in the following stages in accordance with the purpose of the study:

Identification of Sources: First of all, academic articles, books, reports and other scientific sources covering entrepreneurship and innovation issues in Turkey were identified. These sources were scanned through university libraries, academic databases (Google Scholar, JSTOR, Sciencedirect, etc.) and publications of national and international organizations.

Data Collection: Data obtained from specified sources focused on the situation of entrepreneurship and innovation in Turkey, ecosystem components, current challenges and government policies. Additionally, successful startup examples and relevant statistics were also collected, contributing to the in-depth analysis of the study.

Data Analysis: The collected data was systematically examined using the content analysis method. In this process, information obtained from different sources was compared and synthesized. An in-depth evaluation was made on the effects of innovation on entrepreneurship by determining the similarities and differences between different views, theories and approaches in the literature.

Interpretation of Results: The findings obtained as a result of the literature review provide a comprehensive framework about the current status, challenges and potential solutions of Turkey's entrepreneurship ecosystem. The data obtained was analyzed and interpreted for the purpose of the article.

With this method, it is aimed to understand the interaction between entrepreneurship and innovation in Turkey and to identify existing knowledge gaps in this field. The literature review allowed for an in-depth examination of the topic and laid a solid foundation for future research.

RESULTS

In discussions on the concepts of entrepreneur and entrepreneurship, Schumpeter (1934) defines entrepreneurs as individuals who implement innovations, focusing on the concept of innovation. Knight (1921), on the other hand, discussed entrepreneurship from the perspective of motivation and emphasized that not all initiatives will succeed and some will fail. However, since it cannot be predicted which initiatives will be successful and which will fail, Knight focused on mistakes and uncertainties when explaining entrepreneurship (Brouwer, 2002). Baumol (1968) defined entrepreneurs as people who are at the highest level of the hierarchy that shapes the behavior of the firm and bear great responsibility for the dynamism of the enterprise community. Schumpeter (1934) and Knight (1921) brought the entrepreneur to life and assigned him a certain field of activity. Baumol (1968) defines entrepreneurship as the discovery of new ideas, their implementation, leadership and inspiration, and states that this is more than Schumpeterian innovation. While Stough (2016) generally considers entrepreneurship as the process of establishing and developing a business, he defines entrepreneurs as people who establish and grow a business in this process.

In the entrepreneurship literature, entrepreneurial roles and types have been discussed in various ways. Dollinger (2008:7) stated that the definition of entrepreneurship is as diverse as the number of authors on the subject and stated that this term is of French origin and means "undertaker".

There is no consensus among researchers about the precise definition of entrepreneurship and the role of entrepreneurs (Amit, Glosten, Muller, 1993). Shane and Venkataraman (2000) emphasize that entrepreneurship cannot be explained solely based on the characteristics of certain individuals and by referring to these individuals. Additionally, the authors state that entrepreneurship studies are nowadays handled with specific aspects such as small businesses or new firms, rather than a conceptual framework. Therefore, the authors argue that the biggest obstacle to creating a conceptual framework in the field of entrepreneurship comes from the definition itself.

A. Entrepreneurship Ecosystem

Similar to biological ecosystems, a business ecosystem consists of networks of loosely connected organizations. Every species in biological systems, regardless of its apparent strength, shares the general fate of the network. Ecosystem components are in constant interaction; The health and performance of each component and the actors within it depend on the health of the overall system. Every action of institutions can positively or negatively affect the general situation of this network. Actors are expected to take on different roles and exhibit a heterogeneous structure, significantly influencing each other in terms of stability and productivity (Heikkilä, Kuivaniemi 2012; Iansiti, Levien 2004).

Although the term ecosystem is based on the metaphor of biology, at a certain point it has a conscious guiding function. This represents a transition from a random process, as in biological systems, to a more structured system. Business communities are social systems, unlike coevolving communities of biological organisms; These social systems consist of people making decisions and are interconnected by a complex network of choices. Business ecosystems concentrate on the new capital, customer interest and talent pool created by innovation, just as successful species are nourished by different natural resources (Moore 1993). Stough (2016) also states that the ecology metaphor is a good concept for describing complex systems, as well as assuming inputs and outputs that include feedback between humans and nature.

The strategy of the entrepreneurship ecosystem focuses on the components and development processes that make up this ecosystem. This strategy gains importance due to the need to explain the complex and unique developments of ecosystems (Isenberg 2011). The rapid growth experienced along with technological advances has led many people in the traditional business environment to question their business networks, and in this process has clearly shown that they jointly share the fate of the network they are in (Iansiti, Levien 2004). Economic development and growth of the entrepreneurial ecosystem are a result of complex entrepreneurial processes; Many initiatives develop in interaction with each other and environmental factors (Neck et al. 2004). In the process of emergence of new organizations, important moments in the process of companies reproducing time and context can have dramatic effects on the entrepreneurial ecosystem.

Audretsch and Belitski (2017) define the entrepreneurial ecosystem as factors that define entrepreneurial opportunities and influence their commercialization, along with institutional and organizational systems. Gauthier et al. (2018), in a more technical interpretation, defined the ecosystem around shared resource pools within a 100 km radius, usually around the center point in a given region, with a few exceptions based on local reality. Bringing together the definitions in the literature, Mason and Brown (2014) define potential and existing interconnected entrepreneurial actors as entrepreneurial institutions (firms, venture capitalists, angel investment networks, banks), institutions (universities, public institutions, financial institutions) and entrepreneurial processes. They put forward their own definitions.

Malecki (2018) stated that there was a transition from entrepreneurship environment and similar concepts to the concept of entrepreneurship ecosystem, according to research conducted in Web of Science and Scopus databases in October 2017. The research has shown that the terms entrepreneurial environment or similar terms were widely used from the 1970s to 2015, whereas entrepreneurial ecosystem emerged in the 2000s and became dominant from 2016 onwards.

Cohen (2005) defines a sustainable entrepreneurship ecosystem as a group of interconnected actors in a local geographical community that promotes sustainable development through the support and facilitation of new ventures. Mack and Mayer (2016) define the entrepreneurial ecosystem as interactive components that support new firm formation in a specific regional context. Additionally, the authors emphasize that regions with high entrepreneurial activities should be considered as a system (Neck et al. 2004; Mack, Mayer 2016). While firms producing new organizations show that time and context can be important in this reproduction process, they also reveal that certain critical moments can create dramatic effects within the entrepreneurial ecosystem (Neck et al. 2004).

Isenberg (2010) states that ignoring the interconnections of ecosystem components can have negative consequences. However, there is still limited understanding of how successful entrepreneurial ecosystems form and develop. “Chicken and Egg” questions such as whether businesses arrive at the pre- or post-financing stage, how clusters begin in these regions, and why some regions successfully adapt to technological changes while others fail are not adequately addressed (Mason, Brown 2014). Iansiti

and Levien (2004) propose three critical criteria for assessing a healthy ecosystem: i) productivity, ii) resilience, iii) core organizational advantage.

B. Entrepreneurship Ecosystem Approaches

One of the most important issues regarding entrepreneurship is the mapping and measurability of the ecosystem. With support from the UK Department for International Development (DFID) for mapping efforts, the Aspen Network for Development Entrepreneurs (ANDE) has developed a variety of tools and resources to reveal entrepreneurial ecosystems. ANDE (2013) examined nine different ecosystem approaches. These are:

1) Babson College - Babson Entrepreneurship Ecosystem Project,
2) Council on Competitiveness - Asset Mapping Roadmap,
3) George Mason University - Global Entrepreneurship and Development Index,
4) Hwang, V.H. - Innovation Rain Scheme,
5) Koltai and Company - Six + Six,
6) GSM Association – Information and Communication Technologies Entrepreneurship,
7) Organization for Economic Co-operation and Development - Entrepreneurship Measurement Framework,
8) World Bank - Doing Business,
9) World Economic Forum - Entrepreneurship Ecosystem.

Research on entrepreneurship ecosystems in developed and developing countries focuses on calculating the factors that may affect entrepreneurship and the interactions of these factors with each other with a multidimensional measurement approach. Entrepreneurship is seen as a tool for socio-economic development goals, which reveals the need to measure the impact of local entrepreneurial activities. For this purpose, the OECD Entrepreneurship Indicators Program was developed with the support of the Kauffman Foundation. In this program, three main elements are defined for the evaluation of the ecosystem: determinants, entrepreneurial performance and impact (ANDE, 2013).

C. Start-up Concept

Before moving on to explanations about the entrepreneurship ecosystem, it is important to make a brief definition of the concept of "start-up", which constitutes the sample group of the research. Although start-up has several features that differ from general forms of entrepreneurship, it is not independent of the basic concepts of entrepreneurship.

The European Commission defines SMEs according to the number of staff and turnover or balance sheet total. However, since start-ups may have more employees and their initial capital and financing sources are different compared to SMEs, measuring their turnover becomes difficult. For this reason, the European Union states that there is no official definition for start-up; However, it states that the criteria of age (younger than 5 or 10 years, depending on the sector), innovation (product, service or business model) and scalability (intention to expand the number of employees and the markets in which it operates) can be used.

Cukier, Kon, and Lyons (2016) state that the term "start-up ecosystem" appeared in the literature around 2005 and has increased rapidly since 2010, according to Google Scholar. This shows that the start-up ecosystem has become an important element for innovation by transforming technology and traditional business systems with mobile systems and the internet. Cukier, Kon and Lyons (2016), Gauthier et al. (2018), defines the start-up ecosystem as a complex system consisting of people, initiatives and various supporting organizations that interact to create new start-up companies and develop existing ones. This ecosystem covers a limited area within a 30-mile (or one-hour travel) range.

Tripathi et al. (2018) analyzed articles and internet resources focusing on the start-up ecosystem and found that a start-up ecosystem operates in the environment of a specific region. This ecosystem, where entrepreneurs and supporting organizations collaborate to create new ventures and guide existing ones, is a system in which entrepreneurs, investors, and other stakeholders interact through collaborative networks with government and supporting organizations. Additionally, this ecosystem supports the creation of an infrastructure aimed at domestic product development and employment creation on a larger scale. Feld (2012: 186-187) collected the characteristics of successful start-up ecosystems under nine headings.

Leadership: A strong group of entrepreneurs who are visible, accessible and committed to making the region a great place to start and grow a company.

Intermediaries: The existence of effective, visible, well-integrated accelerators and incubators, as well as many respected advisors and mentors present across all stages, sectors, demographics and geographies.

Network Density: Deep, well-connected community of start-ups and entrepreneurs, as well as engaged and visible investors, advisors, mentors and supporters.

Government: Strong government support and understanding for those new to economic growth, as well as the availability of supportive policies covering economic development, tax and investment instruments.

Talent: Broad, deep talent pool for employees at all levels across all industries and specializations.

Support Services: Integrated, accessible, effective and affordable professional services (legal, accounting, real estate, insurance and consulting).

Corporations: Special departments and programs to encourage collaboration with high-growth startups created by large corporations.

Capital: Strong, concentrated and supportive venture capitalists, angels, seed investors who are visible and accessible across industry, demographics and geography.

D. Entrepreneurship Ecosystem, Components and Research Conducted

Entrepreneurship ecosystem studies provide important information about the components of the ecosystem (Cohen, 2006; Isenberg, 2011; Motoyama & Knowlton, 2016). In strategic management, measuring the performance of companies relative to their competitors is not sufficient when evaluating entrepreneurial performance. Because opportunity costs such as time, capital and uncertainty arise in entrepreneurship. Therefore, the unique nature of entrepreneurial ecosystems has led previous studies to investigate their key components and actors (Cohen, 2006; Adly & Khatib, 2014; Neck et al., 2004; Arruda et al., 2013). Relationships and networks also include flows from sources outside the local ecosystem. This depends on the fact that the basic structure in the entrepreneurship ecosystem is the system (Malecki, 2018). Mason and Brown (2014) state that there are limitations in determining the general characteristics of entrepreneurial ecosystems. They also note that ecosystems arise in unique conditions and the time dimension is ignored. Entrepreneurial ecosystems often develop in areas with local assets (Mason & Brown, 2014).

Reinforcing approaches to bringing ecosystem components together can be an effective strategy; however, the presence of key ingredients such as entrepreneurs, financing, and mentors may not support growth (Mack & Mayer, 2016). Neck et al. (2004) identified six major components in the Boulder County ecosystem: incubators, subsidiaries, formal and informal networks, physical infrastructure, and culture. These components are all interrelated and part of the Boulder County entrepreneurial system. In their research in the Phoenix ecosystem, Mack and Mayer (2016) focused on documenting the existence of components and argued that the interdependencies between the evolutionary dynamics of components are poorly understood. They emphasized that job creation is linked to issues such as market development, human capital, finance, culture and support, as well as the relational aspects of the economy.

Cohen (2006) examined the potential for developing a sustainable entrepreneurship ecosystem in the Victorian entrepreneurship ecosystem. In his research, he analyzed the ecosystem within the framework of social networks, formal and informal networks. In this study, it was found that various challenges were effective in achieving the goal. Heikkilä and Kuivaniemi (2012) suggest that an expanding ecosystem can be analyzed by considering six different sub-ecosystems: technology, research, customer demands, competitors, social environment, legal and political environment. Motoyama and Knowlton (2016) examined the interactions between entrepreneurs and support organizations by considering the entrepreneurship ecosystem with a social network approach. They emphasized that the components of successful entrepreneurial ecosystems may vary at different stages. Mack and Mayer (2016) stated the importance of factors such as market opportunities, human and financial capital in the startup phase. In the Phoenix ecosystem, the scarcity of success stories and the lack of elements such as mentoring stand out as a critical problem.

Heikkilä and Kuivaniemi (2012) stated that most startups at the seed stage fail, but these startups can be revived with an ecosystem that supports growth. To create an ecosystem that will support the growth of startups, it is important to identify the organizations or actors that need to be included in the ecosystem. Otherwise, as researchers such as Iansiti and Levien (2004) point out, trying to draw the boundaries of an ecosystem will remain only an academic exercise. Shane and Venkataraman (2000) argue that in equilibrium models, entrepreneurial opportunities either do not exist or are randomly distributed throughout the population. In this model, since individuals cannot see the opportunities discovered by others, who will become an entrepreneur depends only on individual characteristics. However, the ecosystem approach emphasizes that the elements that make up a country's entrepreneurial ecosystem consist of many elements that interact in unique ways. For example, the Israeli entrepreneurial ecosystem developed based on military needs despite its lack of natural resources. Ireland has strengthened its entrepreneurial ecosystem thanks to its proximity to the European market with free education and the presence of foreign multinational companies. China's entrepreneurship ecosystem is developing in line with regional policies shaped by the influence of the totalitarian political system (Yaribeigi et al., 2014).

These examples show that entrepreneurial ecosystems are influenced not only by individual characteristics, but also by social, economic and political factors. Ecosystems are shaped by a combination of local dynamics and conditions, and each follows a unique development path.

1. Entrepreneurship Ecosystem and Culture (Success Stories - Social Values)

Success stories and social norms are important components of the entrepreneurship ecosystem. While success stories include elements such as visible success, wealth creation for founders and international reputation; It includes factors such as social norms, risk tolerance, innovation, creativity and the social status of the entrepreneur. Cohen (2005) defines culture as the natural state of

the region and the soul of the community, which includes the common interests and knowledge of the citizens. Community culture plays a critical role in the evolution of the entrepreneurial ecosystem; Pro-innovation cultures can perform well despite adverse macro conditions, while anti-innovation cultures hinder development (Petrakis et al., 2015).

In the research conducted by Widianto (2019), the negative impact of individualism on national entrepreneurship activities was observed. Additionally, family support has been found to positively affect entrepreneurial decisions and processes (Chang et al., 2009). Factors such as family background, gender and work experience also significantly affect entrepreneurial activities (Mathews and Moser, 1996).

Walsh and Winsor (2019) found that socio-cultural factors can hinder functional entrepreneurial ecosystems that support regional innovation. Culture is an important factor affecting innovation and competitiveness in the long term (Petrakis et al., 2015). Additionally, the role of local entrepreneurial support organizations can be decisive in the development of communities' cultural norms (Motoyama and Knowlton, 2016).

Success stories help overcome institutional deficiencies in the entrepreneurial ecosystem by contributing to the development of trust and mutually beneficial relationships (Martinsons, 2002). Consequently, success in entrepreneurship depends not only on individual abilities but also on environmental factors, social norms, and community supports.

2. Entrepreneurship Ecosystem and Financing Processes

Financial capital is a critical component for the sustainability of the entrepreneurial ecosystem. Various sources of financing, such as microloans, angel investors, family and friends, zero-stage venture capital, venture capital funds, and debt, are necessary for entrepreneurs to grow their businesses. Motoyama and Knowlton (2016) research shows that financial support from an accelerator or venture capital firm alone is not sufficient; It shows that inception, strategic resource management and connections between different organizations create important bridges in the financing stages.

The return processes of entrepreneurs are guided by exits. When sufficient financing is not provided, the learning and ecosystem richness of entrepreneurs is limited to early exits, and this negatively affects the returns of entrepreneurs. This is often evident in ecosystems where access to venture capital is limited and public stock market transactions are limited (Mason and Brown, 2014).

Florida and Kenney (1988) found that venture capital firms clustered in regions where technology-intensive enterprises were located. Investors in financial centers generally focus on exports, while investors in technology centers tend to invest in local startups. Venture capital networks are found in high density in technology regions due to their knowledge-intensive nature, which enhances local technological innovation and economic development.

Cohen (2005) discussed a “chicken and egg” problem between investors and successful startups in the Victorian entrepreneurial ecosystem; He stated that investors are cautious in providing capital to startups that do not show a critical growth trend. Research conducted by Pandey (2018) in India has revealed that the financing of a startup depends on its type, and seed financing and venture capital play an important role.

As a result, the financial capital required for the growth of entrepreneurs is a fundamental factor in the functioning and sustainability of the ecosystem.

3. Entrepreneurship Ecosystem and Incentives and Support Mechanisms

This component includes various support elements of the entrepreneurial ecosystem:

Non-Governmental Organizations: Non-profit organizations are important actors that support entrepreneurship. They allow entrepreneurs to gain knowledge and network through events such as business plan competitions, conferences, and entrepreneur-friendly associations. Such organizations increase the vitality of the ecosystem by contributing to the development of entrepreneurs.

Supporting Professions: Professional groups such as lawyers, accountants, investment bankers and technical experts play a critical role in the business processes of entrepreneurs. These professionals help entrepreneurs overcome the legal, financial and technical challenges they face, enabling them to create more robust and sustainable business models. They tend to provide free support initially with the expectation of establishing long-term business relationships.

Infrastructure: Infrastructure elements such as telecommunication, transportation, logistics and energy are necessary for entrepreneurs to continue their business. Additionally, incubators and clusters strengthen the dynamics of the ecosystem by supporting the development of new ventures.

Neck et al. (2004) investigated the role of incubators in the startup of new ventures by entrepreneurs in the Boulder County ecosystem. Incubators play both an implicit and explicit role in enabling entrepreneurs to leave their current businesses. Situations such as employees not being aware that they are planning to start a business reveal the hidden effects of incubators. 67% of the survey participants stated that informal networks are important for the evolution of the entrepreneurship ecosystem.

Experienced mentor networks contribute to the development of entrepreneurs by providing support (Motoyama and Knowlton, 2016). Mason and Brown (2014) emphasize that many start-up support programs focus on ventures with high growth potential. It is clear that such support contributes to the greater success of entrepreneurs and the overall health of the ecosystem.

4. Entrepreneurship Ecosystem and Human Resources

Human capital is a critical component of the entrepreneurial ecosystem and consists of the following factors:

Labor: Skilled and unskilled workers are essential to the success of entrepreneurs. Late generation families and serial entrepreneurs contribute to the ecosystem with their experience and knowledge. These individuals contribute to social and economic development by increasing the sustainability of entrepreneurship.

Educational Institutions: Universities provide students with entrepreneurial thinking and develop their skills through entrepreneurship training and curricula (Yaghoubi, 2010). Entrepreneurial intention is directly related to the desire to start a new venture, and this intention is influenced by perceived barriers and support factors (Lüthje and Franke, 2004).

Learning Process: Motoyama and Knowlton (2016) state that the learning process in the ecosystem is not limited to the education received from universities, but individuals acquire experiential knowledge through their interactions. Entrepreneurs who gain experience by working in corporate companies later make positive contributions to the ecosystem by establishing their own businesses.

University-Related Initiatives: St. In the St. Louis ecosystem, it has been observed that entrepreneurs who are university graduates or postdoctoral researchers apply the technologies they have studied in commercial environments. Providing mechanisms to create flow between the student population of universities and local entrepreneurial firms contributes to the development of the local entrepreneurship ecosystem (Motoyama and Knowlton, 2016).

Technical and Business Skills: Low levels of technical and business skills may hinder motivated entrepreneurs' desire to start new ventures (Vesper, 1980). Therefore, it is important to shape education policies according to the needs of entrepreneurs.

Policy Design: The research conducted by Akçomak, Doğan and Taşkın (2018) revealed that technology and innovation policies are linked to industrial policies. In this context, it is emphasized that science and industrial policies should be designed by taking into account the knowledge creation functions of universities and industrial organizations.

These components are vital for the strengthening and sustainability of the entrepreneurial ecosystem.

5. Entrepreneurship Environment and Markets

This component includes two main factors that influence the dynamics and interactions of the entrepreneurial ecosystem: early customers and networks.

Early Customers

Early Adopters: People who first use your product contribute to the product development process by providing feedback. These customers can serve as references for other potential customers.

Experience in Product Variation: Early customers strengthen the entrepreneur's position in the market by gaining experience with different variations of the product.

Early Reviews: Feedback from this customer group provides important data about the product's market performance and helps entrepreneurs shape their strategies.

Distribution Channels: Early adopters provide important information on how to distribute and bring new products to market.

Networks

Entrepreneurs' Networks: Relationships established between local entrepreneurs increase the sharing of knowledge and experience. This contributes to the development of the entrepreneurial ecosystem (Mack, Mayer, 2016).

Diaspora Networks: Entrepreneurs and professionals living abroad can support the flow of information and resources by establishing connections with the local ecosystem.

Multinational Companies: These types of companies strengthen the ecosystem by providing capital and knowledge to local startups.

The development of ecosystems depends on the technology and industry conditions in the region. Technological progress should create new opportunities, and these opportunities should contribute to the development of the market (Brown, Mason, 2017). Invisible networks created by entrepreneurs in technology zones can weaken the flow of information and collaborations. While Shane and Venkataraman (2000) define entrepreneurship as a mechanism that transforms society's technical knowledge into products and services, they state that opportunities depend on information and belief asymmetries. If there is not enough transaction flow in an ecosystem, there may be delays in capital deployment. This may reduce the impact of supports provided to entrepreneurs. Isenberg (2011) emphasizes that capital and credit support offered to entrepreneurs will have limited impact unless large companies provide support to potential suppliers. Cervantes and Nardi (2012) examined how entrepreneurs in Mexico learned from social media and foreign experiences. Startup weekend events foster the culture of innovation by creating an environment of trust and sharing among entrepreneurs. Mason and Brown (2014) state that successful entrepreneurs revitalize local enterprises by returning to the ecosystem and sharing their experience and wealth. This interaction helps entrepreneurs improve themselves and strengthen the ecosystem.

These components are critical for the healthy functioning and sustainability of the entrepreneurial ecosystem.

6. Entrepreneurship Ecosystem and Politics

Leadership (firm support, social legitimacy, opportunities for advocates, entrepreneurial strategies, urgency, crisis and challenge) and the state (institutions, financial support, regulatory framework supports, research institutes, enterprise-friendly legislation) are among the sub-elements of this component. It is clear that entrepreneurship needs certain policies, unlike self-employment and SMEs (Isenberg 2011). Support and policy initiatives need to focus on increasing coordination between ecosystem components and actors (Mack, Mayer 2016). While state mechanisms regulate the intentions and actions of individuals, they also determine social norms (Griffiths et al. 2016). State structures function as a critical actor in the creation and exploitation of new markets and opportunities through regulatory policies and practices. In countries where entrepreneurial motivation is high and state mechanisms operate with the right policies, gaining and maintaining market share and power is considered an attractive and profitable situation (Griffiths et al. 2016). Governments can influence market mechanisms and ensure their effective functioning by eliminating conditions that create market imperfections and administrative barriers. They can also create a "corporate culture" that supports firms taking reasonable risks and making profits (Gnyawali, Fogel 1994).

Entrepreneurial intentions and government policies play a decisive role in the ecosystem. Griffiths et al. (2016) examined the impact of macro and contextual factors on individual entrepreneurial intentions. Research has shown that low GDP and high corruption rates reduce the desire to start a new venture, but success indicators of a venture's feasibility are related to intentions. In this study, the concept of intention is expressed by entrepreneurial motivation, which reflects the willingness of individuals to establish a business in their region or country. One of the key findings of the research is that the true nature of operational barriers may be underestimated once the initiative is launched. Another study by Krueger, Reilly, and Carsrud (2000a) focused on entrepreneurial intentions and government policies. This study indicates that it is not enough to just encourage entrepreneurial intentions in public, but this can also be implemented by associating them with entrepreneurial intentions. Government policies influence enterprises and therefore support economic development. Even if the quantity and quality of potential entrepreneurs are increased, the perception of entrepreneurship in suppliers, financing providers, government policies and society needs to be encouraged (Krueger, Reilly, Carsrud 2000a).

The sociocultural context is shaped by resources such as habits, attitudes, traditions, tacit knowledge and business acumen for all actors operating within the economic system. This sociocultural context stands out as an important determining factor in economic development. Although strategic areas such as sector planning, labor markets, and international trade policy are important, it becomes clear that policies should be placed in broader institutional frameworks by taking these sociocultural contexts into consideration (Storper, Scott 1995). Storper and Scott (1995) showed in their research that industrial policy is mandatory in competition with the world economy, but regional dynamics and geographical factors cannot be considered independently.

Stough, Haynes and Campbell (1998) investigated the cluster effect of companies using high technology. Although the strong growth of small-scale firms is associated with government sectoral linkages, the pace of product innovation and the high concentration of a technically knowledgeable population also play an important role. In addition to government policies, another important element that directs the ecosystem is leadership. Entrepreneurs who have participated in successful entrepreneurial projects acknowledge that creating a sustainable ecosystem takes time. In this context, mentorship-oriented, inclusive leadership roles that support other individuals in the start-up community also gain importance. Such entrepreneurs base their leadership on meritocracy (Brown, Mason 2017). In both developed and developing countries, factors such as cost implementation agreements, legal rights index, labor tax reveal the critical role of the state in promoting entrepreneurial activities (Widianto 2019).

Entrepreneurs see entrepreneurship as a field that is open to innovation, not dependent on bureaucracy, and facilitates startup processes, but they state that the government supports provided overlap with classical growth strategies, which negatively affects the ecosystem (Mack, Mayer 2016). Mason and Brown (2014) stated that policy efforts alone have a limited effect on increasing the number of new ventures. They emphasized that a two-way effect should be provided for this. The first is that policies should include not only government levels but also non-governmental actors. The second is the need for various policies different from general business start-up goals.

The importance of effective policy in the entrepreneurial ecosystem is that it democratizes entry into the ecosystem and encourages selection and selection mechanisms in resource allocation. Isenberg (2011) argues that entrepreneurs should not be protected in product or financial markets. Otherwise, entrepreneurial potential and the market will be weakened.

7. Organizational Ecology Theory

Organizational ecology examines the birth, growth and extinction of organizations in the context of demographic processes and examines the populations of these structures (Carroll, Khessina 2005). Population ecology theory highlights the role of environmental factors in the survival processes of organizations. In this theory, the most determining factors of survival are defined as environmental effects (Betton, Dess 1985; Amit, Glosten, Muller 1993). Population ecology accepts the inability of organizations to adapt to environmental changes as a distinctive feature and argues that organizations that adapt to their environment will survive (Amit, Glosten, Muller 1993). According to the theory, the selection of new or changed organizational forms occurs as a result of

environmental constraints and this situation is defined as inertia (Betton, Dess 1985). Hannan and Freeman (1977) emphasize the importance of common destiny in terms of environmental diversity of organizational ecology theory.

The unit of analysis of organizational ecology theory is the organizational population, and the theory is a preliminary preparation for modeling organizational structures. The units of analysis used are: i) formal structure, ii) activity patterns, iii) normative order (Hannan, Freeman 1977). Three fundamental issues of population ecology models: i) the role of structural inertia in limiting adaptation, ii) the classification of organizational types, iii) the importance of environmental factors in determining organizational survival (Betton, Dess 1985). The population ecology approach offers an alternative to the dominant adaptation perspective through the organization-environment relationship. Although there are many ecological perspectives, they all focus on the selection process in nature (Hannan, Freeman 1977).

Hannan and Freeman (1977) define organizational form as a characteristic structure that explains the process of transforming inputs into outputs. This formal structure makes it possible to investigate forms and populations through qualitative differences. Hannan and Freeman (1977) described processes that limit the adaptability of organizations and create structural inertia. Internal factors determine firms' sunk costs, communication structures, internal policies, and the influence of institutional norms, while external factors include entry and exit barriers, bounded rationality, and social legitimacy. Strong inertial pressures reduce the adaptability of the organization and increase its likelihood of being suitable for environmental selection.

Carroll and Khessina (2005) stated that entrepreneurship has been discussed in a limited way in the field of organizational ecology, and this is due to the perception of entrepreneurship as an individual process. In his studies, he examined the success and failure of new ventures through rates at two points: the population formation rate (the speed at which organizations launch ventures and their success rate) and the corporate mortality rate. Salamzadeh and Kesim (2015) emphasized that, in addition to the individual importance of the entrepreneur, there are many issues that need to be structurally defined and explained about start-ups, and stated that these populations can be detailed by considering the population ecology theory within the framework of macro theories (Salamzadeh 2015b).

The environment determines the characteristics of organizational populations and the distribution of resources required for entrepreneurship through the selection mechanism (Özen et al. 2008). While individual failures clearly indicate the mortality rate of organizations, the theory at this point focuses on what features of the environment have changed and why organizational populations cannot adapt to these changes (Betton, Dess 1985). By applying selection logic, structural inertia, species definition and environmental selection issues, resources and their interdependence emerge (Betton, Dess 1985). In population ecology theory, inertia generally appears as a phenomenon associated with the complex structures of large companies and is also a concept that creates a central paradox (Betton, Dess 1985). Some organizational populations have half-lives, implying that these forms are better suited to survival. Explanations of causality regarding survival can be developed; However, nothing can be said about fitness or evolution unless it is taken into account in spreading the genotype by simulating natural selection (Betton, Dess 1985). Organizational populations are defined by characteristics and behaviors found among members of a particular population and not found in other members, often operating in the same time period and in the same place. Organizational types and populations are not the phenotype that reflects the general form of organizations, but the genotype that forms the basic set of compositions that all organizations share. Organizations that do not conform to a common form are not considered members of the population, even if they comply with the norms. That is, defining organizational populations in terms of their structural similarities does not recognize significant evolutionarily different differences between populations (Reydon, Scholz 2009).

Through the selection mechanism, the environment determines the characteristics of organizational populations and exerts the ultimate influence on the allocation of entrepreneurial resources. Entrepreneurship research prior to population ecology theory adopted strategic adaptation approaches, believing that success depended solely on the decisions of individual entrepreneurs. The entrepreneurship process can be better understood with population ecology theory. However, the most challenging part of population ecology theory is predicting the environmental conditions that will lead to greater establishment and growth of entrepreneurial firms (Amit, Glosten, Muller 1993). At this point, the theory helps determine the organizational and environmental effects on new ventures with the concepts of innovation weakness and adolescence, which predict that new organizations will be more likely to close than old organizations (Özen et al. 2008).

Entrepreneurship researchers have addressed this issue at the level of population analysis. Organizational ecology aims to offer four explanations in the basic framework: i) the various organizational forms that exist, ii) the distribution of these forms through different environments, iii) the limitations that these environments impose on organizational forms, iv) the rates at which organizations change (Reydon, Scholz 2009). In response to criticism, the population ecology literature has focused particularly on issues of legitimation and the spatial effects of competition at the context and level of analysis. Merely examining the individual characteristics of entrepreneurs and interpreting their actions does not provide sufficient information about the environmental context. Population ecology is therefore a fruitful paradigm for developing research on the social context of entrepreneurship (Thornton 1999). However, the theory does not offer any explanation of the role of individual action in influencing the conditions of establishment (Hannan, Freeman 1977).

Kılıç (2020) conducted research on the most demanded pre-incubation centers in Turkey, which are decisive in the life and death of startups. Research results show that inviting startups to incubation centers and business network and mentor support contribute to the survival of startups. Before the population ecology approach, most entrepreneurship research focused on strategic adaptation and the individual structure of the entrepreneur.

E. Historical Perspective of Turkey's Entrepreneurship Ecosystem

Year	Event
1923	The establishment of the Republic of Türkiye and the foundations of the new economic structure were laid.
1947	The first steps towards transition to the private sector were the establishment of the Ministry of Industry and Trade.
1980	Economic liberalization, promotion of private entrepreneurship.
1990	Increase in entrepreneurship in technology and IT sectors.
2000	Internet boom, many new startups being established.
2006	Entrepreneurship support programs were launched by TÜBİTAK.
2011	It is the development of the startup ecosystem that attracts the attention of investors.
2015	Rapid increase in technology-focused startups, increase in the number of angel investors.
2020	The rise of digital startups and e-commerce post-COVID-19.
2023	Greater international recognition of the entrepreneurial ecosystem.

a. Ottoman Period

Trade and Craft: The Ottoman Empire was located at the intersection of trade routes. Tradesmen and craftsmen formed the backbone of the local economy. During this period, entrepreneurship was limited to traditional methods.

Closed Economy: Economic activities were generally carried out within a closed system and there was no structure that encouraged entrepreneurship.

b. Republic Period (1923-1950)

State Supported Economy: Industrialization was targeted with the establishment of the Republic. The first industrial plans were made to encourage private sector enterprises.

Ministry of Industry and Trade: Founded in 1923, this ministry began to support entrepreneurship by determining industrialization and trade policies.

Cooperatives: The establishment of cooperatives for agriculture and rural development was encouraged. This was a step supporting rural entrepreneurship.

c. 1950-1980 Period

Free Market Economy: Policies implemented in the 1950s paved the way for the private sector. Private entrepreneurs benefited from state-supported industrialization programs.

Planned Economy: Five-year development plans that started in 1963 targeted growth in industry and agriculture. During this period, the state tried to direct entrepreneurship by supporting certain sectors.

Loan and Incentives: Loan programs and incentives were provided for entrepreneurs. However, political instability negatively affected economic growth.

d. Period After 1980

Liberal Economic Reforms: Economic reforms implemented in the early 1980s accelerated private sector initiatives. Privatization policies encouraged entrepreneurship.

Foreign Investments: Foreign capital inflow started to increase. This was an important step for Turkey to compete in the international market.

Small and Medium Enterprises (SMEs): SMEs have become the locomotive of economic growth. The state has developed various support and incentive programs for SMEs.

e. 2000s and After

Economic Growth: In the 2000s, Türkiye experienced a rapid economic growth process. During this period, especially technology-based initiatives and start-up ecosystems began to come to the fore.

Entrepreneurship Support Programs: Incubation centers, accelerators and entrepreneur support programs (such as TÜBİTAK, KOSGEB) were established. These structures made it easier for entrepreneurs to bring their business ideas to life.

Investor Network: Angel investors and venture capital funds began to be included in the entrepreneurship ecosystem. This increased entrepreneurs' access to finance.

Digital Transformation: Areas such as e-commerce, fintech, health technologies have grown rapidly. Türkiye has become an important center for digital initiatives.

f. Today

Young Population and Innovation: Turkey's young population plays an active role in entrepreneurship. Educational institutions and universities support this potential by offering entrepreneurship training.

Social Entrepreneurship: Social enterprises show a tendency to produce solutions to social problems. Various support and funding opportunities arise in this field.

Challenges and Opportunities: Economic fluctuations, political uncertainties and financial difficulties are among the factors that negatively affect entrepreneurship. However, digitalization and access to global markets offer new opportunities.

As a result, Turkey's entrepreneurship ecosystem has undergone significant transformations throughout history. Today, it exhibits a competitive structure both locally and internationally and allows the development of new business models. The future holds great potential for this dynamic ecosystem to further strengthen and diversify.

CONCLUSION

This study aims to reveal the decisive effects of innovation on entrepreneurship by examining in depth the relationship between innovation and the entrepreneurship ecosystem in Turkey. The findings show that Turkey's entrepreneurial potential is high, but significant challenges must be overcome to realize this potential.

First of all, Turkey's young and dynamic population and increasing access to technology provide a positive basis for the development of innovative initiatives. However, problems faced by entrepreneurs such as lack of financing, lack of education and market uncertainties negatively affect innovation processes. In particular, strengthening support mechanisms for financing early stage ventures is of vital importance for entrepreneurs to realize their innovative projects.

Additionally, as a result of the literature review, it was concluded that cooperation between the components of the innovation ecosystem in Turkey should be increased. Strengthening interactions between universities, public institutions and the private sector will increase the flow of information and innovation potential. In this context, increasing the effectiveness of public policies and developing policies that support entrepreneurship are of great importance.

Another important finding of the study is the analysis of successful startup examples. Innovative startups in Turkey attract attention with their ability to compete in both local and international markets. The experiences of these initiatives constitute a learning resource for other entrepreneurs and encourage the adoption of innovative approaches.

As a result, in order for the entrepreneurship ecosystem in Turkey to develop sustainably, innovation must be supported and the needs of entrepreneurs must be met. This is an approach that will support not only economic growth but also social development. In the future, the field needs more research to more comprehensively examine the effects of innovation on entrepreneurship. This study is an important step towards increasing Turkey's entrepreneurial potential and offers strategic recommendations for relevant stakeholders.

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