

What's Driving Turkish Innovation?

A Demand-Supply Analysis of Türkiye's Startup Ecosystem

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Turkey's economy has been growing rapidly, and its startup ecosystem has also seen significant development. The country has become an appealing destination for entrepreneurs from both within and outside the country, thanks to its favourable business conditions, young and talented workforce, and strategic location. In this policy outlook, the drivers behind the Turkish startup ecosystem's growth will be examined, including government assistance, funding accessibility, the emergence of accelerators and incubators, and a thriving entrepreneurial culture. Using a supply-demand analysis, the aim is to provide insights into the opportunities and challenges faced by Turkish startups and offer suggestions on how the country can continue to enhance and encourage innovation and entrepreneurship in the future.

Introduction

Turkey has emerged as one of the fastest-growing economies in the world, and its startup ecosystem has experienced remarkable growth in recent years. The country has become an attractive destination for local and foreign entrepreneurs, as it offers a favourable business environment, a young and talented workforce, and a strategic location between Europe, Asia, and the Middle East. This policy outlook explores the factors driving the growth of the Turkish startup ecosystem, including government support, access to funding, the rise of accelerators and incubators, and the development of a vibrant entrepreneurial culture. By analysing these factors using a supply-demand analysis, this policy outlook seeks to provide insights into the opportunities and challenges facing Turkish startups and to shed light on how the country can continue to improve and foster innovation and entrepreneurship in the years ahead.

The technology ecosystem in Turkey comprises a diverse range of stakeholders, such as established local and international companies, as well as pioneering startups that have gained global recognition. These startups have harnessed their entrepreneurial drive and skilled workforce to achieve significant growth in areas such as e-commerce, fintech, healthtech, cybersecurity, and gaming. Given the impressive success of established technology-based sectors in Turkey, it was only a matter of time before new trends started to take root in the country. Many of these newer trending emerging technologies were becoming popular worldwide, but some appeared to be more geared towards success in Turkey due to factors particular to the country. These included applications of blockchain technology, artificial intelligence (AI), micromobility, agriculture technology (agritech) and education technology (edtech).

What Works for the Turkish Technology Sector

A [demand-supply analysis](#) can be a useful tool when it comes to the management of systems and markets. When it comes to startup ecosystems, it can be particularly useful as it can reveal various insights into the type of factors that influence the current and potential market demand for the products or services offered by startups in the ecosystem as well as the kind of factors associated with the 'supply' of these startups, i.e., the startups' ability to come into existence and sustain themselves. This includes identifying the funding sources available to startups, talent availability and quality in the ecosystem, the regulatory environment in which startups operate, and the success factors that contribute to the success or failure of startups in the ecosystem. Additionally, the analysis can provide insights into the number and types of startups operating in the ecosystem and the overall health of the ecosystem.

Supply Side Factors

In terms of what works for the Turkish emerging technology sector on the supply side, meaning the factors that lead to an increase in the supply of startups in various sectors, a few key points stand out: proactive government support and growing venture capital (VC) and private equity (PE) investment. The Turkish government has been very proactive in its [efforts to support the growth](#) of various technology sectors. The full scope of government initiatives to support startups can be found in Figure 1 below:

Figure 1: The state of the Turkish startup ecosystem (2022)





To provide some specific examples, in the fintech sector, the government has introduced regulatory changes to enable fintech firms to operate more easily in the Turkish market. This intervention includes measures such as the [Electronic Money and Payment Institutions Law](#), which provides a legal framework for digital payment services. Additionally, initiatives such as the [Istanbul Fintech Week](#) and the [Istanbul International Financial Center](#) (IIFC) have been launched to promote the industry's growth. Similarly, in the healthtech sector, the government has launched initiatives such as the [Turkey Health Transformation Program](#) (HTP) to encourage the adoption of digital technologies in healthcare. Regulatory changes have been introduced to enable telemedicine and other digital health services, with measures such as the [Telemedicine Regulation](#) facilitating the sector's growth. For example, the Turkish Ministry of Health introduced a [Visual Examination Appointment](#) service in October 2020 to allow at-risk Covid-19 patients to consult physicians via video calls without visiting a public health institution (the service enables patients to receive a diagnosis and e-prescription for treatment). This system has primarily been implemented by public hospitals, but many private hospitals and clinics have also modified their e-appointment systems to provide video consultations.

The Turkish government has also taken steps to support the growth of the cybersecurity industry. Similar to the [National Artificial Intelligence Strategy](#) (NAIS) in 2021, the National Cyber Security Strategy and the National Cyber Security Council Action Plan, created in 2016 and 2019, respectively, set out a comprehensive framework for improving cybersecurity in Turkey. An updated [National Cyber Security Strategy](#) was presented in 2020. Accordingly, the government has introduced incentives and tax breaks to encourage companies to invest in cybersecurity research and development. In the gaming industry, the [Turkey](#)

[Game Developers Association](#) was established in 2016 to promote the development of the local gaming industry and support Turkish game developers. The government has also been investing in developing the gaming sector with initiatives such as the [Gaming Istanbul \(GIST\) expo](#), one of the largest gaming expos in the region.

The Turkish government has also supported the micro mobility sector, [introducing regulations and initiatives](#) to encourage using electric vehicles and bicycles. For example, in 2020, the Turkish government introduced a [tax exemption](#) for electric scooters and bikes to promote their use.

Furthermore, the Turkish government has shown increasing support for developing and adopting blockchain technology in recent years. The government [announced plans in 2019](#) to create a national blockchain strategy to establish Turkey as a centre of excellence for blockchain research and development. The [Blockchain Turkey Platform](#) was launched in 2018 to bring together stakeholders from industry, academia, and government to promote the development and adoption of blockchain technology.

The Turkish Parliament's 11th Development Plan included the implementation of a blockchain-based digital central bank currency and the establishment of the [Association of Payment Services and Electronic Money Institutions](#) in 2019. The country's first legislation relating to crypto assets, the [Disuse of Crypto Assets in Payments](#) regulation, came into force in April 2021. While it does not prohibit crypto assets or their platforms, it defines them as "[intangible assets](#) created virtually by distributed ledger technology" and not classified as traditional forms of money or capital market instruments. It also [prohibits using crypto assets](#) for payments and providing services in exchange for crypto assets and requires crypto asset service provid-

ers to obtain a license from the country's financial watchdog, the Capital Markets Board, to protect consumers. The regulatory framework governing cryptocurrency-related transactions in Turkey is [relatively non-prohibitive](#), encouraging Turkish consumers and institutions to participate in cryptocurrency markets.

Additionally, the [edtech](#) and [agritech](#) sectors have also received support from the government, along with funding for research and development, incentives for startups, and partnerships with universities and other institutions. The Turkish government's efforts to support the growth of these technology sectors have resulted in significant progress, with many startups and established players emerging to meet the growing demand for technology solutions. This action has positioned Turkey as a [hub for innovation](#) and entrepreneurship and created new economic growth and development opportunities.

Venture financing in Turkey has [experienced significant growth](#) in the last decade, increasing from 40 million USD in 2011 to 1.5 billion USD in 2021, with investment in Turkey's tech startups rising by more than 200 per cent from 2017-2021. The number of companies raising funding and acquisitions by major players such as Zynga, Alibaba, DeliveryHero, and Atlassian investing in or acquiring Turkish startups has increased. Figure 2 below shows the VC and PE deal amount increasing despite the number of deals decreasing in 2021-22 (likely linked to the uncertainty caused by the Covid-19 pandemic):



Notable [international and Turkish VCs](#) funding innovations in multiple industries in the country include 212, 500 Emerging Europe, Earlybird Digital East Fund, Boğaziçi Ventures and Paribu Ventures. Turkey ranked first in gaming startup investments in Europe in 2022, receiving [342 million dollars of investment](#). The marked increase in investment amount for Turkey is largely due to investments of 20 million USD and above, with 4 Turkish startups receiving a total investment of approximately 1.2 billion USD in the first quarter of 2022. The most invested sectors in

Turkey were e-commerce (food delivery) and gaming, with food delivery receiving the highest investment of 771 million USD, of which 768 million USD belonged to Getir, a company that reached a valuation of 11.8 billion USD and became [Turkey's second decacorn](#). The VC and PE industry is increasingly important in providing funding, mentorship, and support to help startups grow and succeed, with the potential for even more investment and innovation in the future.

Moreover, Turkey has [gained international recognition](#) for its growing technology ecosystem and strong partnerships across various industries, which has led to increased foreign investment in the country. One significant example is the [United Arab Emirates](#) (UAE), which has established a 10 billion USD fund dedicated to investing in Turkey. This fund will give Turkish startups and businesses additional capital to fuel their growth and expansion efforts. Pre-investment deals have already been signed in various sectors, including fintech, e-commerce, and energy, demonstrating the significant interest in Turkey's potential for growth and innovation.

Demand Side Factors

On the demand side, one factor leading to the increasing demand for technology startups in Turkey is an [investment-oriented public](#). Secondly, Turkey's growing population of tech-savvy individuals has created a perfect environment for the growth of the tech startup ecosystem. With the widespread adoption of mobile devices and the increasing availability of high-speed internet, Turkey's consumers have become increasingly connected. As per the Turkish Statistical Institute (TÜİK), [94 per cent of Turkish households](#) had internet access in 2022, up from 92 per cent in 2021. This environment has spurred the demand for innovative technology solutions that offer convenience and accessibility in daily life, ranging from mobile payment systems to e-commerce platforms and micro-mobility options. Last but not least, the country also has a [large and educated youth](#) that has also contributed significantly to the growth of the tech sector in the sense that it has a high number of tech-savvy university graduates that have driven the development of the country's startup ecosystem, with many of them [interested in entrepreneurship](#) and pursuing careers in technology and innovation. Moreover, Turkey has a [strong and growing gaming culture](#), with a large and active community of mostly young gamers, which is a pull factor for many gaming startups in Turkey. Taking all of the above facts about the Turkish population into consideration, from Turkey having a large young tech-savvy population with high mobile and internet penetration rates to the investment orientation of Turkish people, it makes sense that internet technology as a variable would act as a [catalyst](#) and increase awareness of stock trading among Turkish households. The easily accessible and public internet is extremely consequential when

it comes to investing for Turks, as it enables “obtaining [investment information](#), facilitating contact and user-friendliness to investment options, and simplifying or easing decision-making”. With the increasing mobile and internet penetration, more Turkish people appear to be comfortable with investing in applications of blockchain technology, including cryptocurrencies and NFTs. This is one of the drivers behind the country’s rapidly growing demand for blockchain technology startups.

Potential Improvement Areas

The demand-supply analysis of the startup ecosystem in Turkey can also highlight potential areas of improvement. It can reveal market gaps that existing startups have not adequately addressed, as well as talent shortages, regulatory barriers, funding constraints, and opportunities for collaboration between startups. Additionally, the analysis can identify ecosystem areas with high innovation potential. By identifying potential areas of improvement, the demand-supply analysis can help to foster innovation, growth, and competitiveness in the ecosystem. These can also serve as policy and programmatic recommendations that can help governments and private industry stakeholders not just develop the current Turkish startup ecosystem but also envision growth for presently nascent sectors such as climate technology as well as augmented and virtual reality (AR/VR).

Supply Side Factors

Even though the Turkish technology ecosystem has grown rapidly and enjoyed consecutive successes in many established and emerging industries in the country, there is room for improvement to take them to new heights. This research study found that “a shift in demand has an impact on innovation and that this effect is conditional on an [enabling supply-side environment](#)”, i.e. demand for innovation can only be met if the supply-side factors are supportive. Thus, firstly, below are some factors that may contribute to a decrease in the supply of startups specific to some of the various sectors highlighted above:

1. The [shortage of specialised talent](#) with expertise in various industries is a critical challenge that can hinder the growth of Turkish startups. Without access to the right talent, startups may struggle to develop and operate their solutions effectively, limiting their ability to compete in the marketplace. This challenge is particularly acute in industries such as fintech and blockchain, even globally, which require employees with specialised skills and experience to succeed. In some cases, Turkish startups (and organisa-

tions and institutions that may support them) may need higher salaries to attract the required talent, which can be challenging for early-stage companies with limited resources.

2. Infrastructure is another challenge that can [limit the growth of startups](#). Gaps in connectivity and access in some areas of the country can limit the ability of startups to reach and serve customers outside major urban centres. For example, if a startup in Istanbul wants to serve customers in a rural area, it may face challenges in providing reliable and fast internet connectivity, which is essential for delivering digital services. To address this challenge, the Turkish government has made [significant investments in digital infrastructure](#) in recent years, including expanding broadband access and improving mobile network coverage. However, there is still work to be done to ensure that startups have access to the infrastructure they need to reach customers across the country.
3. Finally, competition from international competitors is a significant challenge for Turkish startups. Startups in the United States and Europe benefit from larger markets, greater access to funding, and more mature ecosystems, making it difficult for Turkish startups to gain market share and compete globally. In some cases, international competitors may have more resources and be better positioned to succeed in certain markets, making it challenging for Turkish startups to compete. To address this challenge, the Turkish government has implemented [several initiatives](#) to promote the growth of local startups and facilitate their global competitiveness, including establishing startup accelerators, investment funds, and innovation centres.

Demand Side Factors

Given that, some factors may contribute to a decrease in the demand for startups, i.e., the demand for the products and services they offer. In the context discussed earlier, these factors include:

1. One of the main demand-side challenges facing Turkish startups in emerging and established technology industries such as blockchain, cybersecurity, and agritech is the limited awareness and understanding (though it is increasing) of their products or services among potential customers and stakeholders. Startups in these industries often introduce new and complex technologies that may not be widely understood by the general population or even industry professionals. As a result, these startups may strug-

gle to communicate the potential benefits of their solutions and differentiate themselves from traditional providers. This challenge highlights the need for effective marketing and communication strategies to raise awareness and educate potential customers and stakeholders - and that may be costly.

2. Another demand-side challenge that Turkish startups face is limited trust in new technologies and concerns about their reliability and effectiveness. This is particularly true for industries such as fintech, healthtech, and edtech, where startups often disrupt traditional industries and may face resistance from customers who prefer traditional providers or methods. For example, many consumers may be hesitant to use digital health solutions due to concerns about the privacy and security of their personal health information. Similarly, some Turkish consumers [may prefer traditional banking](#) services due to concerns about the safety or reliability of fintech startups. Overcoming this challenge requires startups to build trust with their customers by demonstrating the effectiveness and reliability of their solutions and implementing robust security and privacy measures.
3. Socioeconomic disparities exist in Turkey as they do elsewhere in the world and also present a significant challenge for Turkish startups in many technology industries, but particularly impacts fintech, healthtech, and edtech. Disparities linked to geographic area, income level, education level or accessibility can limit access to services and technology, making it difficult for startups to reach a broad customer base. For example, [low-income individuals may have limited access to the internet](#), financial services or technology products, making it difficult for fintech startups to serve this demographic. Similarly, rural areas may have limited access to equipment such as computers or tablets, making it difficult for edtech startups to reach these communities. Addressing these disparities requires technology startups in Turkey to develop strategies to reach underserved communities and to design solutions that are accessible and affordable for people of all income levels.

Conclusion

Analysing the demand and supply factors provides valuable insights into what is fuelling the growth of the Turkish startup ecosystem. The increasing demand for innovative products and services, driven by a young and tech-savvy population with growing disposable income, has led to a surge in the supply of startups. This growth has been supported by government initiatives, funding accessibility, and a flourishing entrepreneurial culture. Additionally, accelerators and incubators have played a vital role in the development of startups and in creating a supportive ecosystem. However, addressing the regulatory hurdles and skilled labour shortage will require additional attention and solutions. In conclusion, by maintaining a favourable environment for startups and resolving the challenges, Turkey can fully realise the potential of its thriving startup ecosystem to drive economic growth and innovation.