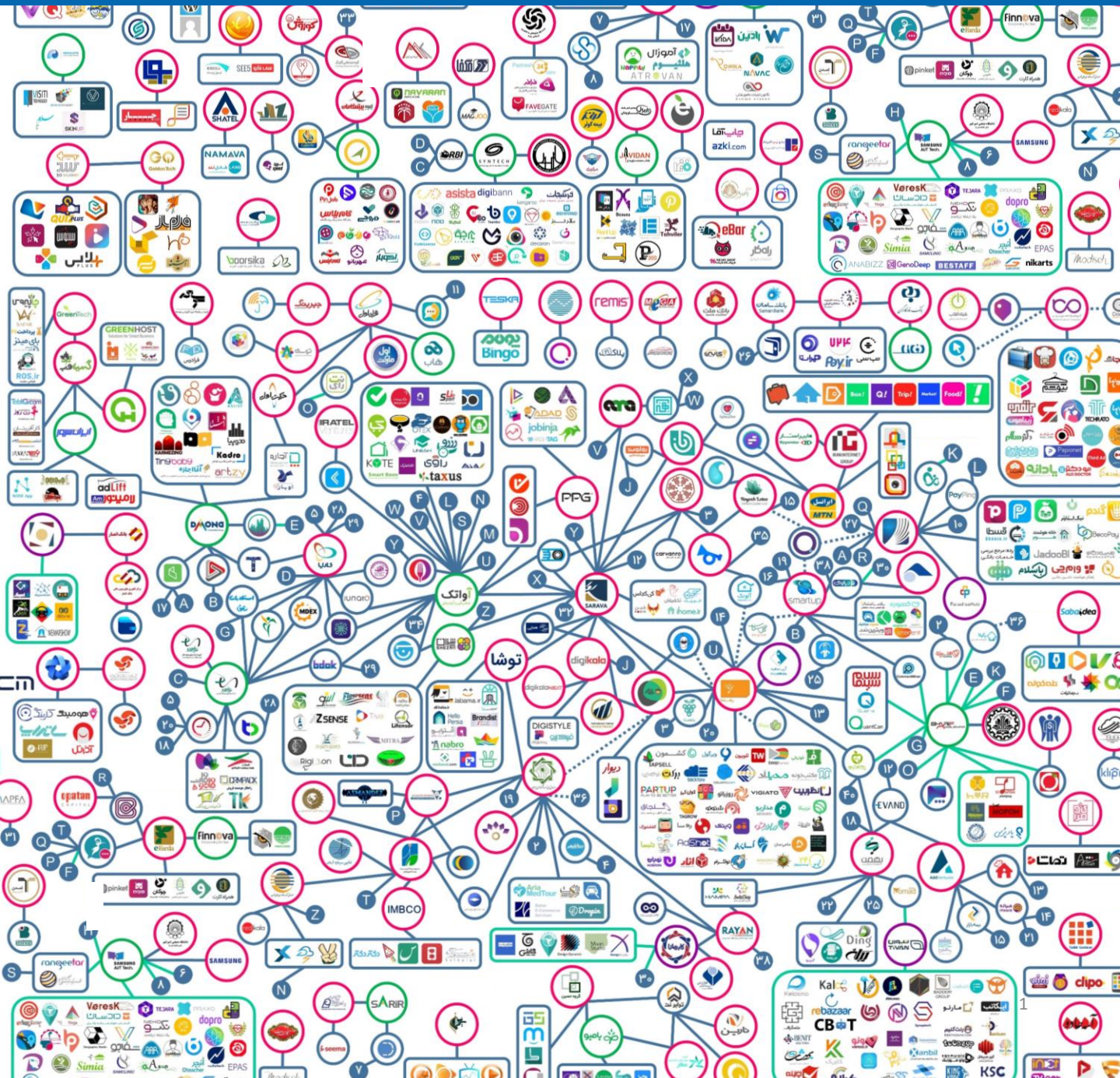




Mapping of the Existing Innovation Ecosystem in the I.R. of Iran



November 2021



Executive Summary

The “Iran’s Innovation Ecosystem Mapping” report, is prepared by UNDP Iran; a deep dive into the country’s innovation ecosystem.

The report provides a holistic view to the reader on innovation context in Iran, starting with an overview of the country’s innovation infrastructure and its place in the global innovation map, followed by the existing governmental support for Iranian startups, as one of the main players in Iran’s innovation ecosystem.

It illustrates the socio-economic characteristics of startups, the demography of startup support centers including; incubators, accelerators, venture capitals, and science and technology parks, in addition to the effect and impact of sanctions on Iran’s innovation ecosystem.

The report aims to provide a blueprint for data-driven decision-making on potential entry points for UNDP’s innovative interventions/programmes in Iran.

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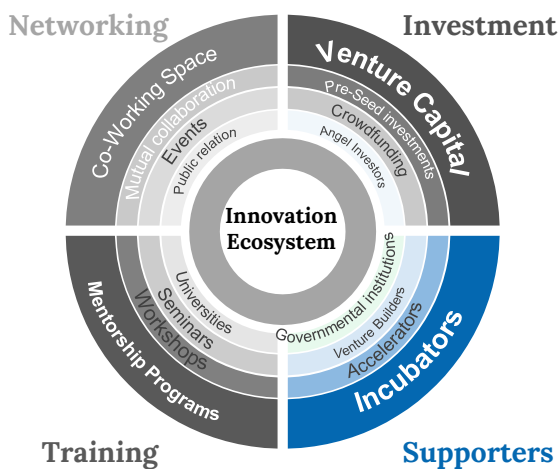
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Innovation Ecosystem Infrastructure



The infrastructure required to create a successful innovation ecosystem includes investment, networking, training, and supporters who can be a bridge for the ideas of entrepreneurs and innovative companies to create, grow, and develop startups. Each of the mentioned infrastructures according to the life cycle of a startup can include other sub-sections as shown below:



For each of the innovation ecosystem infrastructures shown in the figure above, separate organizations and structures with different functions to grow and develop the ecosystem and help startups have been formed. They are created and operating with more or less similar functions in Iran's ecosystem.

Besides the other three innovation ecosystem's infrastructures, supporters have a key role in the innovation ecosystem. Therefore, in this section a brief description of these centers and their role in innovation ecosystem is provided.

An Incubator is an institution that supports entrepreneurs in developing their startups, especially in the initial stages. These are a highly flexible combination of business development processes designed to nurture and grow new and small startups by supporting them through the early stages of development. In incubators, as early-stage hand-holders, there are commonly two different phases which are named the pre-incubation phase and incubation phase.

A Science and Technology Park (STP) is a governmental organization associated with the Ministry of Science, Research and Technology, which has several affiliated centers namely Incubators and the Innovation Centers. STP can also house small and medium-sized companies, research and development (R&D) centers, large corporations, and scientific associations. Technology Park stimulates and manages the flow of knowledge and technology amongst universities, R&D institutions, companies, and markets. It also facilitates the creation and growth of innovation-based companies through incubation and spin-off processes and provides other value-added services together with high-quality space, mentorship and facilities.

An accelerator is an organization that offers mentorship, capital, and connections to investors and business partners. It is designed for selecting startups with promising Minimum Viable Products and founders, as a way to rapidly scale growth. Accelerators are intense and fast-paced, taking 3-6 months to get an early-stage startup ready for market.

To get into an accelerator, startups go through a selective screening process as they are more growth-driven, typically aiming to produce startups that will scale rapidly and minimize resources.

An Innovation Center is a center consisting of one or more innovation teams working together with research centers and companies applying for new products, within the framework of a long-term plan.

Innovation centers and accelerators are mostly private organizations supported by big companies, banks, science and technology parks, and also universities. The services offered by innovation centers to startups and entrepreneurs include acceleration programs, co-work space, and venture investment.

Since almost all the innovation centers in Iran have an acceleration program as well, the name of the innovation center and the accelerator are used interchangeably in Iran.

A Venture Builder is known as "Startup Studio", creates potential startups professionally from the ground-up level. A venture builder enables startup to leverage its internal team of business developers, designers, marketers in the ideation, development, and launching of a company.

Where Does Iran Stand on the Global ‘Innovation’ Map



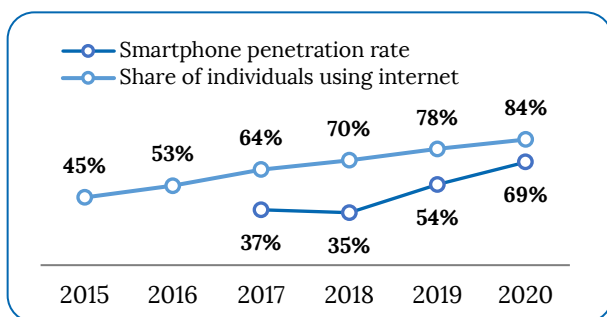
Multiple parties in Iran, in both the public and private sector, have invested in capital and research and development to construct and maintain the infrastructure that supports the digital ecosystem that makes the digital economy possible. These parties include communication service providers (CSPs), digital service and content providers, as well as hardware and software manufacturers.

In Iran, innovation ecosystem represents one of the main components of the digital economy in recent years. Review of Iran’s global digital and innovation indexes and indicator ratings during the last 5 years shows very promising improvements.

Iran’s Network Infrastructure

According to the Ministry of Information and Communications Technology of Iran, the number of internet subscribers in 2020 was **70.6 million people**. Internet penetration rate of **84%** is well above the world average.

Additionally, the smartphone penetration rate in Iran in 2020 was estimated to be **69%** which is relatively higher compared to global average (49%). This means **58.2 million people** in Iran have smartphones in their possession.



Iran’s smartphone and internet penetration rate

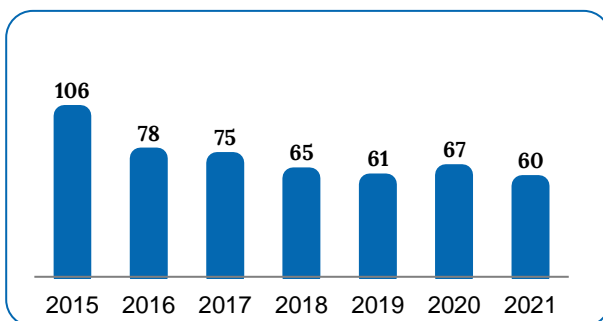
Network Readiness Index

The 2020 Network Readiness Index (NRI) ranks a total of 134 economies based on their performance across 60 variables. NRI applies a holistic approach covering issues ranging from future technologies such as Artificial Intelligence and the Internet of Things to the role of the digital economy in reaching the Sustainable Development Goals.

Iran is ranked **79th in NRI 2021** out of 130 countries. Compared to Iran’s rank in 2016 (92nd), Iran has moved up by 13 levels.

Global Innovation Index (GII)

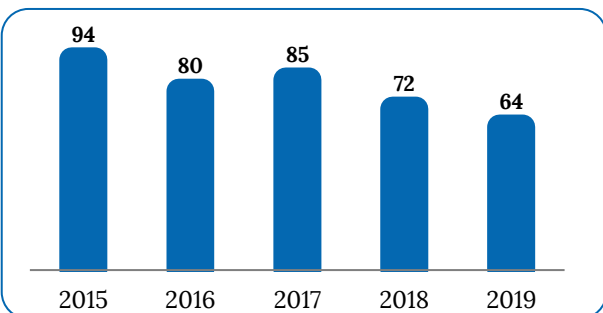
World Intellectual Property Organization (WIPO) publishes an annual global innovation index. The Global Innovation Index (GII) ranks the innovation ecosystem performance of economies around the globe by analyzing 80 indicators, including measures on the political environment, education, infrastructure, and knowledge creation of each economy each year. The Global Innovation Index 2021, captures the innovation ecosystem performance of 132 economies. Iran is ranked **60th in GII 2021** index. Regarding the “Top three innovation economies by region”, Iran is ranked second in Central and Southern Asia.



Iran's rank in Global Innovation Index (GII)

The Global Entrepreneurship Index (GEI)

GEI is an annual index published by the Global Entrepreneurship Development Institute (GEDI) that measures the health of entrepreneurship ecosystems in 137 countries. Iran is ranked **64th in GEI 2019** index as compared to 94th rank in 2015 showing a stable upward trend during the last 5 years.

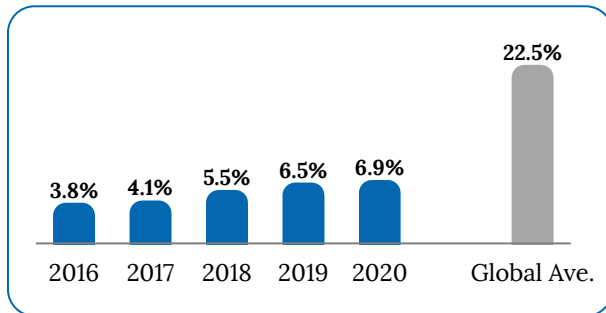


Iran's rank in Global Entrepreneurship Index (GEI)

Iran's Digital Economy at a Glance



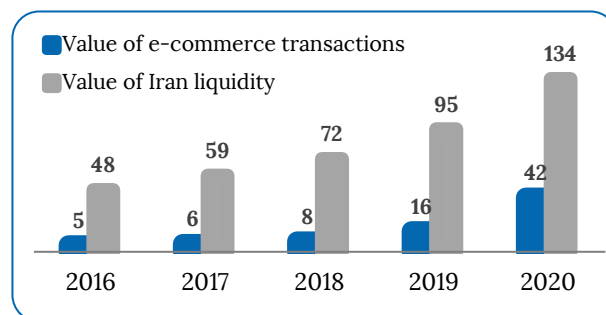
In the past decade, the digital economy has witnessed continuous growth in Iran. According to Statista, the share of the digital economy in Iran's GDP has increased from 3.8% in 2016 to **6.9%** in 2020. Although the average growth in this sector is higher than in other sectors of the Iranian economy, it is still far from its average value in the world economy.



Iran's digital economy share of GDP

According to the electronic card payment system of Iran (Shaparak), in 2020, the electronic purchases over Point of Sales, internet, and mobile phones in Iran have passed **USD 42 B.** (USD/IRR 260,000)

According to the Statistical Center of Iran, this amount is **34% of the country's liquidity** in 2020. This means that compared to 2019, the number of online purchases in Iran in 2020 has increased by more than 2.5 times.

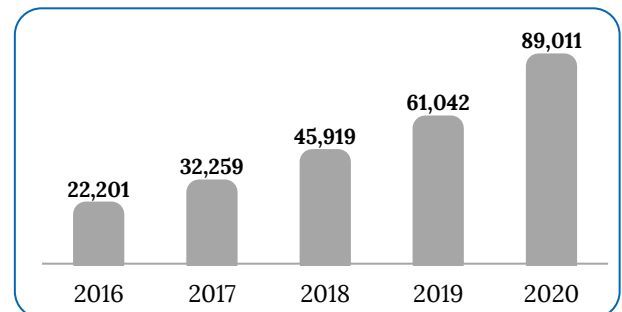


Value of e-commerce transactions and Iran's liquidity [B USD]

According to the e-commerce Development Center of Iran, the total number of e-commerce units is estimated to be around **350,000** units.

e-Namad license

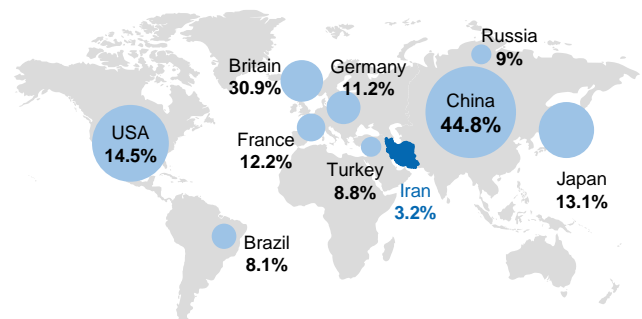
In 2008, Iran's Ministry of Industry and Mining took the responsibility to regulate and organize the online shops and started issuing e-Namad licenses for e-commerce websites. Any company or individual that wants to sell its products/services online via its website in Iran, should acquire the e-Namad, which is the official indicator for a trusted online vendor. However, a high share of these vendors are operating without this license.



Number of Iranian active e-commerce unit with e-Namad license

According to the annual report published in 2020 by Digikala (one of the country's leading e-commerce companies), the number of online shopping portals is estimated to be approximately **49,000**, which has more than tripled in the past 3 years. Moreover, the total number of Iranian producers working with Digikala has reached **152k** in 2020.

The share of online retail of total e-commerce transactions in Iran increased from 2% in 2019 to **3.2%** in 2020. This number is related to marketplace websites as well as social media. This upward trend in addition to natural and gradual growth has also been affected by the spread of the COVID-19. The map below illustrates Iran's share of online retail compared to other countries in 2020.



share of online retail in the world, 2020

Introduction to Innovation Ecosystem in Iran



Although the first incubator in Iran was established in 2000, the first wave of startups in Iran started after 2012, thanks to the initiatives taken by several universities, visionary individuals, and the return of foreign-educated Iranians. The movement was quite late compared with other developing countries such as India, but it quickly expanded and caught up with the latest technologies as more and more students, academics, entrepreneurs, government bodies, as well as domestic and foreign investors started to get involved.

In 2014, Several private and governmental investment and venture capital firms, as well as angel investors, accelerators, incubators, and science parks, were established to drive and develop the ecosystem. In terms of the number of startups, there were around 150 startups by the end of 2014.

In 2015, there has been a surprising growth in the number of startups reaching estimated number of up to 400 startups in Tehran alone. This shows an impressive 150% growth rate in the number of startups in Iran's startup ecosystem.

The second wave of Iranian startups, appeared in 2016, with companies working in other sectors such as Financial Technology (Fintech), Insurance Technology (InsurTech), Video-on-Demand (VOD), and messaging apps. Among them, the Fintech vibe in 2016 turned into the emerging trend in Iran's startup ecosystem.

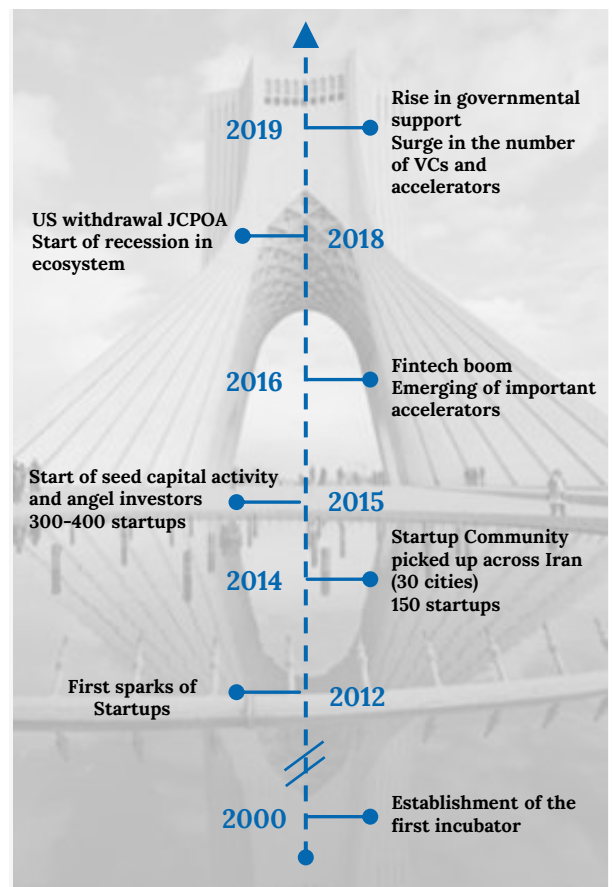
The third and the current wave started when the US withdrew from the Joint Comprehensive Plan of Action (JCPOA) in 2018. This has caused deterioration of the business environment for startups in several areas. Subsequently, the growth of startups in the country slowed down since 2018 due to a sharp decline in domestic and foreign investment in the field of startups.

However, restrictions can turn to opportunities and this is what happened in Iran. In the absence of international players, Iranians saw the opportunity and started to clone and localize the international platforms and services.

Between 2014 to 2020, the two institutions of the Vice Presidency for Science and Technology and the Ministry of Communications provided support for startups thorough different policy measures.

Throughout these years, the government has also tried to help entrepreneurs by easing the regulations and tax laws for early startups, through a "knowledge-based firms" plan. The government has supported VCs and accelerators by providing venue spaces on university campuses. Pardis Technology Park aka. "Silicon Valley of Iran" which also hosts many entrepreneurs, was funded by the government to help the tech sector.

Particularly, since 2019, after sanctions were re-imposed and in order to improve the concept of self-sufficiency, governmental support for startups increased sharply. The support included funding in the form of loans and direct investments (through Iran National Innovation Fund) and other incentives for building startup support facilities such as accelerators, innovation centers, and innovation factories. These policy measures resulted in rapid growth in the number of these centers between 2019 to 2020.



History of Iran's startup ecosystem

Government's Support to Iran's Innovation Ecosystem

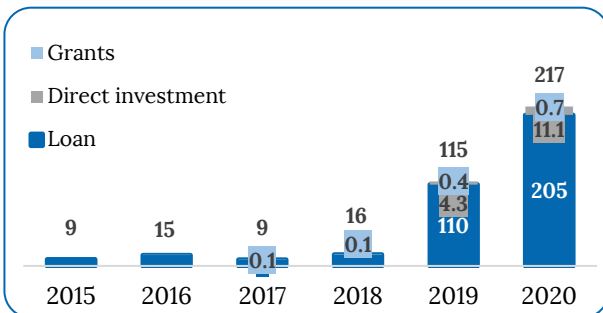


Iran's Science, technology, and innovation (STI) policies are categorized in 3 waves:

- Wave 1: Developing higher education and scientific publications (from 1990)
- Wave 2: Developing research and emerging technologies (from 2000)
- Wave 3: Transition towards innovation and a knowledge-based economy (from 2010)

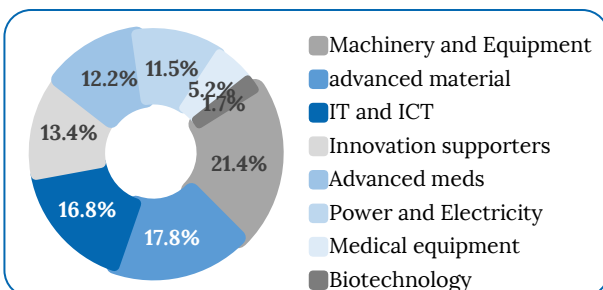
Looking at the current wave, wave 3, Iran National Innovation Fund (INIF) was established in 2011, in order to assist the non-governmental institutions and companies in the commercialization of innovation by providing financial support and services. INIF works as one of the key intermediary agencies under the direct supervision of the Vice Presidency for Science and Technology. The INIF's services are classified into Loan, Credit Notes, investment, and empowerment.

As illustrated in below figure, considerable support was provided through loans. Moreover, since 2019, there was a sharp increase in the fund allocation. The total financial support in 2019 and 2020 sums up to 87% of the total allocated fund in the past 5 years.



INIF financial support by type, M USD [2015-2020]

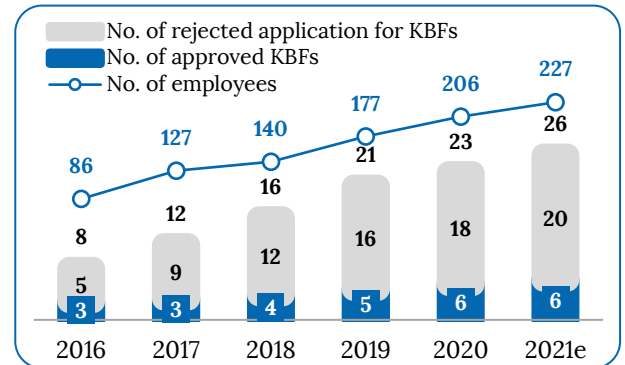
In the figure below, the INIF loan allocation in the period of 2018-2020 by type of application is presented. Working capital has the most considerable share in the total load allocations.



INIF loan allocation by sector, [2018-2020]

The government has also tried to help entrepreneurs by easing the regulations and tax laws for early startups, through a “Knowledge-based firms” plan.

A **Knowledge-Based Firm (KBF)** is an entity that engages in development and application of invention or innovation and commercialization of R&D outcomes in higher technologies with a high added value including designing and production of goods and services. In Iran, the number of KBFs has increased from around 3,000 in 2016 to more than **6,300** in 2021. There are strict criteria for admitting a company as a knowledge-based firm; among the total 26k applications for KBFs, only 24% have been accepted.



Cumulative number of knowledge-based firms [thousand]

Historically, each KBF provides jobs for an average of 35 people. The total number of employees for KBFs grew from 86k to 227k in 5 years.

Currently, many KBFs are active in different fields, including information and communication technology, healthcare, biotechnology, agriculture, and energy.

In addition to the formation of knowledge-based firms, there is another type of company under the support plan of the government, which officially came into existence in Iran in 2017 and was named “**Creative Company**”. The main activity of creative companies is in the field of art, creative industries, culture, and digital services.

Creative companies use creativity, innovation, and new business models in offering new products and services. However, the growth and development of their products and services are not based on advanced technology. The total number of creative companies in 2021 has reached **1,412**.

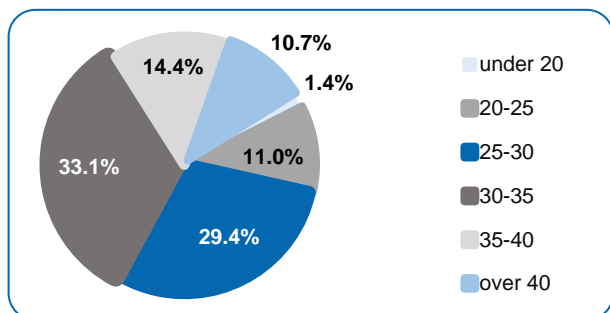
Socio-Economic Characteristic of Startups



The following analysis on Iranian startups is based on a questionnaire that was completed and submitted by 347 startups in Elecomp 2019 (Iran's Market of Electronics and Computer Products and Services):

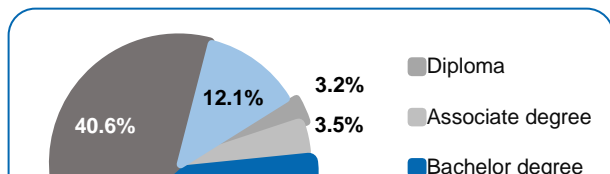
Demographic analysis of startups' founders

The socio-economic information shown below refers to the age group of startups founders. 62% of the founders are aged between 25 and 35 years.



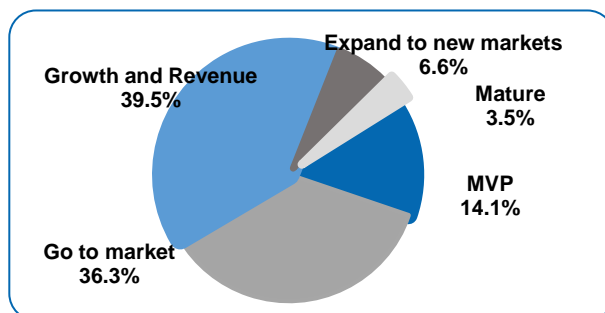
Founders of surveyed startups in Iran by age group

Regarding the educational level of the startup founders, the most widespread educational qualification is Master's Degree (40.6%). It is found that 92% have earned at least a university degree and approximately 12% have earned a Ph.D.



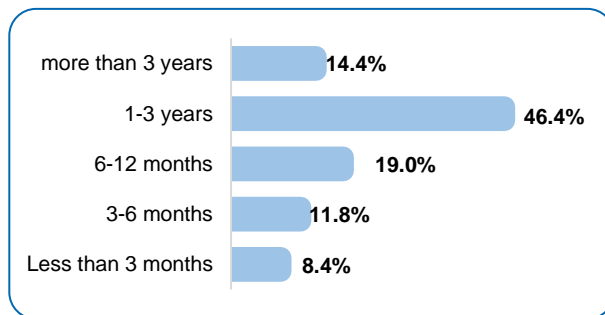
Business analysis of startups

Regarding the growth stage of startups, about 40% of surveyed startups were in the growth and revenue generation stage, 14% were in the stage of coming up with a Minimum Viable Product (MVP) and only 3.5% were considered as mature and in after growth stage.



Growth stage of surveyed startups in Iran

Looking at the life cycle of the startups, approximately half of the surveyed startups have the age of 1 to 3 years and 8% were less than 3 months old.



Life cycle of surveyed startups in Iran

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