

TURKIYE Digital Ecosystem

Desk & Web Research Results

Education:

- **General Directorate of Vocational and Technical Education:** It is the ministry responsible for vocational education in Turkey. Education is carried out with approximately 200 thousand teachers and 1.850.000 students. It has started digital transformation since 2020 for digitalization-oriented trainings. Many actions have been taken, such as adapting educational content to industry 4.0, developing digital education materials, and improving teachers' competencies.
- **General Directorate of Innovation & Education Technologies:** The duties and authorities of the General Directorate of Innovation and Educational Technologies are as follows:
 - To carry out works aimed at supporting education and training with technology.
 - To carry out studies on the use of information technologies and information products in education and training activities.
 - To prepare programs, films and similar publications based on information and communication technologies for non-formal education and training, to publish or have them published.
 - To monitor and evaluate new technologies and developments applied in education and training.
 - To ensure that technological opportunities are used effectively and widely throughout the country in education and training and that every student benefits from information technologies.
- **General Directorate of Lifelong Learning:** Lifelong Learning Institutions include non-formal education programs, adult education literacy activities, public education, vocational education, open education schools, higher education, overseas education opportunities, barrier-free learning and e-learning resources. The duties of the General Directorate of Lifelong Learning are as follows:
 - To formulate, implement, monitor and evaluate policies in order to extend education and training throughout life, excluding compulsory education.
 - To carry out non-formal education and training and open education services.
 - Developing policies and strategies to increase lifelong learning culture and awareness.
- **Cyber Security Vocational High School:** It is a school established to train experts in the field of cyber security. Within the scope of educational activities, there are not only high school and equivalent students. It also provides training for those who want to pursue a career.

Financial:

- **BAKKA** Development Agency: It carries out activities such as providing financial support to institutions, organizations and SMEs in order to support digital education and digital transformation, providing expert team support to carry out project activities, monitoring and supervising the studies. In a project called Cyber Vatan, it provides training of individuals who will work in Turkey's cyber security field.
- **BAKA**: It provides financial support to ensure the qualified manpower of the country, especially in the fields of renewable energy and digital transformation in agriculture.
- **KOSGEB**: It provides various supports, including grants and repayments, for SMEs and entrepreneurs. It provides financial support for SMEs and entrepreneurs to reach an innovative, technological and competitive structure.
- **İŞKUR**: It is an institution that contains the data of job seekers. On-the-job training programs are organized in order to enable the unemployed registered with İŞKUR to gain professional experience and increase their employability. It offers free training opportunities to individuals who want to get education and get a job, especially digital transformation and digital training. It does not offer trainings with its own personnel, but purchases training services from institutions that are experts in their fields.
- **TUBITAK**: In order to contribute to the increase of our country's R&D capability, innovation culture and competitiveness; It is the center of programs that support project-based R&D activities, development and sustainability of the national innovation-entrepreneurship ecosystem.

Infrastructure:

- **Istanbul Technopark**: In Cube Incubation, the incubation center of Teknopark Istanbul, there are more than 90 entrepreneurs and entrepreneur groups that carry out R&D studies on innovative and deep technology-based business ideas. Offering opportunities to entrepreneurs at international standards with the motto of "Incubation center for deep tech entrepreneurs", Cube Incubation is taking firm steps forward to become one of the world's leading incubation centers. In Cube Incubation, where branding trainings are provided at zero cost, entrepreneurs; It benefits from the Biocube Laboratory established on an area of 300 square meters, the Clean Rooms located on an area of 100 square meters, the Post Incubation Area and the Prototyping Center planned to be established on an area of 400 square meters, free of charge or at a very low cost.
- **ODTU Technopark**: 50% of the companies operating in ODTÜ TEKNOKENT are software-informatics, 20% electronics, 15% machinery and design, 6% medical technologies, 6% energy and environment, and the remaining 3%. carries out R&D studies in other fields such as advanced materials, agriculture, food, aerospace and automotive. Aircraft/helicopter systems dynamic model development and simulation projects, aircraft/helicopter control systems development studies, satellite development projects, alternative energy and alternative fuel projects, wind and water turbine design, vehicle tracking system, design of test and measurement systems, power supplies and energy feeding systems, laser applications, sensor technologies, tissue and gene research, e-

government, e-commerce, distance education, e-learning and e-education software, ERP-MRP solutions, education management systems, geographic information system software, formatted message management systems, hospital software, advanced material studies with different field applications and microelectronic mechanical system applications are some of the R&D studies carried out within ODTU TEKNOKENT. ODTU TEKNOKENT carries out a wide variety of programs for the companies and entrepreneurs it hosts. Within the scope of supporting technology-based entrepreneurship, pre-incubation programs "YFYİ Acceleration Program" and "Animation Technologies and Game Development Center", incubation centers; There are studies such as the Acceleration and Investment Company "Growth Circuit", which was established as a financial instrument, the "METU Technology Transfer Office" for the commercialization of academic knowledge, the defense industry, ICT and health clusters aiming at the development of inter-company cooperation, and overseas offices opened to support international cooperation.

- **DENEYAP:** Try-do (DENEYAP) The main aim of Turkey is to raise young individuals with high technology production competence, who will be the driving force of the National Technology Move, which we consider indispensable for the development of our country. We believe that our young people, who have interest and talent in this field, have the potential to achieve great things with sufficient opportunities and the right direction, and we know that there are young people in Turkey who can be future scientists, researchers and entrepreneurs. We aim to establish Experimental Technology Workshops in 81 provinces to support them on their way to be productive and innovative individuals who contribute to the development of our country. The educational model of Experiment-ap Technology Workshops is designed for students in two age groups to gain skills such as entrepreneurship, creative thinking, critical thinking, solving complex problems, effective communication and teamwork. In the experiments, our young people at the beginning of secondary and high school age receive 36 months of free training on 11 topics such as Design and Production, Robotics and Coding, Electronic Programming and Internet of Things, Nanotechnology and Materials Science, Aviation and Space Technologies. In this 3-year period, they acquire both basic technology competencies, deepening in their special interest areas, and the ability to produce projects.

Experts:

- **TÜSİAD:** As the organizations represented by its members, has an important representation ability in the Turkish economy in areas such as production, added value, registered employment and foreign trade. With its works, it aims to contribute to the formation of a social order in which the understanding of competitive market economy, sustainable development and participatory democracy is adopted. In order to provide sustainable competitive advantage, the importance of a qualified workforce equipped with 21st century digital skills and competencies is increasing day by day. With TÜSİAD's "My Work, My

Future", it is aimed to develop the digital competencies and skills of students and young professionals through the free online education platform, with a focus on new generation technologies.

- **ARGEMİP** (R&D Centers Communication and Cooperation platform): In order to accelerate the R&D and Design activities in Turkey, it works to compare R&D and Design management practices, to reveal good examples and common problems between R&D and Design practices, and to increase cooperation between R&D and Design centers. ARGEMİP, which is open to all R&D and Design Centers, aims to increase the number of its members rapidly and to cover all sectors with its representation capability.
- **TCCSC**: The Turkish Cyber Security Cluster is a platform established for the purpose of developing the cyber security ecosystem in our country in line with the main goal of Turkey, which produces technology in the field of cyber security and can compete with the world, the foundations of which were laid under the leadership of the Presidency of Defense Industries and with the contributions of all relevant public institutions/organizations, private sector and academia representatives. Platform activities are carried out with the support and coordination of the Presidency of Defense Industries and the Presidency Digital Transformation Office.
- **Zonguldak Chamber of Commerce and Industry**: It is a chamber that organizes trade, innovation, entrepreneurship and skill development trainings for nearly 2000 SMEs. It has a vocational high school attached to it. There are nearly 100 teachers in this vocational high school with approximately 1100 students.
- **Sayt Technology**: It is a company established to develop in the fields of technology, software and IT solutions and defense industry.
- **Sayel System**: Ankara-based technology company. It is a company that develops system security and software, and provides awareness through trainings.
- **Network Administrators Association**: NAA is an association established to bring together people who are interested in network technologies, who are still working in this field and who provide training on network technologies. We can list the general aims of the association as follows:
 - Gathering the people working on computer network management and the representatives of the organizations under the umbrella of the association, to ensure an effective communication and working environment among the members,
 - To ensure the introduction and dissemination of computer networking technologies in Turkey,
 - To carry out promotional and training activities on network technologies,
 - To support all kinds of research and work on network technologies, to take the lead in such studies,
 - National and international congresses, conferences, etc. to actively participate in activities,
 - To support network technologies education activities in high schools and universities,
 - To prepare the environment for social and cultural activities among network managers,
 - – Guiding and supporting on network technologies such as standards, terminology, training, legal regulations, working conditions.

- **PAYDAS:** It is a local association that organizes free trainings, workshops and conferences in the field of Industry 4.0. Within the scope of cooperation with schools, it organizes activities such as teacher trainings and student programs, especially IoT, Artificial intelligence, Cyber security, Cloud computing and Robotics trainings.
- **INNOMATE:** It is an institution that develops innovative solutions in education, contributes to digital transformation in education and develops software and closed systems in the field of industry 4.0
- **Information Technologies Educators Association:** Information Technologies Education, technology in education, in order to provide digital transformation in education, to strengthen in-school and out-of-school education environments with technology, to train the qualified workforce needed by the information sector, to equip all individuals, especially educators, with the knowledge and skills required by the age. The purpose of this study is to reveal the studies needed in the fields of educational technologies and educational technologies.
- **Cyber Vatan:** Various training and capacity building activities have been carried out since 2014. With Cyber Vatan, it is aimed to increase the trained manpower while serving the national strategies of our country. In addition to the technical training given to the students, studies to increase innovative thinking are carried out. In this context; Professional and applied technical trainings are given by expert trainers, training on idea development and effective presentation techniques is provided in company with mentor companies, intensive specialization studies are carried out in teams, Business development and transforming ideas into commerce support are provided.

Positives of Turkish Ecosystem:

- Availability of qualified individuals in different types of digitalization
- Country resources and grants provide opportunities for ecosystem development
- Seeing digitalization as a factor affecting our future
- The society's openness to digitalization
- The strong desire of the young population to choose engineering
- Good investments in digital education
- Young people's warm welcome to this idea

Negatives of Turkish Ecosystem:

- Lack of the same infrastructure regionally.
- Reluctance of ecosystem users.
- Difficulty in the use of grants from EU and public resources and in financial processes.
- Incompetence in managers.