

Türkiye's AI sector has grown rapidly, supported by strong government backing and venture capital funding. This policy outlook examines AI's extensive impact across various sectors, highlights innovative Turkish commercial and social entrepreneurship startups and offers strategic recommendations for sustainable AI-driven innovation, fostering economic growth and societal well-being.

Introduction

In Türkiye, the Artificial Intelligence (AI) industry has developed exponentially over the past couple of decades, gaining momentum with each passing year. The technology's ability to mimic human intelligence through machine learning, natural language processing, and advanced analytics has revolutionised many sectors, spanning from healthcare and education to commerce and financial services. Starting with just five AI firms in 2000 in the country, the number of companies has skyrocketed to nearly [1,200 by 2024](#), according to the Istanbul Chamber of Commerce (ITO). This rapid expansion highlights Türkiye's commitment to embracing AI technologies and integrating them into diverse industries. Significant investments and technological advancements have bolstered Türkiye's AI market, which is projected to reach [1.62 billion USD](#) by 2024 and expand further with a compound annual growth rate (CAGR) of [28.72 per cent](#), aiming for a market volume of 7.37 billion USD by 2030. Key areas such as Machine Learning (ML) and Natural Language Processing (NLP) have led this growth, positioning Türkiye as a competitive player on the global AI stage.

AI's importance in addressing both social and commercial challenges in Türkiye is profound. In the healthcare sector, AI enhances diagnostics and telemedicine, improving access and quality, particularly in remote areas. In education, AI-powered personalised learning platforms cater to individual student needs, increasing access and improving outcomes. Environmental sustainability efforts benefit from AI through optimised waste management and resource conservation. Moreover, AI-driven assistive technologies are making significant strides in enhancing accessibility for individuals with disabilities. On the commercial front, AI revolutionises retail and e-commerce through personalised marketing and inventory management, boosts manufacturing efficiency via predictive maintenance and quality control, strengthens financial services with advanced fraud detection and risk management, and optimises logistics and transportation through improved route planning and fleet management.

This policy outlook aims to delve into the extensive impacts of AI across various sectors in Türkiye, illustrating how AI technologies are leveraged to address critical social and commercial challenges. By examining the strategic initiatives, technological advancements, and market dynamics driving the growth of Türkiye's AI sector, this policy outlook will provide a comprehensive overview of the current landscape. It will also explore future prospects, emphasising AI's potential to further contribute to economic growth and societal well-being in Türkiye. Through detailed analysis and case studies, best practices will be highlighted along with lessons learned, and policy recommendations for sustaining AI-driven innovation and development will be made. This analysis will offer insights for policymakers, industry leaders, and stakeholders on how to foster a ro-

bust AI ecosystem that supports continued technological progress and addresses societal needs effectively.

AI Policy Development in Türkiye

Türkiye's AI startup ecosystem is on the brink of significant expansion, driven largely by an increasing number of venture capital (VC) funds, which have made [securing funding](#) more accessible for startups. Leading the charge in this sector are active VC firms like 212 Capital Partners, Earlybird Venture Capital, and Hummingbird Ventures. In tandem, the Turkish government has played a crucial role in fostering the AI startup environment. Recognising the necessity for a dynamic approach to the rapidly evolving AI field, the government introduced the [National Artificial Intelligence Strategy \(NAIS\)](#) in 2021, its inaugural national AI strategy document. President Recep Tayyip Erdoğan has underscored AI's importance, deeming it a pivotal component of the country's development goals.

The NAIS was developed through a participatory process that included contributions from public institutions, academia, professional organisations, the private sector, NGOs, and international bodies. It focuses on six strategic priorities:

- Cultivating AI expertise and employment.
- Supporting research, entrepreneurship, and innovation.
- Ensuring access to quality data and technical infrastructure.
- Formulating regulations to facilitate socioeconomic adaptation.
- Enhancing international cooperation.
- Promoting structural and labour market transformation.

This strategy outlines 24 objectives and 119 measures designed to coordinate national AI efforts from 2021 to 2025. The primary goal is to reduce reliance on external technologies to achieve AI autonomy. Financial and regulatory support for AI startups is emphasised, along with significant investments in AI education to build a strong talent pipeline.

By 2025, the national AI plan aims to elevate AI research and development to a national priority, with the ambition of establishing Türkiye as a world-renowned AI hub by 2030. This initiative has spurred the introduction of over 50 new AI-related academic programs and advocates for integrating AI training into existing educational frameworks. To attract and retain AI researchers, the government has

launched talent initiatives, including the “10,000 Talents Initiative,” which offers substantial incentives for academics to return to Türkiye. State-backed initiatives like the [Tech-InvesTR VC Program](#) are providing crucial support to early-stage companies. The NAIS has been acknowledged in the media as a vital factor in advancing Türkiye’s AI capabilities, both geopolitically and commercially.

The NAIS anticipates a [doubling of the AI market size](#) and global expenditures within five years. With the Turkish government’s robust support, the influx of VC funding, and the development of a comprehensive AI talent pipeline through university programs, Türkiye is well-positioned to meet the ambitious targets of its national AI strategy, propelling it towards becoming a significant player in the global AI arena.

AI in Turkish Social Enterprises

The global Gross Domestic Product (GDP) includes a [7 per cent contribution](#) from the social enterprise economy, with the introduction of generative AI potentially adding an annual value ranging from 182 billion to 308 billion USD to this sector globally. In Türkiye, AI is playing a transformative role across various sectors, enhancing accessibility, quality, and outcomes. AI offers social enterprises [significant benefits](#), including customised solutions at scale, enabling personalised support and improved accessibility, increased opportunities for system change through cost-effective analysis and transparency, as well as enhanced business potential and competitive advantage by optimising processes, reducing costs and unlocking new revenue streams. AI also accelerates learning and innovation, potentially adding 2.6 to 4.4 trillion USD annually, according to [McKinsey](#).

In the field of education, the utilisation of AI is significantly improving educational access and quality. A notable Turkish example is Code2, a personalised coding education platform that leverages AI to create customised learning paths and resources tailored to individual learners. This approach not only makes coding education more accessible but also ensures that the learning experience is aligned with each student’s unique needs and pace. As per Code2 founder Mustafa Sakalsız, ‘[no-code platforms](#)’ such as Code2 eliminate technology barriers for those who want to make software.

AI applications are also being used to improve health outcomes in Türkiye. Vivoo, an AI-based wellness platform, provides personalised health insights, helping individuals make informed decisions about their well-being. The company now works in [collaboration](#) with CVS, one of the leading pharmacy and grocery chains in the US. Environmental sustainability is another area where AI is making a significant social impact. Fazla Gıda, an AI-driven platform, is dedicated to reducing food waste through optimised dis-

tribution. By connecting surplus food from producers and retailers with organisations that need it, Fazla Gıda not only minimises waste but also supports resource conservation and helps address food insecurity. Their cloud-based infrastructure enables evaluation for maximum financial, environmental, and social benefits. Since its inception, the company has saved more than [55,000 tonnes of food](#).

The promotion of social inclusion by enhancing accessibility for marginalised groups is also possible through the use of AI. In Türkiye, BlindLook is an excellent example of this, as it utilises AI and audio technology to make international brands’ products and services [understandable and actionable](#) for 285 million visually impaired people globally. Through its innovative technologies, BlindLook is making it easier for visually impaired people to navigate their environments and access information, thereby fostering greater independence and inclusion. It’s truly commendable to witness the significant impact of Turkish startups in the field of AI, resonating both locally and on the global stage. These innovative ventures are not only driving technological advancements but also fostering positive societal change and enhancing the human experience. Through their pioneering work, Turkish AI startups are not only contributing to economic growth but also playing a pivotal role in addressing societal challenges and improving the quality of life for people worldwide.

AI in Turkish Commercial Enterprises

AI is profoundly transforming the landscape of retail, e-commerce, manufacturing, financial services, logistics, and transportation in Türkiye, driving innovation and efficiency across these sectors. In the realm of Turkish retail and e-commerce, AI is revolutionising personalised marketing, inventory management and customer service. A prime example is Insider, an AI-driven platform that excels in personalised marketing and customer engagement. Achieving a valuation of 1.22 billion USD in 2022, it became Türkiye’s 6th ‘[unicorn](#)’ and the first in software technology. By analysing customer behaviour and preferences, Insider delivers tailored marketing strategies that enhance customer satisfaction and loyalty. Insider counts [more than 1200](#) international brands as its customers and has more than 800 employees now, working across the world. Similarly, [Shopi](#) harnesses AI for inventory management and dynamic pricing solutions, optimising stock levels and pricing strategies to maximise profitability and customer satisfaction.

Turkish AI startups are playing a critical role in predictive maintenance, quality control and supply chain optimisation in the country’s manufacturing sector. [Faradai](#), previously known as Reengen, offers AI-powered energy man-

agement and predictive maintenance solutions. These technologies help manufacturers anticipate equipment failures, maintain high-quality standards, and streamline their supply chains, ultimately boosting productivity and reducing operational costs. The rebranding is aligned with a pivot building dedicated software for management of brands' carbon and [ESG](#) (Environmental, Social, and Governance) data. Not only are regulatory bodies worldwide implementing mandates requiring companies to disclose ESG-related information, but investors are also increasingly incorporating ESG factors into their decision-making processes. Turkish startups are utilising AI to build products for fraud detection, risk management, and personalised financial services. In logistics and transportation, AI applications are enhancing route optimisation, fleet management, and demand forecasting. [TIRPORT](#) is an exemplary AI-powered logistics platform that focuses on route optimisation and fleet management. By analysing traffic patterns, delivery schedules, and vehicle performance, TIRPORT enables more efficient and cost-effective logistics operations, ensuring timely deliveries and reducing fuel consumption.

Both examples of Faradai and TIRPORT illustrate how AI can enable seamless integration between commercial and social enterprises and [help achieve](#) Sustainable Development Goals (SDGs). These cases demonstrate that AI not only makes such integration possible but also fosters significant benefits across both sectors. By leveraging AI technologies, these enterprises drive business growth while advancing social impact and sustainability goals. Public-Private Partnerships (PPPs) can also serve as crucial bridges between the social and commercial realms, driving AI adoption and innovation across various sectors. Collaborative efforts between government entities, private companies, and nonprofits yield impressive results that benefit both society and the economy. For example, Türkiye İş Bankası [entered into a partnership](#) with Koç University to establish a research centre for the advancement of scientific and academic endeavours in Türkiye, particularly in the field of AI. These integrative partnerships blend social impact with commercial viability, driving comprehensive advancements across sectors.

Lessons Learned and Best Practices

By examining the experiences and track record of these pioneering startups, discernible patterns emerge, highlighting key lessons that can inform future drives in harnessing AI for the betterment of society and business alike in Türkiye and beyond:

Data Accuracy

Key lessons from social and commercial enterprises employing AI underscore the paramount importance of data

accuracy. Enterprises have recognised that the reliability of data directly influences the effectiveness of the AI model. The effectiveness of AI systems hinges [significantly](#) on the quality of training and validation data. Data quality encompasses various dimensions, including accuracy, completeness, consistency and timeliness. However, maintaining data quality poses a formidable challenge due to the sheer volume of data generated daily and the inherent complexity of data structures. Thus, **investing in robust data quality assurance processes** is crucial to ensure trustworthy outcomes. Transparent documentation of data sources and processing methods can foster trust and understanding among stakeholders. Implementing mechanisms for auditing and accountability can further enhance data accuracy and integrity.

Individual vs. Collective Benefit

The application of AI in both social and commercial enterprises can be challenging as balancing [collective welfare with individual interests](#) extends to AI initiatives but mostly cannot be solely resolved through AI implementation. For instance, consider the deployment of AI algorithms in healthcare, where decisions impact both patients and healthcare providers differently. Therefore, advocating for a singular set of utilitarian ethical principles for AI is not feasible, given the complexities of societal dynamics. Moreover, recognising the intricate interactions between humans and AI agents underscores the necessity for ethics-driven legislation and certification mechanisms. This imperative becomes even more critical for AI applications, which have the potential for catastrophic consequences for humanity, such as autonomous weapons. However, a potential solution, given dynamic contexts and that there is no one-size-fits-all ethical framework applicable to AI can be the **adoption of multi-stakeholder approaches**, where diverse perspectives are considered in the development and deployment of AI systems as this approach fosters inclusivity and helps mitigate biases and unintended consequences.

Very Fast Pace of Development

Another key lesson learned from the integration of AI in both social and commercial enterprises is that the pace of technological advancement is extremely fast. This accelerated development significantly impacts individuals' lives and the environment, necessitating governments to adapt their policy development protocols accordingly. However, the challenge lies in the inability of both individuals and governments to keep up with these advancements, as evidenced by the lack of adequate legislation to ensure the long-term sustainability of new technologies. For instance, fintech companies can utilise AI algorithms to offer personalised financial services to users, including budgeting tools, spending analysis and investment recommendations. Despite their innovative approach to financial technology, they can face challenges related to regulatory

compliance in highly regulated financial sectors, including ensuring data privacy, security, and compliance with financial regulations. **Prioritising regulatory insight over oversight is crucial**, as policymakers must thoroughly understand both AI opportunities and challenges to formulate effective and impactful policies. This proactive approach is essential to ensure that policy development keeps pace with technological innovation, fostering positive outcomes for all stakeholders.

The Turkish government has been very successful in achieving this: the country has embraced a [proactive and pro-innovation approach towards AI regulation](#), evident through the establishment of the Department of Big Data and AI Applications and the introduction of the National AI Strategy (2021-2025). Türkiye's Medium-Term Program (MTP) for 2024-2026 also prioritises digital transformation. This strategy, developed in collaboration with governmental bodies and the private sector, emphasises fostering a robust AI system while prioritising data protection, security, and ethical standards. Anticipated AI-specific regulations and amendments to existing legislation further highlight Turkey's proactive stance towards embracing AI innovation.

Conclusion

The utilisation of AI by Turkish social and commercial enterprises holds immense promise for driving innovation, enhancing competitiveness, and fostering societal well-being. As evidenced by the enterprises built and the lessons learned, there exists a clear imperative for policymakers to proactively continue to engage in shaping a conducive regulatory environment that promotes responsible AI adoption. By fostering collaboration between governmental bodies, the private sector and civil society, Türkiye can establish a robust policy framework that balances innovation with ethical considerations, ensuring that AI technologies are deployed in a manner that benefits individuals, businesses and society at large. With a forward-looking approach and a commitment to inclusivity and transparency, the country has the opportunity to emerge as a global leader in harnessing the transformative power of AI for high economic growth and social development.