

OVERCOMING THE CHALLENGES OF DIGITALIZATION: THE ESTONIAN EXPERIENCE

Afraim MAMMADOV

afraim.mammadov@esri.gov.az

Economic Scientific Research Institute (The ESRI)

Ministry of Economy

Baku, Azerbaijan

Digitalization is a key driver of economic growth and development in the 21st century. However, digitalization also presents challenges for countries like Azerbaijan. This article discusses the specific challenges that Azerbaijan faces in the digital age, and it compares and contrasts these challenges with those faced by Estonia. The article also analyzes the factors that have contributed to Estonia's success in digitalization, and it offers recommendations for how Azerbaijan can overcome its challenges. The article argues that Azerbaijan needs to invest in its digital infrastructure, improve its digital skills, create a more supportive regulatory environment, and strengthen its cybersecurity defenses. If Azerbaijan can overcome these challenges, it could become a major player in the global digital economy.

Keywords: Digitalization challenges, Azerbaijan, Digital infrastructure, Internet penetration, Regulatory environment, Innovation, Startups, Tech-savvy population, Global digital economy.

1. Introduction

Digitalization refers to the process of using digital technologies to change how traditional businesses operate. This is a crucial factor for economic growth in the 21st century. However, for countries like Azerbaijan, there are difficulties related to this. Azerbaijan faces a major challenge due to its limited digital infrastructure. The country has a low rate of internet usage and many people lack skills in using digital tools. This makes it hard for businesses in Azerbaijan to use digital technologies and compete globally. Another problem is that Azerbaijan doesn't have the right rules in place to support digital businesses. The laws and regulations in the country do not really encourage new ideas and businesses. As a result, startups and small businesses struggle to succeed in Azerbaijan. Even with these problems, Azerbaijan has the potential to become a digital leader in its region. The country has a young population that's good with technology, and the government is focused on promoting digital growth. If Azerbaijan can deal with these challenges, it could become an important player in the global digital economy. In the following sections, I'll talk about the specific problems that Azerbaijan deals with in the digital age. I'll also compare these issues with what Estonia faces. Additionally, I'll look at why Estonia has been successful with digitalization and suggest ways that Azerbaijan can overcome its own challenges.

2. Challenges of Digitalization in Azerbaijan and Estonia

In the context of digitalization, Azerbaijan encounters a spectrum of challenges that collectively delineate its digital landscape. The Internet users in Azerbaijan stand at a relatively modest 84.6%, indicating a significant portion of the population lacks access to the Internet, thereby curtailing their participation in the digital economy. On the other hand, while the world's average median internet speed is 59.8 Mbps, Azerbaijan's median internet speed is only 26.95 Mbps, which puts it in 118th place globally (Wisevoter, 2023). Additionally, the country's digital infrastructure remains less developed compared to certain peers, consequently impeding the seamless integration of digital technologies into businesses. While yearly it is diminishing, a conspicuous gap in digital skills is also apparent, with a State Statistical Committee of the Republic of Azerbaijan data revealing that the specific weight of enterprises with Internet access in the total number of all operating enterprises is 54% (Figure 1.).

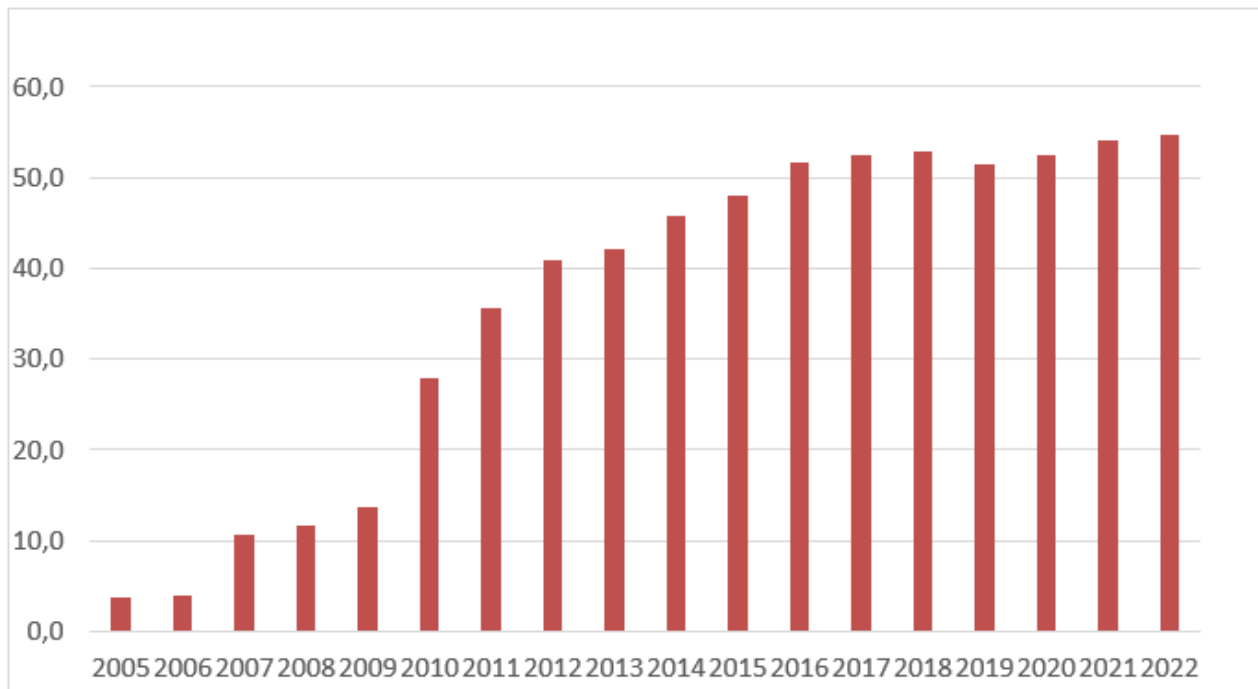
This deficit translates into a scarcity of proficient professionals who could facilitate the adoption of digital innovations by businesses. The regulatory framework within Azerbaijan, often falling short in terms of fostering an environment conducive to innovation and entrepreneurial initiatives, contributes to the challenges. Notably, the country's data protection laws exhibit relatively lesser strength compared to international benchmarks, thereby inducing hesitation among businesses considering the adoption of emerging technologies.

Furthermore, bureaucratic complexities within the government's procurement procedures hinder the swift entry of startups' products and services into the market. Azerbaijan's susceptibility to escalating cybersecurity threats is also evident, exemplified by instances of cyberattacks that have targeted the government's website and underscored the broader implications of such assaults for commercial entities and individuals alike. These multifaceted challenges collectively underscore the intricate landscape Azerbaijan faces in the digitalization era. To transcend these obstacles, concerted efforts are imperative to fortify

digital infrastructure, elevate digital literacy, cultivate an innovation-friendly regulatory milieu, and enhance cybersecurity resilience.

Figure 1.

The specific weight of enterprises with Internet access in the total number of all operating enterprises in Azerbaijan by years



Source: State Statistical Committee, 2022

In the domain of digital progress, Estonia emerges as a pioneering force and stands as one of the world's foremost digitally advanced nations. Nevertheless, even in its trailblazing role, Estonia grapples with challenges in the digital era that encompass diverse dimensions. Despite Estonia's commendable digital prowess, a significant gap prevails between the digital skills possessed by the younger versus the older generations and between those in urban versus rural settings, presenting impediments for businesses seeking skilled personnel and curtailing opportunities for those lacking digital competence. Moreover, Estonia, though modest in size, bears a substantial digital footprint, rendering it a prime target for cyberattacks. An illustrative instance materialized in 2007 when Estonia faced a substantial cyber onslaught, incapacitating government websites and inducing widespread disruption; although considerable investments have been channeled into fortifying cybersecurity, the nation's susceptibility to such threats remains (McGuinness, 2017). Concurrently, the Estonian populace inherently values their privacy, translating into reservations about the utilization of personal data by governmental entities and commercial enterprises, thus complicating the seamless governmental implementation of select digital services and placing constraints on the expansion of the digital economy. In the face of these formidable hurdles, Estonia remains steadfast in its commitment to digital advancement and is diligently striving to surmount these challenges. The government's endeavors encompass robust investments in nurturing digital competencies, bolstering cybersecurity protocols, and safeguarding privacy; concomitantly, the private sector is vigorously investing in digital innovations, further amplified by the flourishing growth of a startup ecosystem

within the nation. Collectively, these multifaceted efforts position Estonia favorably to perpetuate its digital achievements and sustain its eminence in the era of digital transformation.

3. Factors that have contributed to Estonia's Success in Digitalization

The triumphant trajectory of Estonia's digitalization can be attributed to several pivotal factors. Foremost among these is the unwavering commitment demonstrated by the Estonian government over numerous years. In the year 2000, a transformative initiative, the e-Estonia program, was inaugurated by the government, aiming to metamorphose the nation into a paperless society. (Vassil, 2016) An ardent investment in digital infrastructure, cybersecurity, and the cultivation of digital proficiencies further underscores the government's resolute stance. Exemplifying this dedication, the establishment of a national data center alongside an extensive fiber-optic network interlinking educational institutions and medical facilities stands testament to their proactive measures. Additionally, the inception of initiatives like the Digital Literacy Program and the Digital Entrepreneurship Program is emblematic of the government's pursuit to equip Estonian citizens with indispensable digital skills (Lorenz, Kaido Kikkas, & Mart Laanpere, 2016).

Estonia emerges as the foremost global contender in government effectiveness, with a concurrent second ranking for digital government implementation. An early foray into digital transformation during the early 1990s, coinciding with the disintegration of the Soviet Union, positioned Estonia strategically. This timely inception facilitated the development of avant-garde digital technologies and services. In a historic feat, Estonia swiftly followed by the 2001 introduction of the groundbreaking X-Road – a secure platform catalyzing electronic data exchange between government entities (Ahto Kalja, Aleksander Reitsakas, & N. Saard, 2006).

Estonia's policy of open data availability has birthed a thriving landscape of startups and commercial endeavors harnessing governmental data to engender innovative products and services. A 2019 Open Knowledge Foundation report elevates Estonia to the zenith of open government data, fostering an environment ripe for innovation. Through forging international alliances, Estonia has effectively disseminated its digital prowess while concurrently gaining access to novel technologies and resources. Noteworthy among these partnerships are affiliations with the European Digital Single Market and the Organization for Economic Co-operation and Development (OECD).

Consistent with the findings of a 2019 OECD report, Estonia emerges as the premier global exponent in the adept utilization of information and communications technologies (ICT) within government services. In culmination, the multifaceted synthesis of these factors has propelled Estonia to the vanguard of digitalization, serving as an exemplar for nations embarking on similar transformative journeys.

4. Recommendations for Azerbaijan

Azerbaijan can overcome the challenges of digitalization and become a leader in the digital economy by making a strong commitment to digitalization, starting its digital transformation as soon as possible, focusing on developing its tech-savvy population, adopting an open data policy, and partnering with other countries and organizations to share its expertise in digitalization.

Specifically, the Azerbaijani government should invest in a national data center and

a fiber-optic network that connects all of the country's schools and hospitals. This will improve the country's digital infrastructure and make it easier for businesses and citizens to adopt digital technologies. The government should also launch a number of programs to provide digital skills training to Azerbaijani citizens, including the Digital Literacy Program and the Digital Entrepreneurship Program. This will help to close the digital skills gap and make it easier for Azerbaijanis to participate in the digital economy.

In addition, the government should pass a new data protection law that is in line with international standards. This will help to protect the privacy of Azerbaijani citizens and make businesses more confident in adopting digital technologies. Finally, the government should simplify the process for startups to obtain a license to operate. This will make it easier for startups to get their products and services into the market and help boost economic growth.

By following these recommendations, Azerbaijan can overcome the challenges of digitalization and become a leader in the digital economy. This will pave the way for economic growth, job creation, and improved quality of life for all Azerbaijani citizens.

Conclusion

Digitalization is a key driver of economic growth and development in the 21st century. However, digitalization also presents challenges for countries like Azerbaijan. Azerbaijan faces a number of challenges in the digital age, including a lack of a strong digital infrastructure, a digital skills gap, a lack of a supportive regulatory environment, and cybersecurity threats.

Despite these challenges, Azerbaijan has the potential to become a leader in digitalization in the region. The country has a young and tech-savvy population, and its government is committed to digitalization. If Azerbaijan can overcome the challenges it faces, it can become a major player in the global digital economy.

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Reference list

- Ahto Kalja, Aleksander Reitsakas, & N. Saard. (2006). *eGovernment in Estonia: best practices*. <https://doi.org/10.1109/picmet.2005.1509730>
- Lorenz, B., Kaido Kikkas, & Mart Laanpere. (2016). Digital Turn in the Schools of Estonia: Obstacles and Solutions. *Lecture Notes in Computer Science*, 722–731. https://doi.org/10.1007/978-3-319-39483-1_65
- McGuinness, D. (2017, April 27). How a cyber attack transformed Estonia. Retrieved August 17, 2023, from BBC News website: <https://www.bbc.com/news/39655415>
- State Statistics Committee. (2022). *Share of enterprises with Internet access in total number of all enterprises* [Excell Table]. https://www.stat.gov.az/source/information_society/en/003_16en.xls
- Wisevoter. (2023, July 7). Internet users by country. Retrieved from <https://wisevoter.com/country-rankings/internet-users-by-country/#azerbaijan>
- Vassil, K. (2016). *Digital Dividends Estonian e-Government Ecosystem: Foundation, Applications, Outcomes*. Retrieved from <https://thedocs.worldbank.org/en/doc/165711456838073531-0050022016/original/WDR16BPEstonianeGovecosystemVassil.pdf>