
Assessing Azerbaijan's Digital Transformation Profile Through the New Generation Economy Index 2025

Arzu Huseynova

*Economic Scientific Research Institution, Ministry of Economy of the Republic of Azerbaijan,
Baku, Azerbaijan
0000-0002-0981-9923, arzu.huseynova@esri.gov.az*

Abstract

As national economies undergo digital transformation, there is a growing need to measure not only technological readiness but also the ability to translate digital opportunities into tangible socioeconomic changes. In this regard, this paper presents a situational analysis of Azerbaijan's position in the 2025 Next Generation Economy Index (NGEI), a multidimensional assessment framework that includes fifteen countries and ten relevant development dimensions. In line with this objective, the study uses a diagnostic model and explores the path of factors contributing to outcome achievement based on the National Digital Transformation Profile. Azerbaijan ranks eighth among 15 countries in the Next Generation Economy Index. Azerbaijan also performed well in demographic potential, education, skills, and technological readiness. However, although we note that the indicators for innovation and the creative economy were relatively low, these discrepancies indicate that the country's development potential in outcome-related areas has not been fully realized. The study's findings highlight the importance of innovation ecosystems, research commercialization, entrepreneurship, digital exports, and interinstitutional collaboration in ensuring sustainable economic transformation. This study provides a diagnostic picture of the situation in Azerbaijan and details a number of factors that could help transform existing skills into sustainable economic well-being much more quickly.

Keywords: Digital Transformation, Digital Economy, Innovation, Economic Development, Azerbaijan

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1. Introduction

The rapid development of digital tools has shifted the basic fundamentals of the economy. The present economy has more influence on competitiveness based on the ability to generate, transfer, and promote knowledge and not just the production and accumulation of resources [work and capital]. What we know then is that digital technologies have the potential to impact production processes, business models, public administration, innovative systems, and international trade processes [5].

The expansion of conventional indicators of economic performance presents a partial and partial picture of development as digitalization moves from one sector and enters into more widespread domains. Increased access to the internet, digital infrastructure, and technology preparedness do not automatically lead to greater creativity, entrepreneurship, and productivity. Consequently, growing attention has been focused on the extent to which countries turn digital capabilities into the tangible output of their economies [3, 6]. This represents a critical problem

for developing and middle-income countries as spending on infrastructure and human capital increases faster than building innovation ecosystems and commercialization processes [9].

Some recent research notes that the technological, organizational, and institutional components were considered to be essential to successful digital transformation [3, 4]. Firm human capital development, innovation capacity and ecosystem coordination shape economy response to sustainable technological change affects the ability of economies to generate the benefits from sustainable technology change driven advantages [5, 8]. Countries with established innovation systems tend to be more productive and economic competitive, but platform-based business activities and creative fields more and more add value and often even contribute further to economic diversity at greater scales [7, 9, 10, 14].

In turn, these advances have led to the emergence of increasingly more multidimensional tools used to assess economic change. Composite indices have become increasingly popular to survey phenomena that are hard to quantify by one single index [15]. These models make it possible to study the interaction of the technologies, the economic, the social and the institutional developments, to ensure their international comparison [15].

One such index is the 2nd Generation Economy Index [1, 2]. This is particularly important in the digital transformation arena, where higher levels of preparedness are not always associated with equally positive innovation and commercialization.

In recent years, Azerbaijan has built a digital infrastructure, strengthened its educational potential, and promoted technological modernization. However, the extent to which these advances have had a positive impact on innovation, digital entrepreneurship, the development of the creative economy, and the international competitiveness of digital activities is questionable.

In this context, the aim is to determine Azerbaijan's position in the 2025 Generation Economy Index and identify the country's key strengths and weaknesses in its digital transformation, to examine Azerbaijan's situation from all perspectives at the same time, and to identify potential opportunities for the government to be more actively involved in the country's new economic transformation.

1.1 Problem statement

Today, digital transformation is a strategic priority for increasing productivity, expanding competition, and accelerating economic growth. Many resources are put into digital infrastructure, technological readiness, education, and skills development. They set the stage for participation in the digital economy. Although good conditions are available, good consequences are often not achieved [3, 4].

Progress is, in many instances, evaluated against measures related to technology and digital resources. Success is often measured by such indicators as the penetration of broadband access, the use of the Internet, digital government services, and technological infrastructure. However, one indicator is not enough to fully reflect the success of transformational processes. Countries can demonstrate a very high level of readiness, but at the same time show low results in innovation, entrepreneurship, digital export, and value creation based on knowledge [5, 8].

Studies show that economic benefits are mainly due to the ability to transform into productive activities, innovative products, and sustainable competitive advantages [3, 6]. On the other hand, the relationship between readiness and the results of the assessment of digital development is currently an urgent problem. The Azerbaijani instance is illustrative of this challenge. A lot of progress has been taken on issues like technological modernization, digital infrastructure, education, and skills. These gains have significantly enhanced the nation's participation in the new digital economy. However, existing evidence indicates that progress in innovation, creative economy activities, startup development, and technology commercialization have lagged behind [1, 2].

This situation poses an important analytical question. How are existing capabilities converted into discernable economic outcomes? The answer is significant, since there are

multiple policy interventions depending on problem type or context. In the event limitations are a consequence of unpreparedness, more should focus on infrastructure, education, and adoption of technology. Where readiness already exists but consequences are poor, focus needs to be on the innovation systems, research commercialization, entrepreneurship, venture finance and ecosystem development [4, 7].

Consequently, it is the relationship between enabling conditions and achieved outcomes within the framework of the digital transformation in Azerbaijan that is addressed to be the principal problem of the current study. Understanding this relationship would clarify current strengths and weaknesses and would facilitate the prioritization of economic development issues for the future.

1.2 Literature Review

The linkage of digital technology and economic growth has emerged as one of the most studied issues in modern economic studies. The swift proliferation of digital technologies has also affected production systems, labour markets, innovation paths, corporate structures, and public services. Therefore, modern studies tend to regard a digital transformation as a multidimensional phenomenon of which it is not merely a matter of technology adoption [3].

The earlier research focused at times on information and communication technologies and productivity, and economic growth. Subsequent research moved up a ladder of broader questions about the adoption by organizations, institution building capacity, and value creation. Recent research has been showing that technology resources have meaningful impacts only were accompanied by changes in support on management, human capital, and innovation systems [4, 5].

An expanding body of literature has stressed digital innovation as one of the agents for economic transformation. Innovation is no longer considered to be the result of research-based activities. It is also being recognised as a part of the economy. It is understood instead as a process involving knowledge creation, commodity commercialisation, market reformulation, and ongoing learning from a system of knowledge processes and market evolution. The extent to which this process works also relies on the interaction among universities, the firms, the enterprises, the investors, the public institutions and other actors in a wider innovation ecosystem [6, 7].

Recent studies have also highlighted that digital platforms have begun to take a more prominent role in economic activity and the growing importance of using technology and ecosystem-based economic activity. Platform models encourage producers, consumers, and service providers to engage more with each other and also bring down transaction costs and facilitate access to markets. Their increasing influence has reconvened classical forms of competition, entrepreneurship, and international business development [14].

A second key area of research focuses on the creative economy. International reports published recently also reflect the increasingly significant influence of the ability to innovate and digital responsiveness on economic performance. As stated in the Global Innovation Index 2024, developing countries that perform well in the fusion of knowledge making, know-how and technical development and commercialization have a higher level of innovation performance and a higher international competitiveness [7]. The OECD's Digital Economy 2024 report highlights the growing importance of digital technologies in boosting productivity, improving economic efficiency, and accelerating structural change [8].

Therefore, digital transformation should be viewed not only as a technological innovation, but also as a multidimensional development that affects the organization of economic activity, the innovation potential, and the means of value creation. The multidimensional nature of digital transformation has created the need for more complex analytical architectures to measure digital transformation. Composite indices are one of the common frameworks for assessing complex socio-economic processes that cannot be fully measured by a single indicator. These indices allow the integration of technological, economic, social, and institutional indicators into

a single analytical framework and provide a more comprehensive basis for cross-country comparisons [15].

Areas such as digital infrastructure, innovation, education, entrepreneurship, and institutional quality have been extensively studied in the literature. The interaction of these areas and the translation of potential into economic impacts have been less studied. This is particularly relevant for countries where digital readiness, human capital, and technological capabilities are developing faster than innovation, commercialisation or creative economy outcomes. In this context, the Next Generation Economy Index provides an analytical framework for a broader perspective. The index allows for a distinction between enabling conditions and achieved outcomes; it also allows for the study of economic transformation based on the degree to which each resource is realised as economic value, rather than on existing resources [1, 2].

Applying the above methods to the Azerbaijani context provides a suitable theoretical context for a more systematic examination of the country's digital development potential, innovation capabilities, entrepreneurial environment and potential for sustainable economic value creation.

2. Experiments

2.1 Analytical framework and data

The research derives empirical evidence from the "Next Generation Economy" composite index. The index combines interrelated dimensions such as human capital, technological readiness, innovation potential, social development, and economic indicators into a single assessment system [1, 2].

The benefit of the composite index technique is that multiple dimensions are combined into an analysis model; however, individual analytical analysis may still be performed in terms of each one [15]. This creates a methodological base for the systematic evaluation of the digital transformation process influenced by various interacting technological, economic, social, and institutional factors.

The NGEI is made up of ten subdimensions grouped into two major categories. The first one represents the enabling conditions. Such dimensions refer to the resources and capabilities conducive to economic transformation. The second category represents realised outcomes and assesses the extent to which available capacities yield measurable economic results [1, 2].

Factors promoting participation cover demographic capacity, health, education, skills, technological readiness, social inclusion, and institutional support. Taken together, the indicators indicate the structural aspects essential for participation in the digital economy. Outcome dimensions encompass innovation performance, creative economy development, and platform economy activity. These measures demonstrate the financial benefit that results from the efficient utilization of resources and skills in a location [1].

The framework relies on the assumption that strong outcomes will be more likely to take place when enabling conditions are adequately developed. Simultaneously, favorable conditions are not inherently good for success. Variations between these two pairings of indicators may thereby identify obstacles in the transformation process and useful information for policy discussion [3, 4].

The current research uses diagnostics instead of causal analysis. It does not seek to estimate econometric relationships or identify direct causal effects between independent variables. Rather, the analysis considers the internal structure of Azerbaijan's NGEI profile, and it compares the readiness-related factors with the outcome-related dimensions. We use this approach to pinpoint areas where development seems to be relatively strong and areas that need further work. The empirical analyses depend on the data reported in the official New Generation Economy Index 2025 Global Ranking Report as well as the methodological documentation [1, 2].

These sources offer information on performance, subdimension scores for total performance, country rankings, and distribution of results by input and output category. This article is based on data reported which are the parameters for the measurement. The structure of the framework in focus on the relationship between enabling conditions and realized outcomes provides a more holistic approach to the economics of transformation than do traditional ranking techniques. It gives you the opportunity to pay attention not just to the overall performance, but to the process of how development capabilities are turned into economic value that is quantifiable.

3. Results and discussion

3.1 Azerbaijan's diagnostic profile

Azerbaijan achieved 42.11 points on the New Generation Economy Index 2025 and placed eighth out of the fifteen countries to take part in the evaluation [1]. Despite the relatively general status of results, further analysis of the index's internal dimension shows some crucial elements in the profile of national development of the country. Demographic capacity, skills, technological readiness, and education show the strongest results, as highlighted in Table 1.

These features of the digital economy may suggest a broadly favorable environment to engage in the digital economy. The results of the report in this section imply that a majority of the essential criteria concerning technological and economic adaptation in Azerbaijan have been adequately established [1]. When the outcome-related dimensions are considered, however, an alternative picture is revealed. Innovation in the national profile, as indicated in Table 1, ranks lowest, and the creative economy shows a fairly moderate performance. Platform-economy activity outperforms those benchmarks but has not reached the thresholds set by the country's readiness indices [1].

The comparison of preparedness to outcomes presented in Table 1 is one of the key issues in this work. Capacity seems to exceed the economic value of those capacities. This mismatch tells us that there is not so much existing talent in place for innovation, entrepreneurship, knowledge-based value creation, and this value is not being maximized. The findings suggest that Azerbaijan's main limitation is not due to lack of technology access or human capital development. The issue lies in the degree to which resources, including human capital, knowledge, and technological capabilities, are translated into economic returns. In this respect, the index structure presented in Table 1 is not just consistent with the country's position in the world, but it also represents the institutional and functional deficiencies of turning digital transformation potential into economic returns.

Table 1. Azerbaijan's NGEI diagnostic profile

Indicator	Value
Overall NGEI score	42.11
Rank	8/15
Input score	34.12
Output score	8.00
Profile	Medium-high input / low output
Demographic score	82.7
Skills and technological readiness	63.9
Education score	53.6
Innovation score	6.5
Creative economy score	17.1
Platform and sharing economy score	34.6

Source: Compiled by the author based on NGEI 2025 Global Ranking Report [1].

3.2 Interpreting the observed pattern

The above findings also indicate a wide-spread gap between the enabling conditions for innovation, as well as its performance and commercialization results. This divide exists across many developing countries and middle-income economies which invest more in education, digital infrastructure, and technology readiness than in the outcome and commercialization of innovation [3, 4]. Another explanation is that countries may be competent for knowledge generation but poorly developed for knowledge commercialization, even when they possess the appropriate human capital and institutional systems to create enough opportunities for innovation. A good link between research organizations, universities, businesses, investors, and other institutions is also required for the knowledge to be commercially valuable [6]. A further key influence is entrepreneurship. In business, start-ups create new technology or new products at a higher rate and develop markets. So, value from the start is not limited to their own economic activity. They usually provide more competition, investment from the top down, and the dissemination of technology, which in principle buffers the effects of technology and education in a thin startup ecosystem [7].

The interpretation of these results rests on the notion of digital value creation. We know that the economic impact of technology comes from its embedding in production, or indeed in the business process itself [4, 5]. According to the data, the process of digital transformation is not only about the adoption of new technology but also about the establishment of sustainable economic activities that raise productivity, increase innovation, and offer a competitive edge. Also, the low performance of capabilities per innovative and creative economy dimensions means that their economic benefits are too low. In order to promote innovation, the state of readiness cannot be expected to facilitate this [7, 8, 9]. The overall conclusion of the assessment is that while Azerbaijan is making progress to lay the ground of the future for digital development, it is nevertheless challenged to create value relevant to this space and to be able to monetise these things. These findings imply that infrastructure-related or access indicators are not the only global enablers of digital transformation; it's also important to be able to transform capabilities into concrete economic benefits. The preparedness and outcomes distinction thus offers a good framework for analyzing the longer-term development of production systems and their innovation and economic impact.

3.3 Policy implications

According to the analysis, there are points that lead to a more balanced development path. The key policy targets are shown in particular from Table 2, with the gaps in supporting environment and performance most evident with regard to where they are concentrated.

Table 2. Priority bottlenecks and policy levers for Azerbaijan

Bottleneck	Evidence from the report	Policy lever
Weak innovation commercialization	Innovation score 6.5; R&D expenditure 0.18% of GDP	Tax incentives, venture co-investment, stronger research-to-market pipelines
Thin startup base	Around 100 active startups	Seed and growth finance, incubators, procurement sandboxes
Low digital export depth	ICT exports below 1% of non-oil exports	Export support, e-commerce logistics, payments and certification infrastructure
Weak creative-economy monetization	Creative economy scores 17.1	Accelerators, licensing support, global market access for digital content
Moderate platform development	Platform and sharing economy score 34.6	Interoperable digital markets, SME onboarding, regulatory clarity

The first is to enhance the capacity for innovation. An increased focus on research commercialization has the potential to enhance the translation of scientific knowledge for economic worth. Increased cooperation between universities, research organizations, and industry could assist in pursuing this goal by connecting knowledge generation to market deployment more closely if the sector can contribute to achieving the development of a stronger link between knowledge generation and market application [6]. Based on the policy solutions introduced on Table 2, the evidence for how policy instruments related to innovation financing, commercialization as well as research-market linkages could potentially serve as one means of addressing this issue could be proposed.

The second priority is entrepreneurship and business development. New firms are frequently significant sources of innovation and economic dynamism. Economic initiatives to assist in the startups, startup acceleration, mentorship, and financial access could boost the degree to which the economy translates technological potential into financial success. In order to contribute to the building of a more active innovation ecosystem, a combination of further proliferation of seed finance, incubation models, and business support systems will be implemented (see Table 2). Further development of mechanisms of financing is an additional focal area. Innovation projects are often uncertain and have a long investment horizon. Consequently, venture capital, seed investment, and other sources of risk finance are frequently linked to superior innovation performance. Further implementation of those mechanisms could enhance participation and experimentation with new business models for tech firms [4].

Digital exports need more attention. International experience has shown that digital exports have a crucial role in contributing to innovation, technology upgrading, and productivity enhancement. Access to global digital markets leads to learning, scale-up, and transfer of knowledge in ways that cannot happen in domestic markets. Therefore, greater participation in the export sector might back up the construction of more competitive and higher value economic activities [9, 11]. The policy measures included in Table 2, also further underline the necessity of export support instruments and digital market integration.

Further benefits might come from better coordination between public institutions, educational institutions, businesses, investors, and technology intermediaries. Digital transformation is a complex and varied effort, and the activities of multiple stakeholders affect the effectiveness of development policies. Alignment of these actors may help with implementation of policy and could reinforce the innovation ecosystem as a whole [3, 5].

Lastly, monitoring systems should include outcome driven rather than readiness tracking in the focus of the monitoring system. There still need to be infrastructure, education and technology capacity development improvements. But how well these investments work should also be considered in the context of innovation, entrepreneurship, productivity and value creation. This would have a broader foundation for evidence-based policy making and for measuring developmental evolution over the long-term.

Combined, the policy directions outlined in Table 2 could help to reduce the disparity between potential capabilities and actual results. A stronger integration of these dimensions would make existing resources more effective and can further contribute to the efficiency and long-term competitiveness of the Azerbaijani economy.

4. Conclusion

This paper examined the position of Azerbaijan in the New Generation Economy Index 2025 and examined the correlation between the enabling conditions and outcomes. Based on the conclusions of these investigations, a clear base for participation in the digital economy is found; this is indeed the case in the country. There are good impacts on demographic ability, higher education, skills, and technology readiness, indicating development resources played a significant role [1].

On the other hand, its conclusions also indicate that outcome-related dimensions are not well developed. In supporting dimensions: innovation, the performance of the creative economy

and platform activity do not seem to represent sufficiently the readiness of at least the most critical level yet. The dichotomy between these types of indicators is also the main result of the study and informs what phase of economic transformation in Azerbaijan we have managed to arrive at, respectively. Our results would suggest that progress in future will depend not only on the continued investment of infrastructure and human capital, but also on the effectiveness of structural devices to transform raw inputs into wealth and economic value. It will lead to the realization of this goal through a more robust innovation environment [4, 6, 7], as well as enhancing commercialization mechanisms, expanding entrepreneurial efforts, and widening international reach.

One of the key contributions to the research is the emphasis on the association between readiness and results. Although, as our survey demonstrates, such traditional evaluations will tend to emphasize aggregated performance, the analytical model will offer insights into internal differences buried in the summaries.

This view presents a holistic picture of specific strengths, weaknesses, and objectives. What we find is Azerbaijan has indeed many of the elements required to participate in the digital economy in the right way. But the wealth that benefits from such conditions remains below their full potential. Future outcomes will depend on the success of innovation instruments, commercialization strategies, entrepreneurial activity, and connections within the international market.

This article examines only the New Generation Economy Index 2025 indicators which are used to analyze the data and the framework applied for analyzing the data. Subsequent studies can further analyze the conditions that drive transformation outcomes via sectoral, comparative, and longitudinal approaches. Research of this sort would lead to more insight into the issues influencing economic change in a digital era.

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Authors' Declaration

Conflict of Interest. The author declares that there is no conflict of interest related to this study.

Authors' Contribution Statement

Arzu Huseynova contributed to the conceptualization of the study, development of the analytical framework, data interpretation, manuscript preparation, revision, and final approval of the article.

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