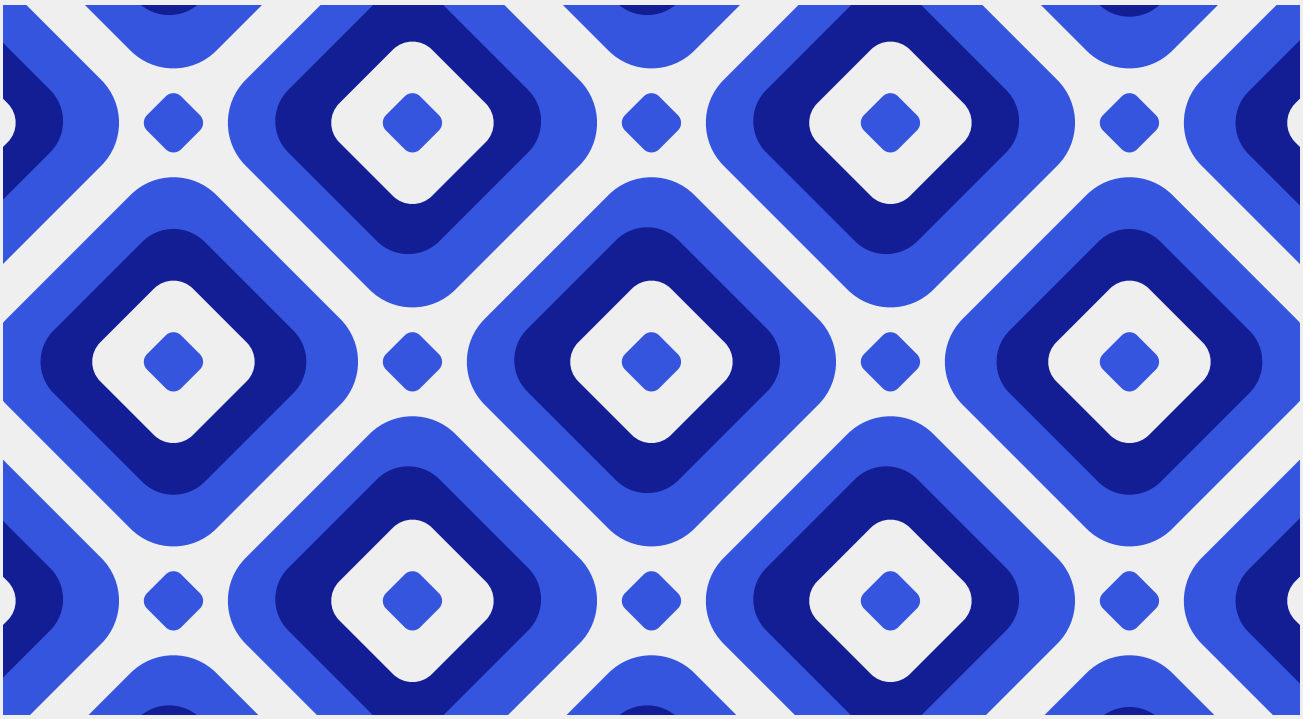
FOSTERING REGIONAL INTEGRATION AND CONNECTIVITY IN CENTRAL ASIA THROUGH DIGITAL INFRASTRUCTURE AND YOUTH-LED ENTREPRENEURSHIP



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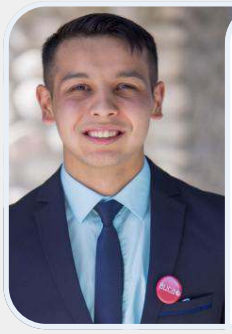

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Abstract

This research examines how digital infrastructure and youth-led entrepreneurship can serve as catalysts for regional integration in Central Asia. Drawing on expert interviews, survey results, literature review, and comparative country assessments, the research identifies a growing transition from state-centric models toward bottom-up, digitally enabled cooperations among Central Asian countries. Findings reveal that despite structural barriers, fragmented regulations, and infrastructure (e.g, electricity, limited broadband quality, and early-stage financing), the region's young, growing, digitally savvy population and emerging innovative ecosystems around IT parks present significant opportunities for integration.

Findings suggest that key enablers of this progress are hands-on digital education, policy harmonization, stable energy sources, computing infrastructure, and interoperable payment systems. The study proposes developing regional digital sandboxes, unified payment systems, and access to funds, a practice-based education system, and a permanent Digital Governance Forum that will act as a space for policy discussions.

Keywords: Central Asia, regional integration, youth-led entrepreneurship, digital literacy, policy harmonization, connectivity, digital sandbox, IT parks.

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Introduction

The complex geopolitical landscape, economic hurdles, and historical debates have long shaped regional integration in Central Asia. Despite numerous efforts aimed at deepening regional integration, geopolitical rivalries, fragmented regulations, and limited infrastructure have, over the past couple of decades, hindered more substantial progress. Traditional approaches to trade agreements and state-led initiatives have not effectively addressed these structural barriers.

Today, digital transformation offers a new way forward for the region. We are already seeing the positive effect of expanding broadband networks, interoperable platforms, and technology-driven entrepreneurial ventures that are unlocking new possibilities for cooperation beyond traditional models. Young innovators, in particular, are becoming leading agents of change as they use digital tools to build businesses, connect markets, and drive cross-border collaboration.

This research aims to explore the question of how digital infrastructure and youth-led entrepreneurship can act as catalysts for regional integration in Central Asia. It incorporates findings from the academic literature, policy analysis, and stakeholder perspectives to provide practical steps for creating a connected, inclusive digital ecosystem. It seeks to go beyond rhetoric and detail actionable strategies that allow governments, private actors, and development partners to collaborate towards a more integrated digital future for the region.

Literature Review

1. Introduction

This chapter offers a comprehensive review of the academic literature on connectivity and regional integration in Central Asia, with a focus on the changes enabled by digital infrastructure. In addition to highlighting the emerging trends that point to a potential reconfiguration, it identifies the underlying political, economic, and social problems that have persisted in undermining regional integration. It identifies the fundamental political, economic, and social issues that have continued to undermine regional integration in the region, but also highlights those emergent trends indicating a possible reconfiguration. In this regard, special attention is given to how digital transformation, a process enabled by the diffusion of advanced broadband infrastructure and the proliferation of digital entrepreneurship, opens a new window for thinking about regional cooperation. Drawing on several theoretical approaches, such as classical economic models, new regionalism, and demand-supply dynamics of integration, these findings develop the background for explaining the complex interaction of traditional and emergent forces that shape the regional path of Central Asia. Through this examination, this chapter provides the setting for innovative, inclusive, and technology-driven approaches to regional integration able to transcend rigid geopolitical and institutional barriers.

2. Theoretical Frameworks and Historical Context of Regional Integration

2.1. Classical Theories of Integration

The academic understanding of regional integration has changed and evolved, moving from traditional, trade-centered models to more dynamic, multifaceted frameworks. These theoretical advancements provide important instruments for assessing the potential and constraints of regional integration processes.

International trade theory and neoclassical economics served as the foundation for early integration theories, also known as the “old theory” or “static approach”. By shifting the explanation of trade from technological differences to cross-national variations in factor endowments, the Heckscher–Ohlin–Samuelson model expands on Ricardo's idea of comparative advantage. In this framework, international trade functions as a conduit for countries to specialize based on their abundant production factors, resulting in a more efficient global distribution of resources (Burfisher, Robinson, & Thierfelder, 2004). Jacob Viner's (1950) introduction of trade creation and trade diversion offered a more sophisticated assessment of customs unions, cautioning that regional agreements can result in economic

inefficiencies by redirecting trade from lower-cost external suppliers to higher-cost partner nations. James Meade (1956) introduced additional complexity with the theory of second best, contending that in the presence of existing economic distortions, the establishment of a regional integration arrangement does not inherently enhance welfare. The effects depend on how the new distortion related to integration interacts with other distortions that are already there, like losses in tariff revenue, structural protection, or uneven distribution. These constraints subsequently necessitated a reevaluation of integration via more flexible and multifaceted strategies, exemplified by the New Regionalism.

2.2 New Regionalism Approach (NRA)

Although influential, the aforementioned classical models presupposed relatively uniform development levels, constant returns to scale, and flawlessly operating markets. There are conditions that do not happen very often in the real world. Their focus on shallow integration, which only includes lowering tariffs and opening up trade, makes them poorly suited to deal with the political, developmental, and technological problems that come with modern regionalism, especially in regions like Central Asia.

To address these limitations, Balassa's (1961) typology provides a staged model of regional integration. It starts with free trade areas, moves through customs unions, common markets, and economic unions, and ends with complete economic integration. Each stage denotes a higher degree of institutional integration and economic policy coordination. However, this framework has been criticized for its linear and Eurocentric presumptions despite being frequently cited (Kang, 2016; Gibb, 2009). Integration does not follow these neat stages in regions such as Central Asia, where countries differ in economic structure, political systems, and external alignment. Furthermore, newly emerging drivers of integration, such as youth entrepreneurship, digital infrastructure, or financial technology, are not taken into account in Balassa’s framework.

It is in response to these limitations that, during the 1990s, the New Regionalism Approach (NRA) emerged. In contrast to classical, state-centric models, the NRA conceptualizes regional integration as a dynamic and multi-level process wherein not only states and markets but also social actors, transnational networks, and informal structures participate. It identifies that integration is often nonlinear and shaped by external pressures of globalization, asymmetries of development internally, and bottom-up social movements. This framework is particularly relevant when analyzing regionalism in Central Asia, where disparities between countries, restricted state capacity, and the limited development of civil society require more adaptive and multi-actor approaches.

Key features of the NRA that are particularly pertinent to the focus of this paper consist of the following: its multidimensional view of regionalism, where trade is not just an economic exchange mechanism; it can provide a conduit for technology

transfer and knowledge diffusion. The approach also stresses that international factor mobility, or the movement of people and capital across borders, is part of broader regionalization processes. Furthermore, the NRA is fully compatible with attention to “dynamic” efficiency, as regional markets may well become more competitive and innovative over time. Most importantly, it attaches particular value to bottom-up forms of integration, wherein non-state actors and transnational networks drive regional connectivity and cooperation (Hettne & Söderbaum, 1998).

Within this broader framework, two sub-approaches are relevant to explore useful analytical tools for understanding the changing dynamics of integration in Central Asia. Firstly, open regionalism favors regional cooperation with openness toward global markets and institutions; hence, it fits as a relevant lens for the emerging aspiration of Central Asia for both regional cohesion and international economic engagement (Bergsten, 1997). The second one is developmental regionalism, provided by UNCTAD (2013); it draws on active state involvement in strategic sectors, including infrastructure, digital technology, and industrial capacity-building. The emphasis is thus on capacity-building, long-term development, rather than only on liberalization, which would make it very relevant for countries like those in Central Asia, where digital ecosystems and infrastructures are poorly developed. Together, they can help reframe regional integration as part of a development-oriented and inclusive process, beyond a mere trade liberalization or reduction to intergovernmental treaties.

Taken together, these more recent approaches suggest that integration need not be solely equated either with the abolition of trade barriers or with emulation of EU-style models. Integration can also arise from common development imperatives, especially when reinforced by vigorous public policies in domains such as digital innovation, entrepreneurship, and financial inclusion. These frameworks provide the conceptual scaffolding for the core proposition driving this volume: namely, that youth-led entrepreneurship and enhanced digital infrastructure in Central Asia can light the fuse for a new form of integration, one less dependent on centralized state action and more generated by networks, technology, and social innovation.

2.3 Barriers to Integration in Central Asia

Scholars outline a complex web of obstacles to regional integration in Central Asia. Approaches inspired by constructivism and post-structuralism, such as Rosset & Svarin (2014), argue that divergent national identities forged in the post-Soviet independence period perpetuated fragmented visions for the region. Competing narratives on sovereignty, hierarchy, and regional roles continue to hamper the formulation of a common regional framework. Moving on, realist approaches stress geopolitical rivalries, in particular between Kazakhstan and Uzbekistan, which make it difficult for the crystallisation of a clear regional leadership (Cooley, 2012). From this perspective, the lack of either a regional hegemon or “paymaster” willing to pay for the cost of integration is why integration remains partial (Mattli, 1999).

Collins (2009), additionally, has elaborated on regionalism among patrimonial authoritarian regimes of Central Asia: authoritarian rulers are more concerned about regime stability than with liberal economic integration, so it leaves economic regionalism largely "virtual" while regional cooperation moves forward mainly through symbolic initiatives or security arrangements.

From an external hegemony perspective, Krapohl and Vasileva-Dienes (2020) emphasize powerful outside actors, namely Russia through the EAEU and China through the BRI, whose competing influence and economic pull help to contribute to fragmentation in regional unity in Central Asia. Ajay Patnaik (2019) further suggests that the competitive interests of external powers often eclipse the emerging intra-regional initiatives in Central Asia, reinforcing the region's dependence on those external actors.

Despite these powerful counter-forces, nascent digital transitions and youth-led entrepreneurship efforts point to some avenues through which the balance of forces might shift toward more spontaneous, inclusive, and grass-roots-driven integration processes. As Mattli (1999) notes, the success of regional integration often rests not just on state-led efforts but also on pressure from domestic interest groups, especially businesses and entrepreneurs eager to collaborate across borders. Although Central Asia has yet to see the same degree of EU-style business-driven integration, nascent regional efforts, such as startup ecosystem mapping, regional tech programs including Digital CASA and TechOrda, and cross-border hackathons and incubators, already show how digital platforms and innovation networks are starting to generate transnational linkages not strictly predetermined by geopolitical allegiance.

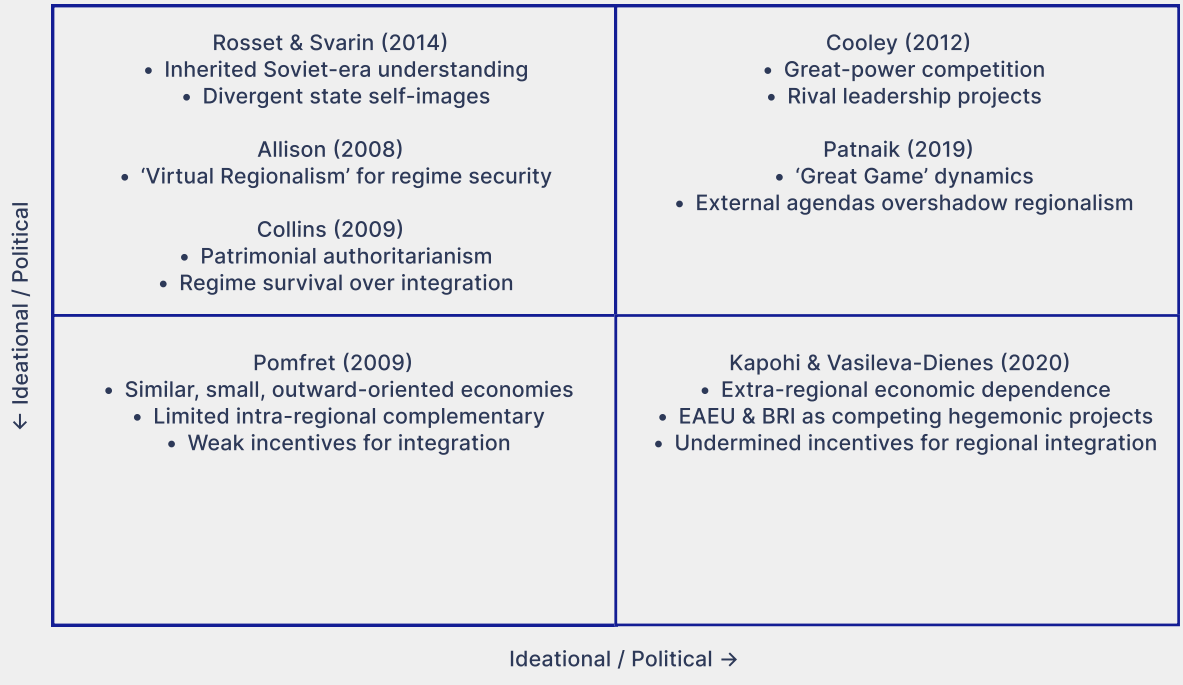

Figure A: Barriers to regional integration in Central Asia: a 2×2 matrix of domestic/external and ideational/economic factors

3. Digital Infrastructure in Central Asia: Foundations for Integration

3.1 Hard and Soft Infrastructure

In today's realities and understanding, infrastructure is seen as a collection of physical objects and a complex system of interconnected processes, norms, regulations, and practices. A paper entitled “Scaffolding, Hard and Soft. Infrastructures as Critical and Generative Structures,” written by Shannon Mather (2016), presents a broader understanding of infrastructure that includes both "hard" and "soft" components. In the author's opinion, these two types of infrastructures are not opposites, but complementary and mutually integrating, forming the basis of the modern digital, social, and cultural environment (Mattern, 2016). Based on this understanding, the balanced development of hard and soft infrastructure in Central Asian countries is a prerequisite for creating interconnections between them.

Infrastructure in Central Asia involves more than just the physical components of connectivity but includes the complex web of social, legal, and technical systems that underpin it. Hard infrastructure refers to the physical components of fiber-optic cables, data centers, energy grids, and transportation systems that provide the basic backbone that underpins the digital transformation (Mattern, 2016). In Central Asia, this hard infrastructure is manifested in variable internet speeds, differential connectivity, and reliability, with Kazakhstan and Uzbekistan possessing significantly higher-order systems compared to Kyrgyzstan, Tajikistan, and Turkmenistan, which still retain many legacy systems and have relatively low levels of investment (Minges, 2016; Ruddy, 2013). Soft infrastructure, often overlooked, involves the regulatory frameworks, legal systems, technical standards, and even cultural conventions that condition the effective use of hard infrastructure (Bowker & Star, 1999).

Harmonization between the Central Asian States on issues related to digital governance, data exchange standards, and digital identification systems remains limited, affecting unhindered regional digital interaction. Differences in e-governance systems and the lack of a unified approach to digital citizen records hinder the creation of interacting digital ecosystems, such as a unified visa system at the regional level.

Without cohesive soft infrastructure, hard infrastructure alone cannot drive integration (World Bank, 2023), and initiatives such as Digital Kazakhstan, that build hard infrastructure (high-speed networks, data centers) to introduce new technologies in industry and public administration (Ministry of Artificial Intelligence and Digital Development of the Republic of Kazakhstan, 2021), help to develop the country's infrastructure evenly and make it ready for integration with other countries in Central Asia.

3.2 Impact of Broadband and Digitalization

Along with other differences in soft and hard infrastructure, the Central Asian countries have a common problem with the impact on developing the region's digital ecosystem. Central Asian countries have delayed broadband deployment, responsible for the bandwidth and Internet speed (Minges, 2016). Being a key prerequisite for developing the ICT sector and accelerating the digitalization of governments and businesses (World Bank, 2023), its full deployment can greatly benefit Central Asian countries. Based on a panel analysis of the impact of broadband on economic development covering the period from the beginning of broadband deployment in 1996 until 2007, it was found that broadband development can lead to lower barriers to market entry and increased market transparency, thereby increasing both productivity, market competition, and ultimately economic growth (Czernich et al., 2009).

According to a study by World Bank specialist M. Minges (2016), enhanced high-volume networks, which would lead to a 10 percent increase in fixed broadband penetration, could positively impact the GDP of Central Asian countries in the range of 0.8 to 1.38 percent per year. The experience of the 25 OECD member countries is a good example of how broadband deployment can have a positive impact on the economy, stimulate digitalization, and improve the quality of life. These countries made significant progress in the 1990s and 2000s, with the OECD Economic Outlook of that period showing a strong correlation between their economic growth and the development of modern broadband infrastructure (OECD, 2000). Therefore, Central Asian countries have a great potential to increase the level of digitalization of government processes and the business environment by improving the level of fiber optic networks in the region. According to expert analysis, Central Asian countries still face significant limitations in their international fiber-optic infrastructure, which connects them to the global Internet. This infrastructure remains underdeveloped and offers low bandwidth capacity (World Bank, 2023). For citizens, businesses, and governments of these countries, this underdeveloped infrastructure results in high internet costs, limited usage, and slow progress in broadband expansion. Experts point to several reasons for the region's poor Internet network development, including the region's complex topography (Internet Society Pulse, 2024) and legacy infrastructure built to meet much lower bandwidth requirements of the past (Ruddy, 2013).

4. Digital Entrepreneurship: An Emerging Force for Integration

4.1 Defining Digital Entrepreneurship (DE)

Digital Entrepreneurship (DE) or E-Entrepreneurship is a widely spreading phenomenon in the world of economics, intending to redefine traditional business structures based on physical infrastructure into digital ones. The process of redefining business processes is motivated by the information-based economy, where digitalization brings economies of scale.

There is no single agreed-upon definition of DE, but multiple interpretations exist. Kollman (2014) defines DE as a field or business that offers its services and creates value purely in an electronic form that is enabled by information technology. Digital entrepreneurship is not limited to a specific business or area of the economy; rather, it encompasses entire environments. This shift presents new opportunities not only in business but also in politics and regional integration, whereby DE is used as a diplomatic tool among countries. Broadly speaking, DE is also defined as creating progress and transforming traditional businesses by introducing new digital technologies (European Commission, 2023). Some authors perceive DE as a sub-category of entrepreneurship where "some or all of what would be physical in a traditional organization has been digitized" (Kraus et al., 2018).

When it comes to the sphere of products and technology, Giones and Brem (2017) define DE as "new products and services based on the internet; services running only in the cloud; using big data or artificial intelligence". In addition, Giones and Brem (2017) introduce the discussion of DE through the alteration of the term "technology entrepreneurship" and present three different concepts, including digital entrepreneurship, digital technology entrepreneurship, and technology entrepreneurship. Given its tech focus, some authors use these concepts interchangeably. However, these definitions are limited to the specific field of technology.

To highlight the difference between traditional and modern entrepreneurship, one can also consider theories and definitions introduced by Israel Kirzner of the Austrian School of Economics, who contributed to the meaning and importance of entrepreneurship. Kirzner notes that the main characteristics of entrepreneurs are their alertness to the market. In addition, he mentions that an entrepreneur is the one who notices the price difference between two markets and makes a profit on the difference through buying in a cheaper market and selling in the expensive market (Henderson, n.d.). Despite contributing to entrepreneurship before the dawn of DE, Kirzner's theories did not lose their prominence in the digital age. For him, entrepreneurs are considered arbitrageurs. The current agents/entrepreneurs in businesses such as Uber, Spotify, Yandex Taxi, or Airbnb are deemed to be those who leverage digital technology to transform existing platforms into technology-driven digital ventures. This portrays the transformation of traditional physical entrepreneurship into the DE, which is based on the shared economy.

4.2 DE and Regional Integration in Central Asia

The role of digital entrepreneurship (DE) in boosting regional ties across Central Asia is gaining attention - especially for tackling long-standing obstacles to collaboration. Rather than traditional models, DE opens markets through online services while stimulating new business ideas (Autio et al., 2024; Kraus et al., 2018). Still, progress depends on strong support systems: aligned regulations, available financing options, and practical training in using technology.

Within the 2030 framework, the UN General Assembly's Resolution 75/211 highlights how vital entrepreneurial activity - and especially DE - is for lasting development. The resolution urges member states to embed youth-focused entrepreneurial plans alongside creative measures within national frameworks - while fostering supportive conditions so every young person can fully exercise their rights and potential - with increased funding directed toward micro, small, and medium enterprises (UN General Assembly, 2020).

Across Central Asia, deep-rooted informal systems combined with social customs - like favoring conventional business models along with uneven regulation - hinder the spread of digital startups. On top of this, weak infrastructure marked by limited high-speed internet access paired with unstable digital governance intensifies existing barriers. Still, the region's median age stands around 27, indicating a large upcoming workforce.

Although online availability differs widely - from above 90% in Kazakhstan down to just 35% in Turkmenistan - young, tech-savvy residents offer strong potential to expand digital enterprise efforts while promoting broad-based economic gains. Youth across the region show strong initiative in starting businesses. In Kazakhstan, for example, young entrepreneurs increased by 2.4 times between 2020 and 2025, hitting close to 700,000 people - over half of whom are women (55.4%). To make full use of this trend, institutions must work together to reduce structural barriers while supporting digital startups. This grassroots momentum can strengthen regional ties, shaping practical policies outlined later.

4.3 Global and Regional Policy Perspectives

Global and regional policies help create settings where digital startups can grow, supporting wider regional ties in Central Asia. Central Asia benefits from frameworks like UNGA Resolution 75/211, along with World Bank programs that advocate for the entrepreneurial ventures that focus on young people, technological innovation, and sustainable economic growth (UNGA, 2020; World Bank, 2025).

Such measures highlight supportive legal frameworks for secure online exchanges, aligned cross-border rules, and funding options to aid emerging digital projects. Also, they underline strengthening institutions, improving public tech skills, therefore connecting local economies to grow stable, expandable digital ecosystems.

In Central Asia, these suggestions fit the growing digital scene - highlighting how national strategies should align through cooperation to support regional data exchange and technology-based development.

Still, these worldwide views are sometimes seen as clashing - or simply moving side by side - with growing digital sovereignty trends. As some researchers point

out, this form of sovereignty tends to center on struggles for authority in managing data, online platforms, and tech networks across local, national, regional, and international scales (Couldry & Mejias, 2019; Milan & Treré, 2020). Instead of just open access, the internet is now treated more like a zone where governments assert dominance - seeking control over information flows, key technological assets, and major digital services. Nevertheless, experts note that areas such as Central Asia struggle to engage fully in global digital exchange because strict rules demand heavy investment in technology setups they lack.

Moreover, debates on digital autonomy in Central Asia are shaped by major powers like Russia and China. For example, Moscow's push for strict local data rules, tighter info oversight, while enabling wide state access, has impacted laws and policies across multiple nations in the region (Keskinen, 2021).

Conversely, China's growing Digital Silk Road heavily influences digital links across Central Asia. By funding telecom networks, alongside building data hubs, online trade tools, or mobile money services, it spreads its own tech rules and regulatory models - shaping how local digital environments evolve (Triolo & Allison, 2018; Shen, 2020).

Although outside forces can boost links and deliver key tech systems for new business owners, they might at the same time lead to split rules and deeper reliance on foreign setups - thus complicating cross-border operations and growth chances for countries in Central Asia. Because of this, how online startups develop across the region depends heavily not just on worldwide guidelines, but on power struggles and differing standards set by nearby giants like China and Russia.

5. The Digital Shift: Reframing Regional Integration

The literature presents a shift from government-led regional efforts toward faster-paced cooperation driven by tech advances and startup environments. Because of this, young digital founders - often outside formal institutions - are using new tools to build economic ties across borders.

Mattli's model shows integration works best when bottom-up interest, like from tech startups, meets active backing from institutions (Mattli, 1999). Digital systems, including high-speed internet and online computing services, open up opportunities for cross-border collaboration without relying solely on official treaties.

Central Asia's youth, digitally skilled workforce - combined with rising startup activity - opens fresh opportunities to view integration through interconnected systems. In Kazakhstan, Kaspi Shop recorded around $2.1 billion in online transactions during 2022, while its travel arm reached roughly $502 million that same year (CESD, 2024). Such platforms help local artisans and micro-businesses access broader domestic and cross-border markets. By 2024, IT Park Uzbekistan

hosted over 260 functioning tech startups. It operates a global accelerator alongside Plug and Play, turning the region into a focal point for new ideas in Central Asia. Such networks - covering business platforms and official startup centers - enable smoother cross-border collaboration while supporting digital commerce.

Digital trade across Central Asia is expanding fast. For instance, Kazakhstan's digital supply services hit $7.91 billion in 2024, topping other CAREC nations (Development Asia, 2025).

The region is also benefiting from the projects led by the World Bank's E-GATE initiative, which supports e-commerce by improving market access for small and medium firms - boosting their operations across the region (World Bank, 2024). With steady progress in policies, transport networks, and tech systems, this shift may evolve into broader digital integration among Central Asian countries.

6. Conclusion and Research Gap

The literature highlights deep-rooted obstacles to integration in Central Asia - divided identities hinder cohesion; autocratic governments limit cooperation; concerns over digital control complicate connectivity; poor infrastructure further slows progress.

Yet it underlines shifts fueled by digital systems, startup activity, and governance reforms. Notably, research from Krapohl and Fink (2013) shows current integration models rarely fit contexts in low-income areas; therefore, fresh theoretical tools are required to link EU analysis with other global cases. The authors emphasize distinct hurdles plus opportunities in places such as Central Asia or Africa and suggest cooperation between poorer nations tends to be viewed more critically than Western examples.

Studies show regional ties can boost profits while cutting expenses and prices - this also stirs stronger market rivalry. Grobbelaar & Meyer (2017) note such links expand product options and improve joint resource use. With these shifts, integration might now be seen through a more flexible, tech-informed, broader lens.

While past academic papers on Central Asian regionalism focused mostly on government-level collaboration, official trade pacts, or strategic partnerships, little has examined how young entrepreneurs using digital tools contribute from the ground up. Besides this gap, startup activity influencing shared online cultures, supporting emerging market routes, or creating international links lacks sufficient theoretical exploration. As a result, current scholarship stays scattered among fields, without combining insights about tech use, self-perception across borders, and shifts in regional power dynamics within one clear model.

This study aims to address the existing gap by focusing on how young entrepreneurs using digital tools can support regional unity. Furthermore, it highlights the importance of cross-country comparisons, aligning regulations across nations, along with shared investment in tech infrastructure. Rather than broad claims, the emphasis lies on building realistic pathways through innovation and connectivity. Thus, combining local enterprise with digital growth offers a working base for lasting cooperation while tackling deep-rooted challenges across Central Asia.

Section 2: Survey Analysis

1. Introduction

This section offers an overview of survey results gathered from selected participants in Central Asian countries, focusing on how digital tools can support regional links via youth-led enterprises. While highlighting main outcomes, it also explores obstacles alongside opportunities for tech-driven progress - guiding future actions and decision-making efforts. By examining present conditions in the digital startup environment, together with difficulties accessing funds and working across borders, the study clarifies what steps could strengthen collaboration.

2. Methodology

The study uses data from 76 participants actively working in digital entrepreneurship, education, or public administration. Since this research focuses on policy, the approach prioritizes insights from people directly linked to designing, implementing, or analyzing digital development initiatives in Central Asia.

The participants responded to 20 distinct questions; several included selectable answers tied to the study's focus. The respondents are primarily from Central Asia - specifically Tajikistan (36%), Kyrgyzstan (21%), Kazakhstan (20%), and Uzbekistan (19%). A large share of them are young entrepreneurs: 50% fell into the 25–34 range, while nearly 38% were between 18 and 24 years old (Figure 1), showing notable involvement from emerging professionals and young entrepreneurs.

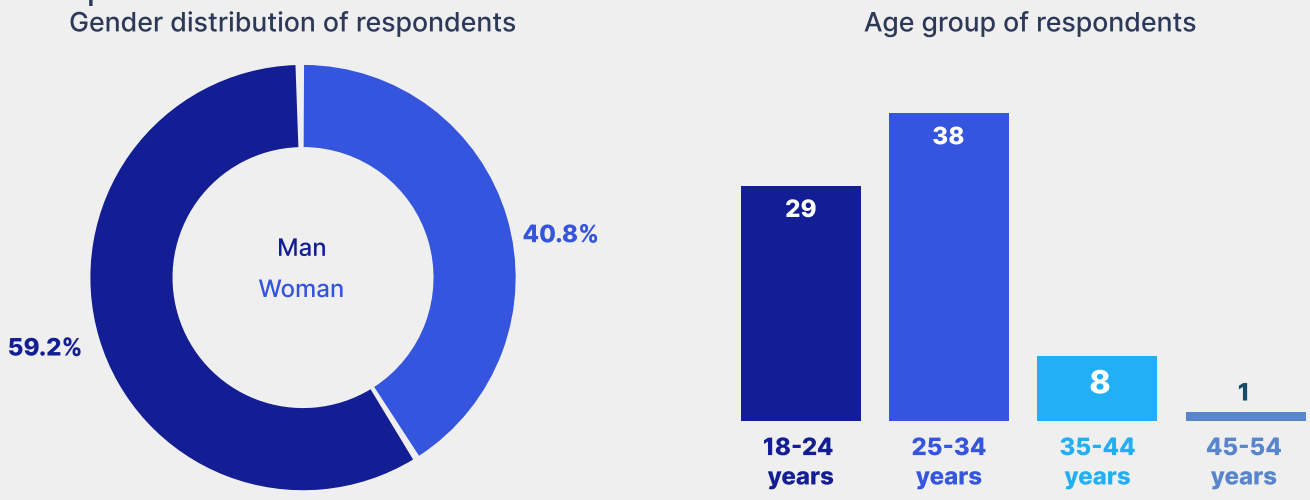

Figure 1: Survey Demographics

When it comes to professional roles, the sample is diverse, with the largest groups being Academia/Researcher/Professor (35.53%), Private-sector professional /

Entrepreneur (30.26%), and Young social entrepreneurs (11.84%). This arrangement of respondents provides a balanced perspective from a theoretical and practical viewpoint.

3. Key Findings on the Digital Entrepreneurship Ecosystem

3.1 Infrastructure and Access Barriers

The analysis of responses shows that significant infrastructure and access challenges impede the growth of digital entrepreneurship in the region. The top 5 barriers selected by respondents are:

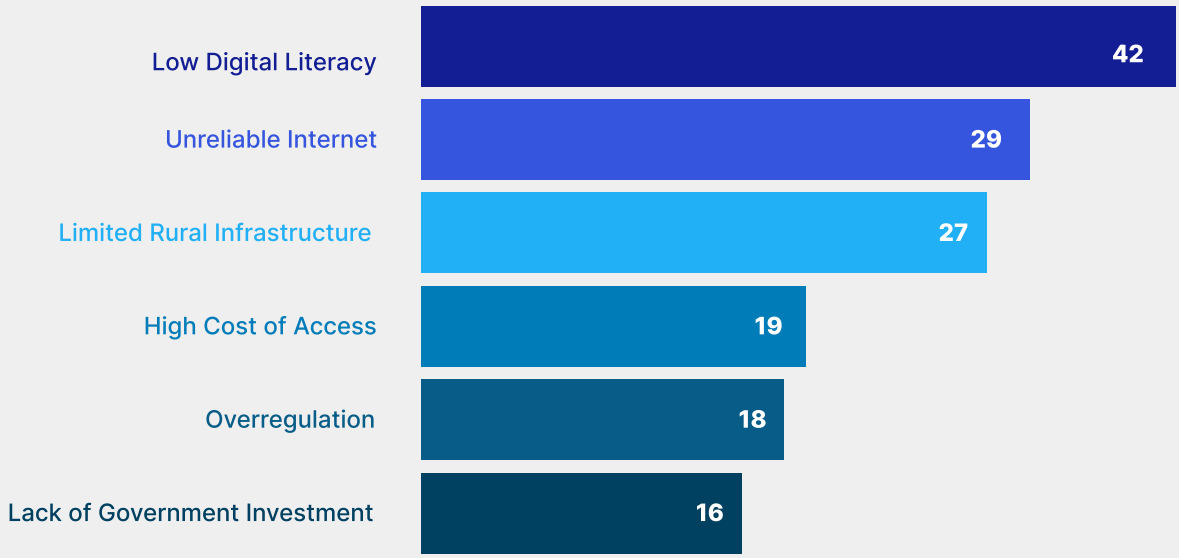

Figure 2: Infrastructure and Access Barriers

The results point to two main issues: poor physical setup - like internet connectivity and rural tech availability - as well as weak support systems, such as digital skills training. In addition, most answers describe getting essential resources - including money, startup help, or data - as either "Somewhat limited" (56.58%) or "Very limited access" (17.11%), indicating that even where basic structures exist, the surrounding environment remains underdeveloped and requires further funding.

3.2 Financial Inclusion and Ecosystem Maturity

As highlighted above, access to financial resources remains one of the significant constraints for young entrepreneurs. The most frequently cited barriers to financial inclusion are:

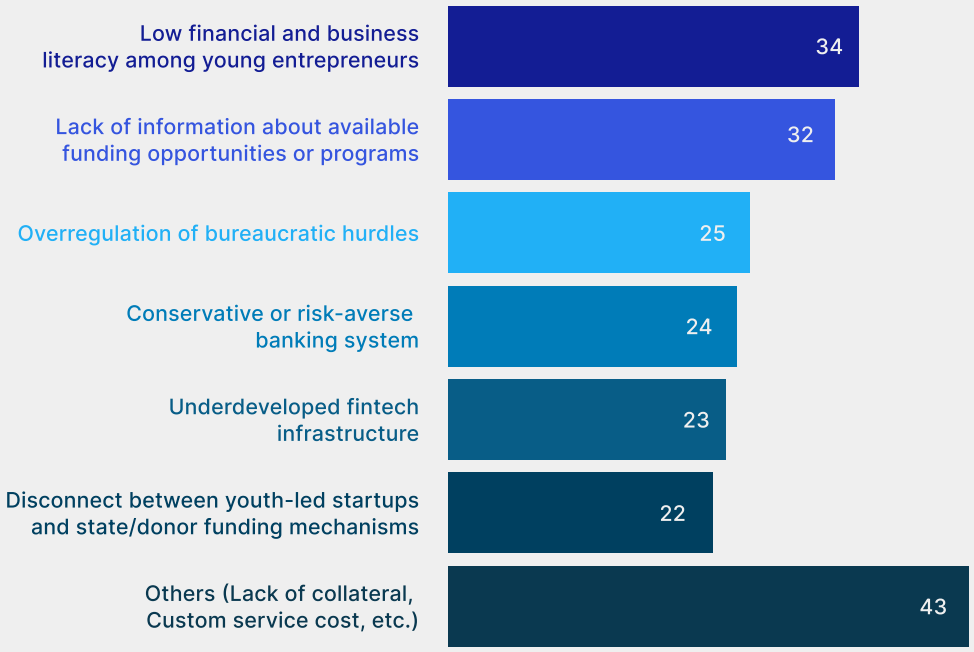

Figure 3: Infrastructure and Access Barriers

The majority of findings suggest poor financial literacy skills and information gaps, which also serve as structural barriers in linking young entrepreneurs to available tools and supplying them with vital know-how that plays an important role in developing the entrepreneurial ecosystem. A similar trend is reflected when looking at accessible banking options, where most participants gave ratings of “Fair” (39.47%) or “Poor” (38.16%).

Overall, the youth entrepreneurship environment is seen mostly as “slowly emerging with promising efforts” (57.89%), while a smaller group views it as “underdeveloped and fragmented” (21.05%) - suggesting progress, yet still unstable development.

4. Regional Integration: Potential and Challenges

4.1 Barriers to Regional Cooperation

Even though it's clear that Central Asia needs better regional connectivity, there are several non-technical problems that make it hard for digital entrepreneurs to work together. The three biggest problems are ecosystem fragmentation and trust:

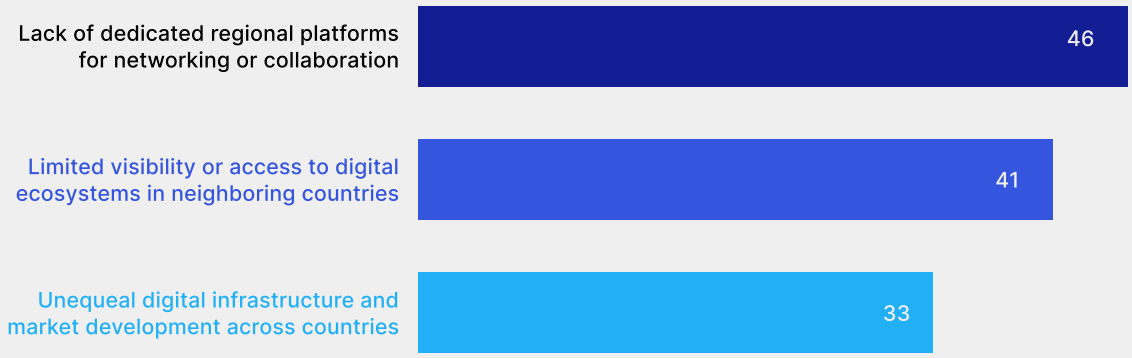

Figure 4: Infrastructure and Access Barriers

The first two points are the most important, which show that the region needs digital public goods and ways to connect people across borders to close the gap in information and collaboration. According to the respondents, the main problems are a lack of a single, visible, and trusted regional digital space and regulatory differences, which remain a concern (9.22%).

4.2 Viability and High-Potential Innovation Areas

A large majority of those who answered are hopeful about the role of digital tools in promoting integration. 40.79% of respondents stated that it is "highly possible and realistic" and 38.16% of them indicated it is "to a moderate extent". The areas of digital innovation that people think will help regional integration the most are:

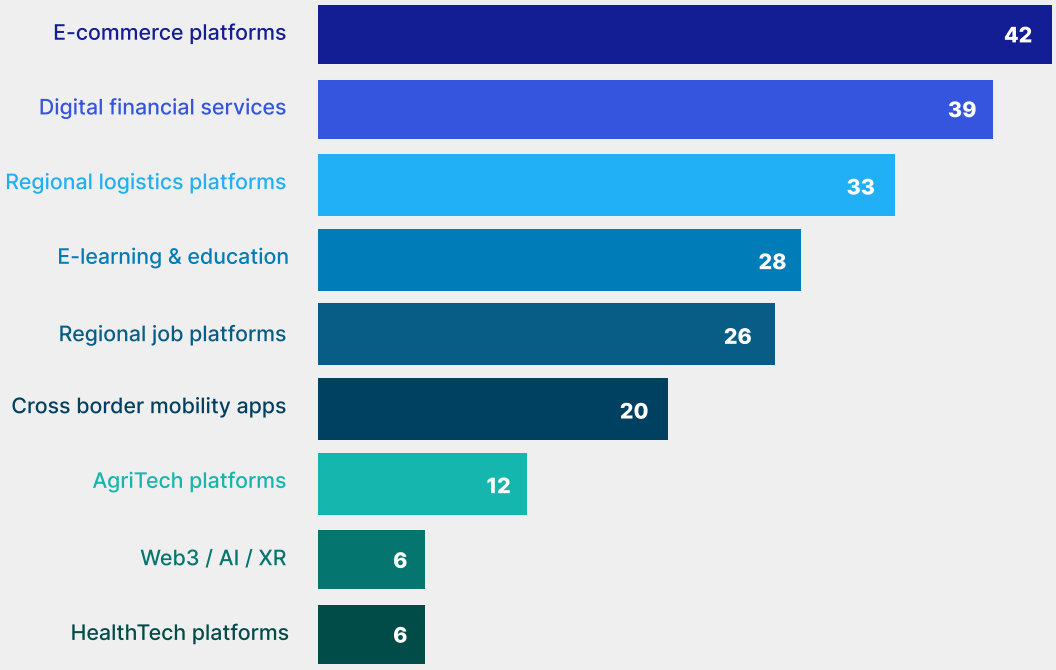

Figure 5: High-Potential Innovation Areas

This agreement demonstrates a market-driven need for solutions that facilitate the cross-border movement of goods, money, and services. This directly meets the needs of regional trade and connectivity. A minority of responses also highlight potential trends and areas of innovation in Web3, HealthTech, and AgriTech.

5. Policy and Institutional Landscape

5.1 Policy Effectiveness

Respondents express a lack of confidence in whether national policies and programs that help digital entrepreneurs will work. The majority of respondents (55.26%) selected "Neutral" while assessing the effectiveness and positive impact. In addition, the "Somewhat ineffective" and "Very ineffective" responses (26.31%) were much more common than the "Somewhat effective" and "Very effective" responses (18.42%). This means that the current policy frameworks are either not reaching the people they are meant to or are thought to have little effect.

Textual responses about certain policies that had a notable effect often said that tax breaks for IT companies were beneficial. Still, they also noted that bureaucratic complexity, overregulation, and outdated tax laws were inhibiting the growth of entrepreneurship.

5.2 Supporting Institutions

Professionals in the field see the support ecosystem as a mix of different stakeholders. Textual responses indicate that most of the support comes from the private sector and NGOs, such as international organizations (UN, UNDP, GIZ, World Bank) and local private companies (like Alif Bank, Zypl.ai, Kaspi, Freedom Finance, and Accelerate Prosperity). Respondents note that people discuss the government's role, but usually in the context of specific projects like IT Parks or state investment agencies, rather than as a general, helpful regulatory environment/body.

6. Conclusion

The survey findings suggest Central Asia’s digital environment has the potential to promote regional ties, driven by youth entrepreneurship initiatives. However, certain barriers must first be addressed - so growth can reach its full economic potential.

Suggested Steps for Action:

- **Focus on foundational digital skills and internet access:** major hurdles include poor understanding of technology alongside spotty, costly connections in remote regions. Because participation in online economic activity depends on

reliable tools and knowledge, efforts across the region should target these issues early - starting with education and stable networks where they're missing most.

- **A unified digital space for the region:** This aspect is widely seen as missing, so a shared sandbox or entrepreneurial hub would benefit the growing digital startups to test and launch their projects. It should operate independently, earn user confidence, and maintain clear rules. The system would support cross-border communication, data exchange, and collaboration. Greater transparency, stronger mutual reliance may follow from this setup.

- **Cross-border e-commerce, digital finance, and logistics:** These areas are tightly linked; improving one often helps the others. So instead of treating them separately, efforts should connect policies across borders. For instance, smoother digital payments can boost online shopping outcomes. Likewise, smarter shipping platforms may reduce delays significantly. When systems align naturally with user needs, adoption tends to follow without heavy pushing. Therefore, support works best when it follows existing trends rather than fights them.

- **Switching focus from incentives to improving the ecosystem user-friendly:** Tax benefits help, yet too much paperwork still blocks progress. Adjustments must simplify startup registration, licensing, or rule compliance for cross-border operations. That way, young founders spend less time on bureaucracy, more energy inventing solutions.

- **Leverage knowledge from global and business players:** National strategies are often seen as ineffective. To build sustainable plans, efforts must include lasting cooperation between the government and the private sector. This approach supports the private sector to gain agility plus apply specialized skills, whereas international organizations can contribute to financing along with oversight. Such joint approaches are key to accelerating progress within emerging systems.

This analysis marks a key starting point for grasping the current state of digital pathways in Central Asia. Findings suggest integration depends less on inventing technologies - more on fixing core issues like connectivity, confidence, and aligned regulatory frameworks. In addition, results highlighted concrete tools and systems required to support digital integration.

Section 3: Interview Analysis and Key Findings

This section consolidates findings from eleven expert interviews conducted across all five Central Asian countries, supplemented by knowledge from one United States–based scholar with expertise in Central Asian studies. Interviewees came from a wide array of professional backgrounds, including artificial intelligence and innovation policy; entrepreneurship; finance and investment; education; youth development; and foreign policy. Their collected experiences provide a multifaceted look at how the processes of digital transformation and youth entrepreneurship intersect with broader processes of regional integration unfolding in Central Asia.

The experts represent the leading public institutions, international organizations, and private enterprises, including Zypl.ai, AK Capital, Ipoteka Bank, the UNFPA in Bishkek, IT Park Uzbekistan, InVision University, the Ministry of Industry and New Technologies of Tajikistan, KIMEP University, and Team University.

The participants include Firuzjon Sodiqov (AI Council of Tajikistan / Zypl.ai), Muhammadjon Ismoilov (youth entrepreneur, Tajikistan), Azizbek Kurbonov (AK Capital, Uzbekistan), Azizbek Azizov (digital entrepreneur, Uzbekistan), Amangeldi Dzhumabaev (OSCE, Kyrgyzstan), Nuriddin Ishonkulov (IT ecosystem analyst, Tajikistan–Uzbekistan), Bakyt Kainazarov (UNFPA, Kyrgyzstan), Participant A (civil society leader, Turkmenistan), Shakhzod Narzullaev (IT Park Ventures, Uzbekistan), Andrew Wachtel (InVision University, Kazakhstan), and Wesley Hill (U.S. policy expert on Central Asia).

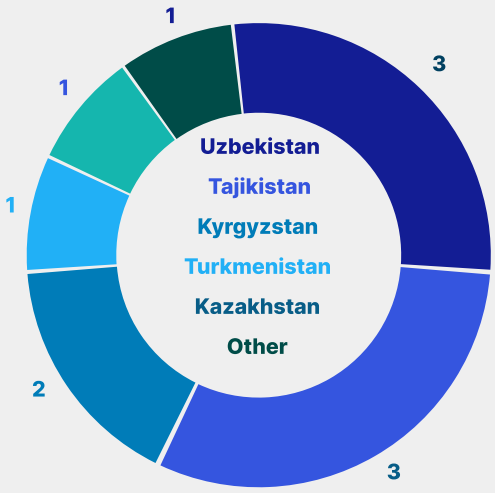

Figure 6: Number of Experts by Country

Taken together, these voices capture both policy-level perspectives and grassroots realities, offering a rare cross-sectoral understanding of the region's evolving digital landscape. The analysis that follows identifies the main thematic patterns that emerged from these interviews, including education and mentorship, digital adoption, regulatory environments, finance and investment, and regional cooperation, one important in defining the digital pathways shaping the future of integration in Central Asia.

3.1 Heatmap of emphasis across interview

The following heatmap synthesizes cross-interview salience by coding each transcript against seven recurrent themes, specifically Adoption > Access (trust, literacy); Compute/AI infrastructure; Digital payments & interoperability; Early capital & instruments; Education & mentorship; Regulatory harmonization; and Regional soft landing/programs on an ordinal 0-3 scale (–/●/●●/●●●). Three dots reflect a higher emphasis given by a given expert to a given theme. In this way, it is possible to compare convergences and divergences across perspectives.

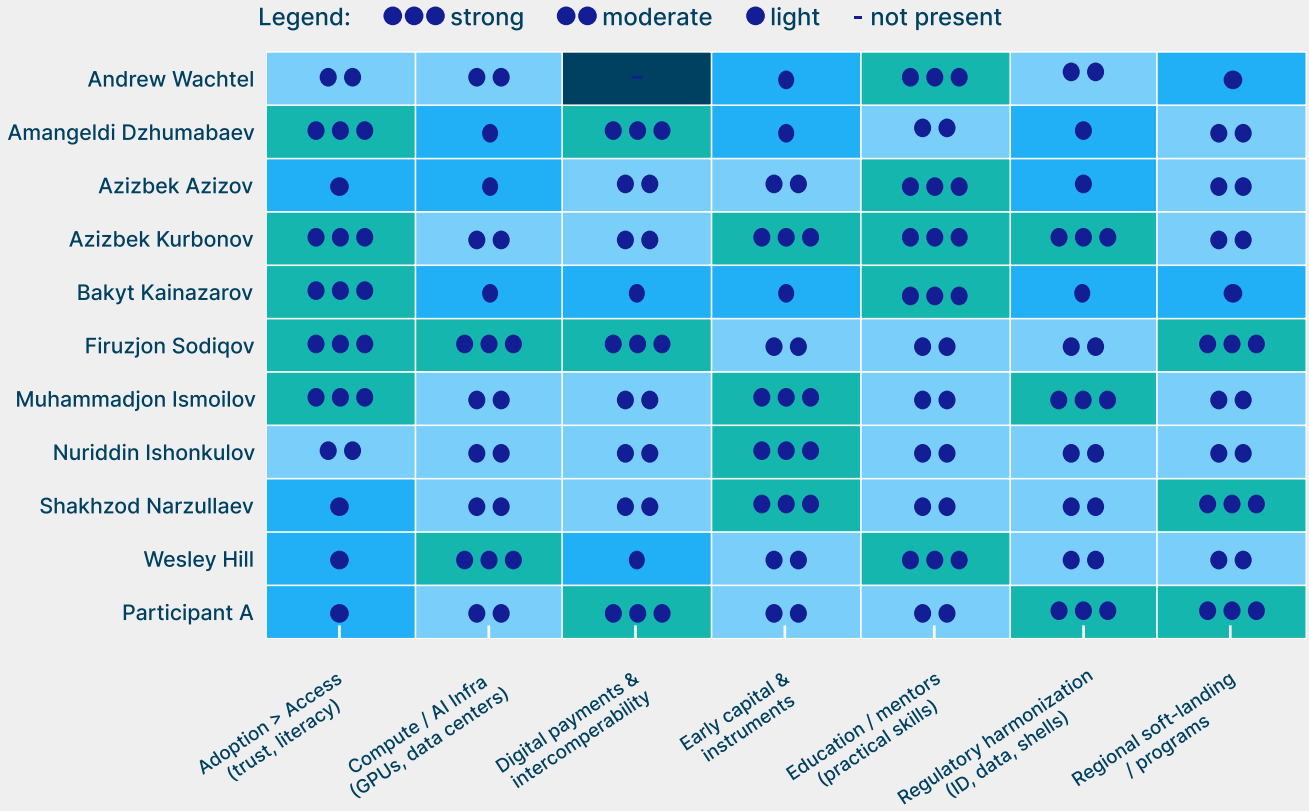

Figure 7: Heatmap of emphasis across interviews

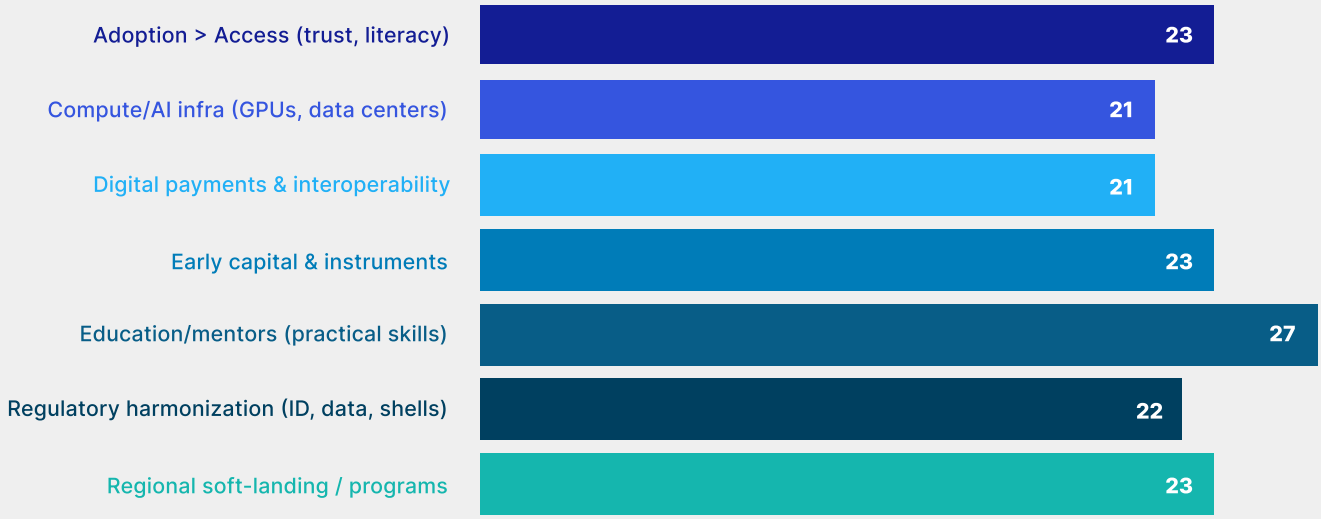

Figure 8: Total score (0-3 sum)

Following the heatmap and theme scores, several patterns are unambiguous. Education & mentorship (practical skills) is the most consistent lever (coverage 11/11; 11/11 at ≥●●; total = 27; avg = 2.45). Through interviews, respondents emphasize the need for applied training, operator-level mentoring, and student co-creation as a reliable pathway to deepen entrepreneurship pipelines and raise regional competitiveness in Central Asia: “students need hands-on digital skills” (Andrew Wachtel; Bakyt Kainazarov; Shakhzod Narzullaev; Azizbek Azizov), “mentors with startup experience” (Azizbek Kurbonov; Shakhzod Narzullaev; Participant A), and “youth as co-designers” (Bakyt Kainazarov; Andrew Wachtel).

Regional soft-landing / programs also register strongly (coverage 11/11; 9/11 at ≥●●; total = 23). Reciprocal IT Park arrangements, accelerator pipelines, and cross-border hubs are indicative that integration is already advancing through business infrastructure - beyond diplomacy alone. Intensity varies by context, with rapid gains where institutional partners and deal flow are present, with further scale contingent on reduced legal and administrative frictions. It is framed as: “We have moved from talking about integration to doing it”. Shakhzod Narzullaev described joint national stands under a single regional brand and a “single-window” entry to Central Asian markets, i.e., practical, ongoing co-operations. Firuzjon Sodiqov detailed IT-park reciprocity and programs such as Silk Way Accelerator that are already operationalizing cross-border scaling. Nuriddin Ishonkulov reinforced the shift “from talk to traction,” noting hubs/IT parks as more effective than generic NGO programs for cross-border deals.

Across interviews, a robust mid-tier of enabling conditions is visible across all interviews, albeit with variable depth:

- Adoption > Access (trust, literacy): coverage 11/11; 7/11 at ≥●●; total = 23. The adoption gap, such as trust, digital literacy, and paper-based habits, is pervasive but not uniformly acute.
- Early capital & instruments: coverage 11/11; 8/11 at ≥●●; total = 23. Demand focuses on “smart first checks” combined with operator mentorship, not large, undirected grants.
- Regulatory harmonization (ID, data, shells): coverage 11/11; 8/11 at ≥●●; total = 22. Widely recognized as the “next frontier” to convert pilots into scalable cross-border markets (e-signatures, data flows, startup legal shells, sandboxes).

Technical and financial rails are not a niche within this corpus:

- Compute/AI infrastructure (GPUs, data centers): coverage 11/11; 8/11 at ≥●●; total = 21. A strategic differentiator where the capacity exists; less immediate for early-stage startups elsewhere.
- Digital payments & interoperability: coverage 11/11; 8/11 at ≥●●; total = 21. Domestic rails are relatively mature, such as QR / e-wallets, while seamless cross-border links are the next integration task. It is seen as “solved at home, missing abroad”; next-stage integration task.

In sum, the heatmap points out an explicit sequencing for action:

- Consolidate the education-mentorship core that underpins talent pipeline quality.
- Expand soft-landing platforms with traction in place to convert momentum into repeatable cross-border deal flow;
- Close adoption, early capital, and regulatory gaps to unlock scale and reduce friction;
- And, simultaneously with this, implement specific enhancements to computing capacity and cross-border payments based on where they would catalyze specific regional use cases.

Together, these steps align near-term program design with longer-horizon system change, translating the widely shared priorities into an executable pathway for regional integration in Central Asia.

3.2 Cross-Case Comparative Analysis

Across the eleven interviews, the center of gravity shifts from building infrastructure to enabling adoption, capability, and operating rules. Uzbekistan and Kazakhstan increasingly function as structural anchors - policy "rails," active hubs, and early capital. At the same time, Tajikistan and Kyrgyzstan surface the frictions that must be solved for scale (power reliability, payments, and identity interoperability, thin seed finance, and operator-level mentorship). Yet the same Tajik/Kyrgyz cases also provide actionable pathways: performance-focused infrastructure, trust-by-design payments/ID, reciprocal soft-landing into UZ/KZ, and practice-first education linked to founder services.

Digital infrastructure: from presence to performance

Across cases, experts distinguish between "coverage" from "quality". In Tajikistan, Muhammadjon Ismoilov focuses on the fact that "in cities, connectivity and power are relatively stable; outside them, speeds drop, costs rise, and outages are common". This reframes the bottleneck as performance and affordability rather than just reach. He also points to active fixes: "a push on fiber backbones and 4G/4.5G… universal service fund projects… shared-infrastructure rules, and community Wi-Fi pilots" with the caveat that impact depends on transparent rollout and rural prioritization. Uzbekistan shows a similar shift in constraints. As Azizbek Kurbonov puts it, "penetration is good… even in regions… fiber optic internet," yet: there are some problems… with electricity reliability," and "we do not have GPUs in Uzbekistan". This signals that the limiting factor for advanced work is now stable power and compute rather than last-mile access. Shakhzod Narzullaev adds that "98% of our country is covered by fiber-optic internet… every school has internet", but reliability still dips "sometimes even in the city center… in concrete buildings… or on the subway", highlighting a next step focused on stability, latency, and last-mile quality. He also contrasts tools like Starlink in Kazakhstan as a differentiator in how countries are solving similar problems. From Kyrgyzstan,

Amangeldi Dzhumabaev's lens is institutional: Enterprise Support Centers have successfully begun digitizing both training - via an online mini-MBA - and service delivery workflows via Bitrix CRM, yet the urban–rural gap persists - “in the city... more opportunities... in Talas, in Naryn, there are not so many” - underscoring why performance and inclusion must advance together.

At the same time, the region is experimenting with “infrastructure depth,” not just reach. Firuzjon Sodiqov flags Tajikistan’s June 21, 2025, launch of the Green AI Data Center, “licensed for NVIDIA H200 chips... the first in Central Asia”, as a step-change with regional spillovers if federated and shared across borders.

This squares with the broader strategic view captured by multiple interviewees: treat energy-anchored compute as a cross-border asset and avoid AI-hype capex without institutional readiness - i.e., build reliability, governance, and operator access before chasing scale. In short, while baseline coverage has improved markedly, the comparative advantage now hinges on performance (power stability, resilience, low latency), depth (local/regional compute), and inclusion (closing the urban–rural usability gap). Central Asia’s digital story is moving from laying pipes to making them reliably fast, affordable, and productively used.

Adoption over access: trust, rails, and habits

With the “pipes” steadily improving, the binding constraint has shifted from physical access to behavioral adoption built on trust, literacy, and predictable “soft rails.” Young expert Muhammadjon Ismoilov, from Tajikistan, argues that the regional scale now hinges on “dependable high-speed internet and power, multi-cloud access, and compliant online payment rails... plus a clear legal system and fair tax rules for cross-border data, identity, and invoicing.” He also maps a practical agenda: harmonizing payments and digital identity, enabling e-invoicing, and setting up joint IXPs/cloud hubs alongside founder-mobility tools.

From Kyrgyzstan, Amangeldi Dzhumabaev shows how domestic rails can work: “QR code is very, very popular here... it is zero fee”, while flagging the next barrier: fragmented platforms and data sovereignty; His remedy is a “common wallet” with Kazakhstan and Uzbekistan and locally owned marketplaces that keep analytics at home.

Several respondents stress that adoption is also a social process. Bakyt Kainazarov pushes institutions to treat youth as ‘equal partners,’ not passive beneficiaries, because bureaucracy ‘can be complicated’ and slows real usage of tools and programs.

In Uzbekistan, Azizbek Kurbonov reframes early-stage behavior realistically: many young founders and the entrepreneurship scene in Uzbekistan are still at a “basic stage,” so micro-grants, operator-led mentorship, and opportunities to ‘experiment, fail, and grow’ matter more than big grants or theoretical training.

Echoing this shift, Firuzjon Sodiqov and other voices from Tajikistan say the region has moved from ‘build’ to ‘get it used’, with unified QR payments and startup-law work as adoption enablers rather than endpoints. Stepping back, Wesley Hill’s governance lens complements the behavioral story: prioritize a ‘digital-state' that lowers friction and makes it “easy to do, easy to try again,” so experimentation becomes habit. These are the conditions that turn connectivity into durable, trusted usage across borders.

Finance and soft-landing: detached, but working

Capital geography remains uneven. Nuriddin Ishonkulov spells out the practical calculus: Tajik founders prefer to register in Uzbekistan because “it is easier to get money here… easier to get a visa… taxation is 7.5%, which is very low,” plus ready access to “local venture companies, platforms, accelerators,” whereas in Tajikistan “reporting, taxation, and approvals are not easy” and “everything is very tight with delivery and logistics”. He also adds that “Kazakhstan is even better” in terms of investment infrastructure and AI startup success. Additionally, Nuriddin Ishonkulov adds that parks and hubs, not NGOs, are the real engines of cooperation: IT parks are “built around the specific needs of the business,” produce “tangible, measurable results,” and enable incentives like visas, tax breaks, and cross-border incubation—i.e., working “soft-landing” rails.

From Uzbekistan’s side, Shakhzod Narzullaev describes the next step as a regional operating model: a “single-window” entry to a ~100M-person Central Asian market, backed by co-financing and One-Stop/ZeroRisk services to open a company, bank, and tax ID remotely, and expanded through joint stands under a shared brand at global expos. On program design, VC leader Azizbek Kurbonov is blunt that one-off cohorts do not change the map: ADB-type programs were “just one batch, one time — not enough”; what is needed is a recurring, multi-country format led by “an institutional player doing rounds of introductions in 4–5 countries,” with “physical linkage” so founders “see each other more” and convert meetings into customers and co-investments.

At the policy edge, Wesley Hill and Firuzjon Sodiqov point to mechanisms that already reduce friction: IT-park reciprocity and accelerator pathways (e.g., Silk Way) that let firms focus on product and BD rather than border formalities. On the demand side, Kyrgyzstan’s zero-fee national QR rails work domestically, but Amangeldi Dzhumabaev argues a regional “common wallet” is needed to turn those rails into cross-border commerce.

Education, youth skills, and operator mentorship (doing > knowing)

Across cases, experts converge on practice-first learning that makes students ship real products with operator mentors, not just pass courses. Andrew Wachtel is blunt that the “traditional four-year undergraduate education… has no future”. He urges iterative pipelines where students “actually do something” and cycle learn →

→ build → launch, ideally with Erasmus-style mobility co-funded by ministries to normalize cross-CA placements. From Uzbekistan's policy side, Azizbek Azizov calls to strengthen "practical, skills-based education" and to "create accelerators and incubators within academic institutions", which would pair university labs with public–private partnerships and regional projects for payments, talent exchange, and joint builds. Kyrgyzstan's Bakyt Kainazarov reframes youth as co-producers: "youth as equal partners, not beneficiaries," describing cross-border ecothons where students "used Telegram to intensify border-village trade", small but concrete proofs that micro-grants + simple platforms convert skills into outcomes.

In Tajikistan, Firuzjon Sodiqov maps the upstream pipeline ("2019 AI academy/lab… 2022 national AI strategy to 2040… AI as a new subject in 100 schools… ~10 universities with AI majors") but flags the commercialization gap: "What is missing is strong acceleration programs, where we can identify youth talents across the country, give them opportunities to develop their skills, and do startups. Because in the end of the day…the founder of a startup matters a lot". He also warns that "the quality of trackers/instructors is a big doubt", underscoring the need for operator-led accelerators and higher-caliber mentors to translate training into exports.

Moving on, Muhammadjon Ismoilov makes the recipe explicit: "hands-on digital skills… taught by practitioners… plus mandatory internships and capstone startups," and, critically, harmonized e-identity/e-invoicing so skills translate into invoices and users across borders.

From the ecosystem vantage, Shakhzod Narzullaev highlights co-financed programs (One-Stop/ZeroRisk) and joint expo stands under a single regional brand as "learning-by-selling" classrooms for young teams. Wesley Hill zooms out: mass, practice-based education and an "easy to fail, easy to restart" environment accelerate learning loops, while Amangeldi Dzhumabaev urges localized hubs (CRM-backed services, etc.) so SMEs outside capitals can adopt tools with nearby, practical help. Net-net: the region's durable lever is not more lectures, but it is applied training, operator mentors, and cross-border placements that make doing the syllabus.

Regional integration: from slogan to operating system

Across interviews, experts describe integration as something that now runs on rails, not rhetoric. Framed as "we have moved from talking about integration to doing it," Shakhzod Narzullaev points to joint national stands under a single regional brand and a practical "single-window" entry into Central Asian markets: hubs routinely host each other's teams, co-run expos, and co-finance deals, so pipeline building is continuous rather than event-based.

Firuzjon Sodiqov adds the firm-side mechanics already at work: IT-park reciprocity, the Silk Way Accelerator, and park residency that lets a Tajik startup

land benefits in Uzbekistan (and vice versa), which turns brand-level goodwill into tax, customs, and mentoring advantages founders actually use.

Nuriddin Ishonkulov reinforces the shift “from talk to traction,” noting that hub/IT-park platforms are delivering more cross-border deals than generic NGO programs. From the investor’s lens, Azizbek Kurbonov argues to scale “Soft-Landing 2.0”: multi-country, recurring onboarding with warm intros and shared mentor pools. Azizbek Azizov articulates the payoff: a unified digital space “provides larger market access, facilitates cross-border payments, and supports exchange of talent and knowledge,” converting five small markets into a credible ~100-million demand story.

Wesley Hill situates this in longer cycles: C5/Turkic formats are birthing sectoral institutions (universities, youth programs), the kind of Europe-style integration that compounds over years, not months. Andrew Wachtel and Amangeldi Dzhumabaev press for the enabling rules (mutual recognition for credentials and e-signatures, light-touch sandboxes, and founder mobility) so student and SME projects can move as easily as expos do. Participant A’s regional view aligns: when VAT/remittance rules and identity rails converge, banks and SMEs behave regionally by default.

Overall, Central Asia’s integration is becoming an operating system of interoperable hubs, soft-landing pathways, and shared metrics with legal harmonization (ID, data, taxes) as the next upgrade to keep the system fast and founder friendly.

Strategic cautions: governance before trends

Wesley Hill warns against over-investing in AI and digital infrastructure without ensuring institutional and societal readiness. He notes that “it is possible to over-invest in new infrastructure... the belief in AI as a panacea worries me the most.” While Central Asian governments are increasingly aware of their advantages, “an educated population and strong energy potential...they need to work more on those advantages because [they] have to think about all of the parts of civil society and the business environment, et cetera” to make those investments effective. He drew a historical parallel with “Ghana and Côte d’Ivoire in the 1990s,” which spent heavily on internet development but failed to benefit because “the wider economy and civil society were not able to take advantage of it.” Their early infrastructure eventually became underused, turning into “wasted spending.”

Wesley Hill strongly notes that the same risk applies to AI: no amount of technological spending can substitute for “updated energy systems, functioning water infrastructure, or a healthy business environment.” Over-investment driven by hype, he suggested, could lead to an AI bubble similar to the dot-com crash of the early 2000s. However, he notes that “I don't think there's an imminent disaster. I don't foresee that happening” in Central Asia.

Comparative read-out (positive trajectory for TJ/KG)

Uzbekistan and Kazakhstan are consolidating the “strong rails” (policy, hubs, early VC) and faster education–industry coupling that attracts mobile students and founders. Moving on, Tajikistan and Kyrgyzstan are well-positioned to turn momentum into scale by deepening adoption and trust, expanding operator-mentor depth, and streamlining simple, online-ready tax/ID/payment rails. Near-term, reciprocal soft-landing into UZ/KZ accelerates market access for TJ/KG teams even as both countries expand their own founder services that set up a complementary, region-wide growth dynamic (e.g., Tajik founders using UZ residency; KG youth co-designing cross-border pilots).

Conclusion

The interviews taken together depict a region that has largely moved beyond “laying pipes” toward the harder work of making digital systems usable, trusted, and regionally interoperable. Education and operator-led mentorship emerge as the central lever for turning young people into founders, while reciprocal soft-landing mechanisms and IT-park–based cooperation translate political goodwill into practical cross-border deal flow. Uzbekistan and Kazakhstan increasingly anchor the regional ecosystem with policy rails, hubs, and early capital; Tajikistan and Kyrgyzstan surface the frictions-which, if resolved, would power reliability, payments, identity, and thin seed finance-unlock scale rather than simply add new pilots. In all cases, experts converge on a cautious but optimistic trajectory: infrastructure depth-compute, payments must be sequenced with regulatory harmonization, governance reforms, and adoption-focused program design to avoid hype-driven misallocation. Central Asia's digital integration is already underway as an operating system of interoperable hubs, talent pipelines, and emerging common rules.

Section 4: Comparative Assessment of Digital Integration (Based on Secondary Data)

To situate the country case studies within a shared regional landscape, we conducted a comparative assessment of digital integration in four Central Asian states: Tajikistan, Kyrgyzstan, Uzbekistan, and Kazakhstan. This assessment draws on secondary data, as well as recent national developments in the region. Countries were compared across five dimensions that recur throughout our interviews and literature review: 1) Digital infrastructure, 2) Adoption vs. access, 3) Finance and investment, 4) Youth skills and mentorship, and 5) Regional cooperation.

Overall, Kazakhstan and Uzbekistan emerge as structural leaders in the region. Both countries have invested heavily in backbone infrastructure and data centers, built comparatively stronger financial and startup ecosystems, and begun institutionalizing mentorship through incubators, accelerators, and university-based programs. These features position them as early hubs for regional digital activity and potential anchors for cross-border initiatives.

At the same time, Tajikistan and Kyrgyzstan are rapidly converging in several critical areas. Although their infrastructure foundations and financial ecosystems remain at earlier stages of development, both countries are demonstrating strong upward momentum: expanding connectivity, widening access for underserved groups, launching dynamic youth-centered digital skills programs, and actively joining regional and cross-border initiatives. Their contribution to the regional digital pathway is increasingly defined not by current scale, but by the speed, ambition, and direction of their ongoing progress, which positions them as important emerging actors in Central Asia's integration landscape.

Figure 9 presents a radar chart that visualizes this comparison across the five dimensions for each country. The figure highlights where individual states are currently more advanced and where further improvement is needed. In the next section, we examine each country in turn, tracing how these aggregate patterns translate into specific policies, institutions, and initiatives on the ground.

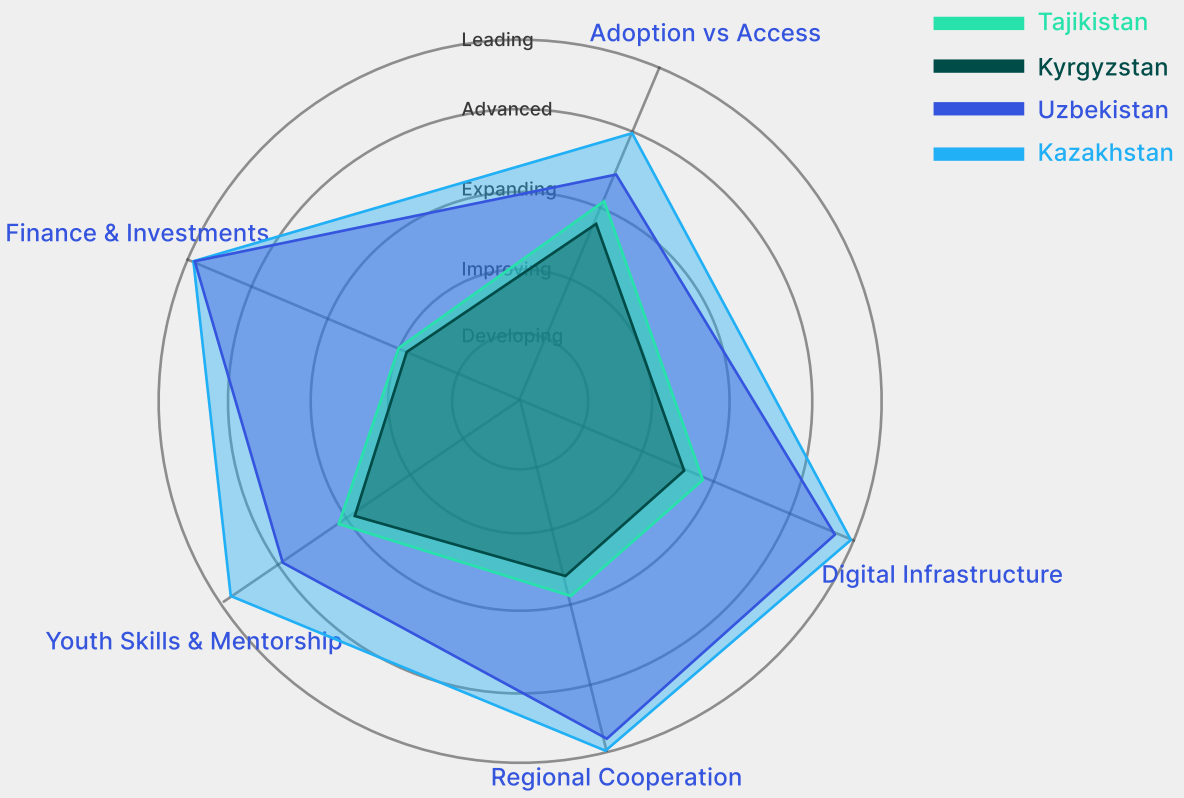

Figure 9: Comparative Assessment of Digital Integration Across Central Asia (Radar Chart)

4.1 Case Study: Digital Infrastructure in Central Asia (2025 Snapshot)

Tajikistan and Kyrgyzstan: From Connectivity to High-Value Digital Ecosystems

Tajikistan has moved from gradual development to rapid digital acceleration. The country adopted Central Asia's first national AI strategy in 2022, setting an ambitious target of generating 5% of GDP from AI by 2040 (AI Council of Tajikistan, n.d.). In October 2025, Tajik company Darya.ai and India's Yotta Data Services signed a landmark agreement to build a Green AI Data Center in Darvoz, the first large-scale facility of its kind in the region (Yotta Data Services Pvt Ltd., 2025). Tajikistan also hosted AI Conf 2025 in Dushanbe, bringing together over 100 global AI leaders from 20 countries, marking a significant step in positioning the country as an emerging AI and digital-policy hub.

Kyrgyzstan is also making bold, innovation-driven advances. Turgunbaeva (2025) reports that it became the region's first country to pilot both a national stablecoin and a Central Bank Digital Currency through a collaboration with Binance. In August 2025, the government passed the Digital Code, a comprehensive law governing AI, data protection, and e-governance (United Nations Development Programme, 2025). According to the State Enterprise Tunduk (n.d.), earlier this year, the country expanded its state portal of electronic services and related

online access, and further strengthened the Tunduk interoperability system, which enables secure data exchange among government agencies, local self-government, and commercial organisations nationwide.

Uzbekistan and Kazakhstan: Anchors of Regional Digital Transformation

In Uzbekistan, policy-driven investments are shaping a rapidly advancing ecosystem. On 25 October 2025, Uzbekistan and Saudi Arabia announced a US$1500 million hyperscale data center in Tashkent's IT Park, beginning at 12 MW and scaling to 500 MW - one of the region's most significant future AI and cloud-computing assets (Pivot, 2025). In September 2025, Uzbekistan hosted ICT Week 2025, bringing together more than 20,000 participants from 50 countries and highlighting deepening regional collaboration in AI, fintech, and cybersecurity (Primova, 2025). Meanwhile, according to the China Academy of Information and Communications Technology (2023), under the Digital Uzbekistan 2030 roadmap, the country is steadily expanding digital infrastructure, including internet broadband, mobile network coverage, and aims to further widen connectivity across regions.

Kazakhstan remains the regional frontrunner. It ranked 24th out of 193 countries in the 2024 UN E-Government Development Knowledge Base index, maintaining the strongest position in Central Asia. The new Akashi Data Center in Astana, a Tier IV hyperscale facility now under construction, will host Google Cloud infrastructure and significantly expand the nation's total rack capacity (Chaudhury, 2025). Kazakhstan's long-standing digital governance reforms, combined with large-scale cloud investments, make it a core anchor for the region's evolving digital landscape.

4.2 Case Study: Adoption vs. Access - Trust, Literacy, and User Confidence in Central Asia

Tajikistan and Kyrgyzstan: From Connectivity to Capability

Tajikistan has made visible progress in strengthening the foundations of digital adoption. Internet penetration has increased from 41% in 2023 to nearly 57% in 2025, according to DataReportal (2025). The World Bank's $39 million Tajikistan Digital Foundations Project (2024–2028) is expanding rural broadband and training more than 28,000 citizens in digital and cybersecurity skills (World Bank, 2024). These efforts mark a transition from ensuring basic access toward building digital readiness and trust, particularly in underserved regions.

A similar upward trajectory is evident in Kyrgyzstan. The country currently ranks 86th in the 2024 Network Readiness Index that reflects gradual improvement in digital maturity (Portulans Institute, 2024). The Ministry of Digital Development's five-year Digital Transformation Program (2024–2028) places citizen-centered

e-government and AI readiness at the forefront of national policy (Ministry of Digital Development of the Kyrgyz Republic, 2024). Together, these changes demonstrate how Kyrgyzstan is strengthening both access and confidence.

Uzbekistan and Kazakhstan: Moving Toward Systemic Digital Adoption

Uzbekistan and Kazakhstan show how improvements in infrastructure and skills can translate into widespread, systemic adoption. Uzbekistan ranks 81st globally in the 2024 Network Readiness Index and performs strongly within the access sub-pillar (Portulans Institute, 2024). According to reports by IT Park Uzbekistan (2022) and Uzcard (2025), national initiatives such as 'One Million Uzbek Coders' and 'Digital Literacy Without Borders' have collectively trained more than 1.5 million people in coding and digital fundamentals. These programs have embedded digital literacy as a mainstream component of Uzbekistan's innovation strategy that accelerates behavioral adoption across society.

Kazakhstan continues to lead the region in digital capability. Ranking 61st worldwide in the 2024 NRI, Kazakhstan maintains strong governance, readiness, and usage indicators (Portulans Institute, 2024). As of April 2025, national digital literacy among citizens aged 16–74 reached 93%, one of the highest rates in Eurasia (Omirgazy, 2025). This provides a robust foundation for advanced e-government services, AI integration, and citizen-facing innovation.

Across all four countries, findings from interviews reinforce this shift: Central Asia is entering a phase where access is no longer the primary constraint. Instead, the region's digital future depends on deepening adoption: strengthening trust, digital literacy, and the social systems that support confident, everyday use of technology.

4.3 Case Study: Finance and Investment in Central Asia

Tajikistan and Kyrgyzstan: Laying the Groundwork for Risk Capital

In Tajikistan, momentum is clearly building, even as access to early-stage capital remains constrained. By 2024, the European Bank for Reconstruction and Development (EBRD) had surpassed €1 billion in cumulative investment in the country, with nearly €43 million (around 9%) directed toward financial institutions and fintech initiatives (Trend News Agency, 2025). According to Business Wire (2025), venture capital inflows reached approximately US $4.5 million, still modest in absolute terms but signaling that Tajik startups are beginning to attract attention from both local and regional investors. These early signals suggest a gradual shift from donor-led finance toward a more diversified investment landscape.

Kyrgyzstan's financial ecosystem is likewise expanding. According to the article

by The Times of Central Asia (2025), foreign direct investment grew by 44% year-on-year in early 2025, totaling US$288 million in the first quarter alone. A recent boost to the country's investment climate came with the adoption of the updated Law on Investments in 2025, which strengthens legal protections for investors; notably, it provides large investors with up to ten years of tax stability under the new framework (Kabar News Agency, 2025). At the same time, the U.S. State Department's Investment Climate Report 2025 notes that, despite these policy gains, the overall volume of digital-sector investment still lags behind the country's infrastructure and innovation needs (U.S. Department of State, 2025).

Uzbekistan and Kazakhstan: Regional Hubs for Venture and Digital Investment

Uzbekistan and Kazakhstan are emerging as Central Asia's leaders in digital finance and investment. In Uzbekistan, the ecosystem has expanded rapidly. According to the UNCTAD World Investment Report 2025, the country attracted US$900 million in foreign direct investment into its digital economy - among the highest inflows in the region (UzDaily, 2025). The Startup Genome (2025) report identifies more than 12 active venture capital funds with a combined asset base of US$136 million, representing a tenfold increase over just five years. Government planning is similarly ambitious, with targets to double fintech investment by 2030 and sustain 20% annual growth in the fintech market, as reported by UzDaily (2025).

Kazakhstan continues to function as the region's principal financial hub. Fintech investments have quadrupled over the last five years, now accounting for nearly 40% of all venture capital deals in 2025, according to Nakispekova (2025). The national ICT market, valued at roughly US $1.45 billion in 2025, is projected to reach US $2.28 billion by 2030, with an estimated annual growth rate of 9.5% (Mordor Intelligence, 2025). This combination of capital depth, targeted fintech growth, and a sizeable ICT market positions Kazakhstan as a key anchor for regional co-investment and cross-border digital ventures.

Insights from expert interviews reinforce this picture: Uzbekistan and Kazakhstan are at the forefront of efforts to build coordinated regional co-investment platforms and harmonized startup regulations. If these initiatives mature, they could significantly increase private-sector participation across Central Asia and enable Tajik and Kyrgyz entrepreneurs to plug into a broader, region-wide investment corridor.

4.4 Case Study: Youth Skills, Education, and Mentorship in Central Asia

Tajikistan and Kyrgyzstan: Expanding Foundations Through Partnerships and Structured Programs

Although Tajikistan is not yet ranked in the People Pillar of the 2024 Network Readiness Index, its youth entrepreneurship ecosystem is gaining substantial momentum. In October 2025, the EBRD and SPCE Hub launched MicroMentor.tj, the country's first digital mentorship platform connecting young entrepreneurs with experienced global business mentors. Complementary initiatives, including UPSHIFT Tajikistan, UNDP's Youth Innovation Labs, and the IOM–UNICEF Pathways to Employability Program (2024–2026), are equipping thousands of young people with digital entrepreneurship, employability, and job-readiness skills(UNICEF, 2023. Most recently, the launch of Project Soro, Tajikistan's first program integrating AI into education with UNICEF support, marks a significant step toward modernizing secondary learning and fostering early digital innovation (UNICEF, 2025).

Kyrgyzstan's progress is shaped by structured national strategies. Ranked 80th in the 2024 NRI People Pillar, the country demonstrates steady improvement in human capital development (Portulans Institute, 2024). Additionally, according to Enactus Kyrgyzstan (n.d.), the government's Youth Entrepreneurship Support and Development Programme (2025–2028) prioritizes digital literacy, business planning, and mentorship opportunities for emerging founders. In parallel, regional and international programs play a catalytic role. The Women ICT Frontier Initiative (WIFI DX), organized by ESCAP and ITC, trained over 200 women entrepreneurs in Bishkek in 2025, which supports building a new cohort of national trainers capable of delivering sustained digital-transformation mentorship (Kabar News Agency, 2025).

Uzbekistan and Kazakhstan: Building Systemic Pipelines for Talent and Entrepreneurship

Uzbekistan's youth entrepreneurship and digital education landscape is expanding quickly under strong policy direction. Although ranked 91st in the 2024 NRI People Pillar, the country's trajectory is strongly upward (Portulans Institute, 2024). The Youth Business Programme 2025–2027 aims to reach 350,000 young people and support the creation of up to 100,000 new jobs through startup financing, digital skills training, and structured mentorship (Yuz, 2025). Events such as the Navruz Hackathon 2025 have become significant incubators for young developers, according to IT Park Uzbekistan (2025), combining technical learning with investor engagement and mentorship through IT Park Uzbekistan.

Kazakhstan continues to serve as the region's systemic leader in youth skills and capacity-building. Ranked 53rd in the 2024 NRI People Pillar, the highest in Central Asia (Portulans Institute, 2024), Kazakhstan has launched several national-scale initiatives that integrate technical training with social inclusion. On 10 June 2025, the country introduced two flagship programs: Aqyl Tech and IT-Aiel, offering nationwide AI, digital, and financial literacy training for youth and women (Astana Hub, 2025). The Digital Kyzylorda: Astana Experience Exchange program further strengthened regional mentoring networks by connecting local

entrepreneurs with national and international experts (United Nations Development Programme, 2025).

Across all expert interviews, a clear consensus emerged: hands-on, practical learning and operator-led mentorship, not theoretical instruction alone, are the decisive ingredients for cultivating the next generation of digital innovators in Central Asia.

4.5 Case Study: Digital Regional Integration and Cooperation in Central Asia

Tajikistan and Kyrgyzstan: Strengthening Cross-Border Collaboration

Tajikistan has become an active contributor to regional digital cooperation. On 18 October 2025, Tajikistan and Uzbekistan signed a memorandum of understanding to expand collaboration on e-governance and digital infrastructure (The Caspian Post, 2025). This is an important example of bilateral digital partnership in practice. Earlier, on 5 June 2025, Dushanbe hosted the regional forum Advancing Regional Integration for E-Commerce in Central Asia, organized by the World Bank, which promoted a shared framework for digital trade facilitation and SME e-exports (World Bank, 2025). Tajikistan's formal accession on 28 August 2025 to the Treaty of Friendship, Good-Neighborliness and Cooperation for the Development of Central Asia in the 21st Century further demonstrates its diplomatic and digital commitment to regional integration (Putz, 2025).

Kyrgyzstan is also becoming an increasingly strategic actor in regional digital diplomacy. During the Trilateral Summit of Kyrgyzstan, Tajikistan, and Uzbekistan in Bishkek (March 2025), leaders reaffirmed their plans to strengthen joint digital, energy, and transport corridors (Observer Research Foundation, 2025). Later, at the WTO meeting on 9 October 2025, Kyrgyzstan proposed a Joint Digital Trade Programme for Landlocked Developing Countries, emphasizing cross-border data exchange and e-commerce harmonization (Kabar News Agency, 2025).

Uzbekistan and Kazakhstan: Driving the Region's Digital Integration Agenda

Uzbekistan and Kazakhstan continue to act as central drivers of regional digital integration. As reported by The Diplomat (June 2025), both countries are jointly "moving Central Asia toward regional integration" through deepening technological and digital collaboration (Sembayeva & Makasheva, 2025). In October 2025, IT Park Uzbekistan positioned itself as a regional digital-connectivity hub, spearheading efforts to integrate Central Asia's fragmented tech ecosystem through cross-border platforms and innovation partnerships. Analyses from the China & Central Asia Studies Center highlight Uzbekistan's expanding global digital alliances - indicating how the country is anchoring regional cooperation while extending its influence beyond Central Asia (China & Central Asia Studies Center, 2025).

Kazakhstan, meanwhile, continues to serve as a co-leader and regional hub for connectivity and digital diplomacy. Through the CAREC Program, Kazakhstan has invested more than US $10 billion into regional transport, logistics, and digital corridors. It hosted Digital Bridge 2025 in Astana, a landmark event that drew over 67,000 participants from 100 countries, underscoring the region's rising visibility in AI, innovation, and cross-border digital collaboration (Soysal, 2025). Days later, on 22 October 2025, Kazakhstan and the European Union reaffirmed their strategic partnership on connectivity, innovation, and satellite-ground infrastructure (Omirgazy, 2025). The European Commission now identifies Kazakhstan as the key regional partner for digital connectivity and trade facilitation.

Expert interviews further reinforced this trend: international organizations increasingly view a shared "Central Asia brand" as an emerging unifier. External partners, such as the EU, World Bank, and China's development agencies, are helping enhance policy coherence, strengthen regulatory harmonization, and support cross-border digital integration.

In short, Uzbekistan and Kazakhstan are not only participating in regional cooperation; they are shaping the region's digital integration narrative, while Tajikistan and Kyrgyzstan are taking proactive steps to align with and benefit from these emerging regional frameworks.

Conclusions

The present study focused on how digital infrastructure and youth-led entrepreneurship may catalyze a new kind of regional integration in Central Asia. Based on a comprehensive literature review, survey and interview data, comparative country assessments, and insights gathered during the research conference, the collective findings suggest that the region is in the midst of an important transformation from state-centric, geopolitically constrained models of integration toward more dynamic, bottom-up, digitally enabled forms of cooperation.

Central Asia's challenges of integration have conventionally been framed in most literature in terms of geopolitical rivalries, institutional fragmentation, and a divergence of national development priorities. Recent scholarship, however, draws attention to newly emerging opportunities driven by digital technologies, youth innovation, and new entrepreneurial ecosystems. These findings match well with our empirical insights.

Survey results suggest that, although Central Asia still maintains significant structural barriers in the forms of low broadband quality and digital literacy, high early-stage finance gaps, and fragmented regulatory environments, the region also has an ambitious, youthful, and increasingly digitally savvy generation that feels cross-border digital cooperation is both achievable and necessary. **Respondents consistently cited interoperable digital payments, regional logistics platforms, and**

pan-digital spaces as priorities, indicating an ongoing and strong market-driven demand for regionalization.

Expert interviews further flesh out this picture. Eleven practitioners across all Central Asian countries pointed to a clear shift in the region's digital trajectory. Infrastructure constraints remain significant, but the binding barriers are now behavioral and institutional: trust, digital literacy, regulatory coherence, reliable payment rails, and stable energy systems. The experts placed particular emphasis on practical education, operator-led mentorship, and soft-landing mechanisms that would allow startups to scale across borders. Kazakhstan and Uzbekistan increasingly function as regional anchors with mature investment ecosystems and strong digital policies, while Tajikistan and Kyrgyzstan show fast-moving momentum, especially in the area of digital adoption and youth skill development. Together, the interviews show that integration is no longer merely aspirational; it is materializing through reciprocal IT-park arrangements, joint accelerator programs, interoperable platforms, and shared entrepreneurial networks.

Comparative national analysis confirms this uneven but accelerating trajectory. While Kazakhstan and Uzbekistan lead in infrastructure depth, investment capacity, and ecosystem maturity, Tajikistan and Kyrgyzstan are rapidly improving in broadband access, AI readiness, digital literacy, and youth entrepreneurship support. Each country brings different strengths to a regional digital landscape that is more complementary than competitive. As digital governance, payments, and data regulations continue to converge, these national ecosystems are becoming increasingly interconnected.

Deliberations from the research conference underscore even more the significance of interdisciplinary perspectives and participatory processes. Participants from academia, civil society, and the private sector affirmed the centrality of digital skills, youth empowerment, and policy coherence for regional integration. Their feedback also reflected broader societal benefits of digital cooperation: knowledge sharing, scientific collaboration, innovation transfer, and inclusive growth. The engagement showed that this research has resonance beyond academia and can feed ongoing policy dialogue.

Combined, these findings indicate a region in transition. Central Asia is shifting from “laying pipes” to constructing the proper legal, institutional, and educational frameworks that would lead to an interoperable digital space. The pivotal levers include:

- Strengthening practical digital skills and mentorship;
- Harmonizing regulations on data, digital identity, taxation, and payments;
- Invest in resilient, inclusive digital and AI infrastructure;
- Expanding soft-landing pathways and joint entrepreneurial programs;
- Foster trust and everyday digital adoption among citizens.

This means positioning youth not as beneficiaries but as co-creators of the regional digital future. In a word, the evidence across all sections of this report converges on a clear insight: that digital transformation-driven by youth, entrepreneurs, and interoperable systems-is enabling a new, bottom-up form of regional integration in Central Asia. Unlike the traditional state-centered models, this emerging form of integration is networked, inclusive, market-responsive, and highly adaptive to technological change. If regional governments, international partners, and private actors coordinate to address remaining frictions, Central Asia has the potential to become a digitally connected region where young entrepreneurs play a central role in shaping economic cooperation, innovation pathways, and shared prosperity. This research fills an important gap, bringing the voices of youth and digital entrepreneurs into the debate on regional integration. Any future work should continue to develop the comparative evidence, expand the range of youth-centered methodologies, and detail policy frameworks through which the current momentum of the region can be translated into lasting, systemic regional connectivity.

Policy Recommendations

1. Pick what is solid without costing a fortune

Responsible government institutions need to offer rewards tied to results for providers who grow fibre plus fast wireless services. Follow nationwide standards for speed, reliability, or cost.

Case Example:
Kyrgyzstan recently boosted rural fibre using public-private partnerships, cutting typical internet expenses in remote areas by nearly a third while making connections more stable - proof that focused contract goals can deliver results.

2. Launch a Central Asia Digital Sandbox and Early-Stage Funding Network

The rise of digital entrepreneurship is visible across all states, however, in uneven terms. To solve such a challenge, states need to create shared labs for finance tech, artificial intelligence, or online shopping tests. Such innovative labs will open new frontiers to financial and professional human resources.

Case Example:
The Astana Financial Services Authority lets foreign fintech firms test ideas using its sandbox setup. Instead of repeating rules, a shared regional approach could include startups from Uzbekistan, Kyrgyzstan, or Tajikistan.

3. Create connected international payment systems using different methods

One of the pressing challenges in Central Asia is the lack of cross-border digital payment systems. The financial regulatory institutions need to strive for a scenario where a single QR code can be used across Central Asian states. Such seamless wallet-to-wallet and bank transfers across borders will boost trade and accessibility. The research revealed that young entrepreneurs often face seamless cross-border payment issues and shipping challenges, which slow down connectivity among these states.

Case Example:
Kazakhstan's Kaspi, alongside Uzbekistan's Uzum Pay, turned into local hits - yet both fail beyond their borders. With a shared QR system, countless people might pay anywhere nearby right away.

4. Create a Central Asia e-Trade Corridor

The trade among Central Asian countries is essential for their economic growth; however, the customs regulations of these states still heavily rely on paper-based documentation that differs from one another. Setting up common rules for customs APIs, along with linking digital certifications with shipment monitoring, will increase the effectiveness and transparency of cross-border trades.

Case Example:
The test run by the CAREC Digital Trade Forum, linking Kazakhstan and Kyrgyzstan without paperwork at borders, slashed wait times - a solid sign that digital steps speed up commerce.

5. Make hands-on learning and Digital Literacy the Core of Education Systems in Central Asia

In every Central Asian nation, youth are eager to dive into tech jobs - yet classrooms stick to old-school lessons on digital skills. If Central Asia aims to build skilled tech workers while linking young business minds across areas, classrooms should swap heavy textbook lessons for hands-on digital training instead.

a. Teach practical digital literacy from the early grades

Shift from traditional Word-based lessons. Try: using real-world tools instead, such as:

- Understanding products plus core ideas behind digital design - like how websites or apps function - with a focus on users instead of features
- Web marketing plus crafting material - understanding how online sites operate, checking data trends, using narratives
- Knowing how to use AI tools without risk or mistakes. Being aware of possible dangers linked to artificial intelligence systems. Creating straightforward models based on clear goals and data inputs.

These methods then turn people into active members online - rather than passive consumers.

b. Set up Startup Labs in higher education institutions

Each area ought to include practical "Startup & Tech Labs" so learners may:

- Engage in actual tasks
- Take part in programming workshops - or try robot-building classes instead
- Solve small-scale issues through trial versions
- Gain insights from actual digital practitioners instead of only instructors.
- Industry-built courses - like product management, UX design, digital promotion, or intro to AI - keep learning hands-on because they reflect real-world needs.

6. Establish a Regional Digital Governance Forum

Central Asian states need to create a permanent forum where each state has a chance to contribute to agreed-upon rules covering fairness in AI, online safety, also access to tech for everyone. This initiative should include stakeholders from civil society, academia, government, and the private sector to work together on pressing challenges and opportunities.

Conclusion

Central Asian states showcased that they could work together on regional projects, including recent significant tech projects. Thanks to shared IT hub deals plus test runs in cloud sharing, regional programs are moving forward. Now what's needed is smart, joined-up planning - so that individual national wins grow into one solid digital zone across the area. A space where young entrepreneurs thrive, new ideas spread fast, and local talent stands strong worldwide. This policy gives decision makers a pathway to turn the youth strength plus tech drive into steady growth and wider benefits across communities.

Research Conference Findings

Introduction

On November 1, 2025, our research team within the C5+1 Youth Council organized a research conference titled “Digital Pathways for Integration and Connectivity in Central Asia”. The event took place at the American University of Central Asia in Bishkek, Kyrgyzstan, and was conducted in a hybrid format, allowing both online and in-person participation. This format enabled attendees from outside Kyrgyzstan to join and contribute to the discussion.

The conference brought together university students, professors, young entrepreneurs, academic researchers, and representatives from non-governmental organizations. The main objectives were to raise awareness among the target audience about digital integration processes in Central Asia by sharing and discussing our research findings, and to collect feedback and recommendations from participants that could inform the next stages of our research, particularly in developing policy recommendations.

During the event, our team presented research findings, outlining the research problem, key data collected, and results from survey analyses and expert interviews. Following the presentation, participants actively engaged in the discussion, offering valuable comments, questions, and recommendations that enriched our understanding of the topic and guided future improvements in our research design.

Feedback from participants:

The overall feedback from participants was highly positive. Participants noted that the conference was both insightful and informative, emphasizing that the research topic was timely, relevant, and efficiently presented. Many attendees expressed appreciation for the focus on regional integration and digital connectivity in Central Asia, recognizing its growing importance for the region’s economic diversification, infrastructure development, and stability. Several respondents highlighted that the research provided valuable insights into how improved digital connectivity can foster cross-border collaboration and innovation.

Participants posed a range of methodological, conceptual, and policy-oriented questions, reflecting genuine interest in the study’s design and implications. The feedback underscored that digital tools and technologies not only enhance connectivity but also empower youth to acquire new skills, contribute to societal development, and strengthen regional cooperation.

Respondents from various fields—including academia, NGOs, and the private sector—emphasized the interdisciplinary value of the topic. For instance, one participant noted that regional integration is significant not only for trade and transport but also for knowledge exchange, scientific collaboration, and environmental sustainability. Another participant, drawing a comparison with European countries, remarked that “in some aspects, Central Asia is ahead of certain EU states in terms of digital payment systems and technological adoption.”

Another scholar suggested framing the results of our research as a scientific article to be published in a peer-reviewed journal, thereby extending the audience and, consequently, expanding the project's impact.

Overall, the conference successfully increased participants’ understanding of digital integration and entrepreneurship in Central Asia, as indicated by the post-event survey results (see Figure 1). The comments suggest that the research resonates across multiple sectors and has the potential to inform both academic discourse and practical policymaking.

The conference post survey distributed among 38 respondents to the question of “How much did your awareness and knowledge on the topic of the research “Regional Integration and Connectivity in Central Asia” increase after participating in the conference? Rate from 1 (low) - 3 (Neutral) - 5 (high) shows the following results:

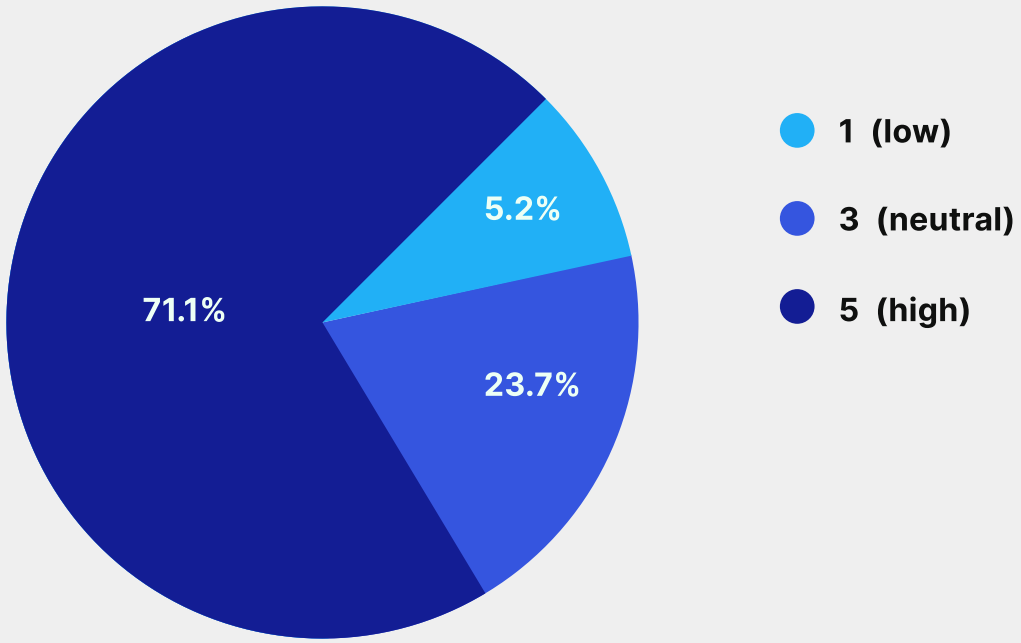

Figure 10: Group Activity: Problem-Based Recommendations

During the interactive session of the research conference, participants—both in-person and online—were divided into several groups, with each group assigned a specific problem related to digital connectivity and entrepreneurship in Central Asia. After a thorough discussion, groups provided recommendations, examples of successful initiatives, and comments on the current state of digital connectivity, digital literacy, and the regional entrepreneurship ecosystem. The outcomes of these discussions are presented below, organized by problem area.

Problem 1: Limited Access to Entrepreneurial Support and Digital Opportunities in Rural Areas

Recommendations:

- Establish a regional database of youth-led or local entrepreneurship to facilitate outreach and collaboration.
- Engage with relevant ministries and local authorities to identify potential entrepreneurs and connect them with support networks.
- Provide capacity-building programs to enhance digital literacy, including training in social media marketing and networking.
- Offer mentorship and training in business development, research skills, and digital innovation.
- Facilitate access to hackathons, accelerators, and high-technology parks to provide hands-on experience.
- Prioritize digital inclusion by bringing technology and training opportunities to rural areas.

Problem 2: Unstable Internet Access in Rural and Remote Areas

Recommendations:

- Expand high-speed fibre-optic networks to regional hubs and implement 5G/ wireless solutions for smaller villages.
- Deploy satellite or radio-based internet solutions for the most isolated communities.
- Establish community-powered digital hubs, including solar-powered centres, providing high-speed internet, digital literacy training, and local tech support.
- Encourage local ownership and maintenance of these hubs to ensure sustainability.
- Foster public–private partnerships to finance and manage infrastructure projects.
- Integrate digital skill development programs to help rural populations access education, e-commerce, and remote work opportunities.

Problem 3: Digital Divide and Lack of Digital Literacy

Recommendations:

- Develop training programs teaching effective and safe use of digital tools.
- Include digital education in schools to strengthen digital literacy from an early age.
- Implement awareness campaigns to protect citizens, especially older adults, from online scams and data misuse.
- Promote smart integration of digital tools so that technology complements rather than replaces traditional knowledge and in-person community practices.

Problem 4: Weak Regional Digital Collaboration and Limited Cross-Border Opportunities

Recommendations:

- Establish Silk Tech Connect, a regional ecosystem linking digital entrepreneurs, startups, educators, and investors across Central Asia.
- Launch monthly Silk Talks, virtual seminars, and workshops led by regional tech experts.
- Organize Silk Hackathons addressing digital innovation and sustainability challenges.
- Deploy a digital mentorship caravan offering training in coding, marketing, AI, and entrepreneurship.
- Create Silk Tech Youth Fellowships, a one-year exchange and mentorship program for aspiring digital entrepreneurs.
- Develop an Open Data Lab, where participants co-create digital solutions for regional development.
- Strengthen cross-border cooperation, innovation culture, and youth participation in the regional digital economy.

Problem 5: Insufficient Investment in Research and Development

Recommendations:

- Make research and development (R&D) a priority for governments to harness local talent and prevent brain drain.
- Encourage public–private partnerships to finance R&D initiatives in digital innovation and entrepreneurship.

Problem 6: Low Trust Between Governments and Across Countries

Recommendations:

- Strengthen trust-building initiatives both between governments and within national institutions to facilitate cooperation.
- Support policy implementation by fostering collaboration among policymakers, stakeholders, and communities.

Problem 7: Balancing Digital Access with Preservation of Human and Traditional Knowledge

Recommendations:

- Thoughtfully provide digital literacy training, ensuring rural communities gain opportunities without becoming overly dependent on technology.
- Use practical examples, such as social media marketing for local produce, to demonstrate tangible benefits.
- Combine digital training with traditional skills and knowledge, e.g., interpreting environmental cues.
- Encourage in-person activities and community engagement alongside digital tools to maintain social cohesion.

Conclusion:

The research conference on “Digital Pathways for Integration and Connectivity in Central Asia” provided valuable insights and practical recommendations. Participants highlighted the importance of digital literacy, inclusive internet access, regional cooperation, and trust-building as key drivers for economic and social development.

The group activity generated problem-based solutions, addressing challenges such as rural connectivity, entrepreneurial support, cross-border collaboration, and preservation of traditional knowledge. These recommendations offer a roadmap for strengthening digital infrastructure, fostering youth entrepreneurship, and promoting regional integration.

Overall, the conference emphasized that effective digital integration encompasses the integration of technology, education, governance, and community engagement. The feedback and recommendations will guide the research team in refining methodologies, developing targeted interventions, considering ideas for future startups, and shaping evidence-based policy proposals for Central Asia.

References

AI Council of Tajikistan. (n.d.). The first patent on AI in Central Asia – zGAN. Retrieved November 17, 2025, from https://aic.tj/en/strategy

Astana Hub. (2025, June 10). Aqyl Tech and IT-Aiel projects launch to provide mass training in digital skills and AI for Kazakh citizens. https://astanahub.com/en/article/proekty-aqyl-tech-i-it-aiel-massovoe-obuchenie-tsifrovym-navykam-i-ii-zapustili-dlia-kazakhstantsev?utm

Autio, E., Komlósi, É., Szerb, L., Galambosne, M. T., Park, D., & Jinjarak, Y. (2024). Digital entrepreneurship landscapes in developing Asia: Insights from the Global Index of Digital Entrepreneurship Systems. European Journal of Innovation Management, No. 720. https://www.adb.org/sites/default/files/publication/961111/ewp-720-digital-entrepreneurship-developing-asia.pdf

Business Wire. (2025, March 19). Central Asia's venture capital market reached $95 million in 2024. https://www.businesswire.com/news/home/20250319550326/en/Central-Asias-Venture-Capital-Market-Reaches-%2495-Million-in-2024?utm

CAREC Program. (n.d.). About the program. Retrieved November 17, 2025, from https://carecprogram.org/?page_id=6&utm

Center for Economic and Social Development (CESD). (2024). Digital trade and investment in Central Asia. CESD. https://cesd.az/y/panel/uploads/51425523421-CESDPaperDigitaltradeandInvestment.pdf

Chaudhury, D. R. (2025, June 21). Central Asia's biggest data center is coming up in Astana; it can open up opportunities for India. The Economic Times. https://economictimes.indiatimes.com/news/india/central-asias-biggest-data-center-coming-up-in-astana-can-open-up-opportunities-for-india/articleshow/121995943.cms

China Academy of Information and Communications Technology. (2023). Uzbekistan digital economy: Overview and vision 2030. https://aict.uz/caict_uzbekistan_digital_economy_overview_vision_2030.pdf?utm

China & Central Asia Studies Center. (2025, October 20). Media Monitoring 20-10-2025... https://www.chinacentralasia.org/projects/media-monitoring-reports/328-media-monitoring-20-10-2025?utm

Couldry, N., & Mejias, U. A. (2019). The costs of connection: How data is colonizing human life and appropriating it for capitalism. Stanford University Press.

DataReportal. (2025). Digital 2025: Tajikistan. https://datareportal.com/reports/digital-2025-tajikistan

Development Asia. (2025). Digitally connected CAREC: Digital trade, emerging regulatory challenges and solutions. Asian Development Bank. https://development.asia/explainer/digitally-connected-carec-digital-trade-emerging-regulatory-challenges-and-solutions

Enactus Kyrgyzstan. (n.d.). JashIshker.kg – New beginning, new successes! Retrieved November 17, 2025, from https://jashishker.kg/en?utm

European Commission. (2023, October 26). Infosheet 12 – Entrepreneurship. Capacity4dev. https://capacity4dev.europa.eu/library/infosheet-12-entrepreneurship_en?listing=group_library&refgid=94287

Geissinger, A., Laurell, C., Sandström, C., Eriksson, K., & Nykvist, R. (2019). Digital entrepreneurship and field conditions for institutional change. Technological Forecasting and Social Change, 146, 877–886. https://doi.org/10.1016/j.techfore.2018.06.019

Giones, F., & Brem, A. (2017). Digital technology entrepreneurship: A definition and research agenda. Technology Innovation Management Review, 7(5), 44–51.
Gupta, D. S., & Majumder, G. M. (2023). Digital transformation, digital entrepreneurship, and the economy... Springer Nature. https://link.springer.com/chapter/10.1007/978-981-99-4063-9_3

Henderson, D. R. (n.d.). Israel Kirzner. Econlib. Retrieved May 2, 2025, from https://www.econlib.org/library/Enc/bios/Kirzner.html

Herman, E. (2022, May 14). The interplay between digital entrepreneurship and sustainable development. MDPI. https://www.mdpi.com/2227-7390/10/10/1682

IT Park Uzbekistan. (2022, July 25). IT Park Uzbekistan: Three-year wrap-up. https://it-park.uz/en/itpark/news/it-park-uzbekistan-three-years-wrap-up

IT Park Uzbekistan. (2024). Annual report 2024: Innovation ecosystem and startup development in Uzbekistan. https://it-park.uz

IT Park Uzbekistan. (2025, March 21). Navruz Hackathon 2025... https://outsource.gov.uz/zh-hans/media/navruz-hackathon-2025-innovation-technology-and-sustainable-development?utm

IT Park Uzbekistan. (2025, May 30). E-GATE Conference: IT Park's role in strengthening regional digital connectivity. https://outsource.gov.uz/zh-hans/media/e-gate-conference-it-parks-role-in-strengthening-regional-digital-connectivity?utm

Kabar News Agency. (2025, September 17). New investment law: Large investors will get up to 10 years of tax stability. https://en.kabar.kg/news/new-investment-law-large-investors-will-get-up-to-10-years-of-tax-stability/?utm

Kabar News Agency. (2025, October 28). Training on the digital future of women's business starts in Bishkek. https://en.kabar.kg/news/training-on-digital-future-of-womens-business-starts-in-bishkek/?utm

Keskinen, E. (2021). Russia's evolving approach to digital sovereignty. Journal of Cyber Policy, 6(2), 234–252.

Kollmann, T. (2014, January 31). What is e-entrepreneurship? Edward Elgar Publishing.

Kraus, S., Palmer, C., Kailer, N., Kallinger, L. F., & Spitzer, J. (2018). Digital entrepreneurship: A research agenda. International Journal of Entrepreneurial Behavior & Research. https://www.emerald.com/insight/content/doi/10.1108/ijebr-06-2018-0425/full/html

Milan, S., & Treré, E. (2020). The rise of the data poor. Social Media + Society, 6(3), 1–5.

Ministry of Digital Development of the Kyrgyz Republic. (2024). Concept for the Digital Transformation of the Kyrgyz Republic for 2024–2028. https://digital.gov.kg/wp-content/uploads/2024/06/concept-digital-transformation-of-the-kyrgyz-republic-for-2024-2028.pdf?utm

MicroMentor. (n.d.). Homepage. http://micromentor.tj

Mordor Intelligence. (2025). Kazakhstan ICT market size & share analysis. https://www.mordorintelligence.com/industry-reports/kazakhstan-ict-market

Nakispekova, A. (2025, August 7). Kazakhstan becomes regional fintech leader as startups quadruple. The Astana Times. https://astanatimes.com/2025/08/kazakhstan-becomes-regional-fintech-leader-as-startups-quadruple/?utm

Observer Research Foundation. (2025, April 21). The Kyrgyz-Tajik-Uzbek summit... https://www.orfonline.org/expert-speak/the-kyrgyz-tajik-uzbek-summit-marking-the-end-of-central-asia-s-soviet-legacy?utm

Omirgazy, D. (2025, April 28). Kazakhstan reports high digital literacy and internet usage. The Astana Times. https://astanatimes.com/2025/04/kazakhstan-reports-high-digital-literacy-and-internet-usage/?utm

Omirgazy, D. (2025, October 22). Kazakhstan and the EU deepen strategic cooperation... The Astana Times. https://astanatimes.com/2025/10/kazakhstan-eu-deepen-strategic-cooperation-on-connectivity-green-energy-and-digital-transformation/?utm

Pivot. (2025, October 23). Uzbekistan launches a $150 million data center with Saudi Arabia. https://pivot.uz/uzbekistan-launches-a-150-million-data-center-with-saudi-arabia/?utm

Portulans Institute. (2024). Kyrgyzstan — Network Readiness Index country profile. https://networkreadinessindex.org/country/kyrgyzstan/?utm

Portulans Institute. (2024). Uzbekistan — Network Readiness Index country profile. https://networkreadinessindex.org/country/uzbekistan/?utm

Primova, D. (2025, September 26). Uzbekistan's ICT Week 2025... Euronews. https://www.euronews.com/next/2025/09/26/uzbekistans-ict-week-2025-how-central-asia-is-becoming-a-global-ai-and-tech-hub

Putz, C. (2025, August 29). Tajikistan signs onto the Central Asian friendship treaty. The Diplomat. https://thediplomat.com/2025/08/tajikistan-signs-onto-central-asian-friendship-treaty/?utm

Sahut, M. J., Landoli, L., & Teulon, F. (2019). The age of digital entrepreneurship. Small Business Economics. https://link.springer.com/article/10.1007/s11187-019-00260-8

Sembayeva, Z., & Makasheva, Z. (2025, June 23). Kazakhstan and Uzbekistan are moving Central Asia toward regional integration. The Diplomat. https://thediplomat.com/2025/06/kazakhstan-and-uzbekistan-moving-central-asia-toward-regional-integration/?utm

Soysal, D. (2025, October 11). Digital Bridge 2025 Astana: Kazakhstan's leadership in the digital era. News Central Asia. https://www.newscentralasia.net/2025/10/11/digital-bridge-2025-astana-kazakhstans-leadership-in-the-digital-era/?utm

Startup Genome. (2025). Uzbekistan: Central Asia's fastest-rising startup ecosystem. https://startupgenome.com/report/gser2025/uzbekistan-central-asias-fastest-rising-startup-ecosystem?utm

State Enterprise Tunduk. (n.d.). Information systems. https://tunduk.gov.kg/en/pages/2-information-systems?utm

The Caspian Post. (2025, October 18). Uzbekistan, Tajikistan aim to expand cooperation in digitalization. https://caspianpost.com/economics/uzbekistan-tajikistan-aim-to-expand-cooperation-in-digitalization?utm

The State of Central Asia (Times of Central Asia). (2025, August 5). Kyrgyzstan sees continued growth in foreign direct investment. https://timesca.com/kyrgyzstan-sees-continued-growth-in-foreign-direct-investment/?utm

Trend News Agency. (2025, October 26). EBRD investments in Tajikistan exceed €1B. https://www.trend.az/business/4108882.html

Turgunbaeva, A. (2025, October 25). Kyrgyzstan launches national stablecoin in partnership with Binance. Reuters. https://www.reuters.com/world/asia-pacific/kyrgyzstan-launches-national-stablecoin-partnership-with-binance-2025-10-25/

U.S. Department of State. (2025, September). 2025 Kyrgyz Republic Investment Climate Statement. https://www.state.gov/wp-content/uploads/2025/09/638719_2025-Kyrgyz-Republic-Investment-Climate-Statement.pdf?utm

UN General Assembly. (2020, December 21). Entrepreneurship for sustainable development. https://unctad.org/system/files/official-document/ares75d211_en.pdf

UN Department of Economic and Social Affairs. (n.d.). Kazakhstan – country information. Retrieved November 17, 2025, from https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/87-Kazakhstan?utm

UNDP Kyrgyzstan. (2025, April 18). Kyrgyzstan is confidently advancing on the path of digital transformation. https://www.undp.org/kyrgyzstan/press-releases/kyrgyzstan-confidently-advancing-path-of-digital-transformation

UNDP Kazakhstan. (2025, October 2). Digital Kyzylorda: Astana Experience Exchange... https://www.undp.org/kazakhstan/news/digital-kyzylorda-astana-experience-exchange-bridges-local-entrepreneurs-global-innovation?utm

UNICEF. (2023, July 11). From learning to earning. https://www.unicef.org/tajikistan/stories/learning-earning

UNICEF. (2025, October 27). Tajikistan launches “Project Soro”. https://www.unicef.org/tajikistan/press-releases/tajikistan-launches-project-soro?utm

Uzcard. (2025, April 30). Digital literacy without borders. https://api.uzcard.uz/en/news/digital_literacy_without_borders/

UzDaily. (2025). Uzbekistan becomes Central Asia’s leader in attracting FDI in 2024. https://www.uzdaily.uz/en/uzbekistan-becomes-central-asias-leader-in-attracting-fdi-in-2024/

UzDaily. (2025, September 19). Uzbekistan plans to double fintech investment by 2030. https://www.uzdaily.uz/en/by-2030-uzbekistan-plans-to-double-fintech-investment-and-join-the-global-fintech-index/?utm

Ministry of Artificial Intelligence and Digital Development of the Republic of Kazakhstan. (2021, April 27). Report on the implementation of the Digital Kazakhstan State Program for 2018-2022 in 2018-2020. GOV.KZ. Retrieved April 27, 2021, from https://www.gov.kz/memleket/entities/maidd/documents/details/161189?lang=ru

World Bank. (2024). E-GATE: Elevate Global Access Through E-Commerce. https://www.worldbank.org/en/region/eca/brief/e-gate

World Bank. (2024, December 17). World Bank to strengthen digital public infrastructure and digital skills in Tajikistan. https://www.worldbank.org/en/news/press-release/2024/12/17/world-bank-to-strengthen-digital-public-infrastructure-and-digital-skills-in-tajikistan?utm

World Bank. (2025, April 23). Europe and Central Asia: Accelerate growth through entrepreneurship, technology adoption, and innovation. https://www.worldbank.org/en/news/press-release/2025/04/23/europe-and-central-asia-accelerate-growth

World Bank. (2025, June 1). E-GATE: Advancing regional integration for e-commerce in Central Asia. https://www.worldbank.org/en/events/2025/06/01/egate-advancing-regional-integration-for-e-commerce-in-central-asia?utm

Yotta Data Services Pvt Ltd. (2025, October 25). Darya.ai and Yotta Data Services sign strategic collaboration agreement...

Yuz. (2025, February 18). В Узбекистане будет развиваться молодежное предпринимательство [Youth entrepreneurship in Uzbekistan will develop]. https://yuz.uz/ru/news/v-uzbekistane-budet-razvivatsya-molodejnoe-predprinimatelstvo