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DIGITAL TRANSFORMATION: A COMPARATIVE ANALYSIS OF INFORMATION AND COMMUNICATION TECHNOLOGIES AND MEDIA IN KAZAKHSTAN AND UZBEKISTAN

Despite the surge of interest in digitalization across the globe, comprehensive research on the post-pandemic digital trajectories of Central Asian countries remains limited. Particularly, Kazakhstan and Uzbekistan, the leading economies of the region, exemplify digital transformation in emerging markets, under different challenges and opportunities. Thus, to fill this gap, the current research tracks the digitalization trends in Kazakhstan and Uzbekistan in the post-pandemic world.

The study aims to analyze and compare local and international digitalization indicators of the countries, focusing on ICT development, digital media markets (particularly video streaming and investment in digital marketing), internet penetration rate, median speed of the internet, social media statistics, messaging platforms, mobile connectivity, and overall digitalization trends.

The relevance of this study stems from its focus on examining how digitalization affects the process of integration of these countries into the global digital economy. The research method employs quantitative and content analyses descriptive of the digital landscapes of Kazakhstan and Uzbekistan, thus delivering a meaningful mix of numerical data and contextual insight about their digital transformations.

The results of the study give an indicative manifestation of both the attainments and challenges in the digital transformation of these two countries. Findings demonstrate the impact that ICT can have on determining the digital paths of Kazakhstan and Uzbekistan.

Offering insights into evolving digitalization dynamics in Central Asia, this research contributes to the growing body of academic discourse and serves as a resource for decision-makers, businesses, and researchers tracking the region's digital transformation and its wider ramifications.

Keywords: communications, media, digitalization, video streaming, internet penetration.

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Цифрлы трансформация: Қазақстан мен Өзбекстандағы ақпараттық-коммуникациялық технологиялар мен медиаға салыстырмалы талдау

Цифрландыруға әлемнің қызығушылығының артуына қарамастан, пандемиядан кейінгі Орталық Азия елдеріндегі цифрлық үрдістерді кешенді зерттеулер шектеулі болып тұр. Өңірдің жетекші экономикалары, яғни Қазақстан мен Өзбекстан, дамушы нарықтар арасында цифрлық трансформацияның үлгілері болып табылады, бірақ олардың әрқайсысы түрлі мүмкіндіктер мен сын-тегеуріндерге тап болып жатыр. Осы олқылықты ескере отырып, бұл зерттеуде пандемиядан кейінгі Қазақстан мен Өзбекстандағы цифрландыру үрдістері қарастырылады.

Зерттеудің мақсаты екі елдегі АКТ дамытуға, цифрлық медиа нарықтарына (атап айтқанда, видеостриминг және цифрлы маркетингке инвестициялар үлесіне), интернеттің ену деңгейіне, интернеттің орташа жылдамдығына, әлеуметтік медиа статистикасына, мессенджер платформаларына, ұялы байланысқа және цифрландырудың жалпы тенденцияларына баса назар аудара отырып, аталған елдердегі цифрландырудың жергілікті және халықаралық көрсеткіштерін кешенді талдау және оларды салыстыру болып табылады.

Зерттеудің өзектілігі мемлекеттердің цифрландыру үрдістерінің осы екі елдің жаһандық цифрлық экономикаға интеграциялану процесіне қалай әсер ететінін зерттеуге бағытталғандығында. Зерттеу әдісі Қазақстан мен Өзбекстанның цифрлық ландшафттарының сандық және контент-талдауына негізделген және осы әдістер арқасында сандық көрсеткіштер мен цифрлық түрлендірулері туралы контекстік түсініктің мағыналы үйлесімін алуға мүмкіндік береді.

Зерттеу нәтижелері екі елдің цифрлық трансформациясындағы жетістіктері мен проблемалары туралы түсінік береді. Алынған нәтижелер Қазақстан мен Өзбекстанның цифрлық

Бұл зерттеу Орталық Азия цифрландыру динамикасы туралы құнды ақпарат бере отырып, өсіп келе жатқан ғылыми зерттеулерге үлес қосады және аймақтың цифрлық трансформациясын, оның кеңірек салдарын зерттейтін шешім қабылдаушылар, кәсіпорындар мен зерттеушілер үшін дерек көзі ретінде қызмет етеді.

Түйін сөздер: коммуникациялар, медиа, цифрландыру, видеостриминг, интернеттің енуі.

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Цифровая трансформация: сравнительный анализ информационно-коммуникационных технологий и медиа в Казахстане и Узбекистане

Несмотря на всплеск интереса к цифровизации во всем мире, комплексные исследования цифровых тенденций в странах Центральной Азии после пандемии остаются ограниченными. В частности, Казахстан и Узбекистан, ведущие экономики региона, являющиеся примерами цифровой трансформации на развивающихся рынках в условиях различных вызовов и возможностей. Заполняя этот пробел, текущее исследование отслеживает тенденции цифровизации в Казахстане и Узбекистане в постпандемический период.

Целью исследования являются анализ и сравнение местных и международных показателей цифровизации в странах, уделяя особое внимание развитию ИКТ, рынкам цифровых медиа (в частности, видеостримингу и инвестициям в цифровой маркетинг), уровню проникновения интернета, средней скорости интернета, статистике социальных сетей, платформам обмена сообщениями, мобильной связи и общим тенденциям цифровизации.

Актуальность исследования обусловлена его направленностью на изучение того, как цифровизация влияет на процесс интеграции этих стран в глобальную цифровую экономику. Метод исследования основан на количественном и контент-анализе цифровых ландшафтов Казахстана и Узбекистана, что позволяет получить содержательное сочетание количественных данных и контекстуального представления об их цифровых преобразованиях.

Результаты исследования дают представление как о достижениях, так и о проблемах в цифровой трансформации этих двух стран. Полученные результаты демонстрируют влияние, которое ИКТ могут оказать на определение цифровых путей Казахстана и Узбекистана.

Предоставляя информацию о динамике цифровизации в Центральной Азии, это исследование вносит свой вклад в растущий объем научных исследований и служит ресурсом для лиц, принимающих решения, предприятий и исследователей, изучающих цифровую трансформацию региона и ее более широкие последствия.

Ключевые слова: коммуникации, медиа, цифровизация, потоковое видео, проникновение интернета.

Introduction

Digitalization has become a cornerstone of modern society, reshaping virtually every sphere of human activity. In Central Asia, Kazakhstan and Uzbekistan serve as compelling examples of digital transformation in emerging markets, characterized by unique challenges and opportunities. Despite global interest in the study of digitalization, limited comprehensive research addresses the post-pandemic trajectories of digital development in these nations. This gap highlights the opportunity for a focused look into their digitalization efforts, specifically concerning Information and Communication Technologies (ICT) and digital media markets, with a particular focus on Streaming Video-on-Demand (SVOD) and share of investments in digital marketing, social media usage, messaging platforms, and mobile connectivity.

The relevance of this study lies in its focus on understanding how digitalization influences these nations' integration into the global digital economy. Despite public and private initiatives to improve digital landspaces of these countries, challenges such as uneven digital inclusion, gaps in policy implementation, and infrastructural limitations persist, further underscoring the importance of this research. The study examines the digitalization of Kazakhstan and Uzbekistan during the post-pandemic period as its primary research object. It aims to analyze and compare both local and international indicators of digitalization in these countries, focusing on the development levels of their respective Information and Communication Technologies (ICT), digital media

markets with a particular focus streaming video-on-demand and share of investments in digital marketing, as well as social media statistics, messaging platforms, mobile connectivity, and the broader digitalization trajectory. The main research question that directs this study is: Has there been general advancement in the digitalization of Kazakhstan and Uzbekistan during the post-pandemic phase and what role has ICT played in influencing digital transformation in such contexts?

Literature review

The digital transformation of Kazakhstan and Uzbekistan reflects a broader global shift toward embracing technology to enhance governance, economic growth, and societal well-being. While these countries align with global trends such as the increased integration of e-governance and expansion of digital infrastructure, they diverge in their focus on specific regional challenges, such as bridging the urban-rural digital divide and fostering digital literacy. These distinctions underscore the unique pathways Central Asian nations are taking in the global digital transformation narrative. Both nations have implemented ambitious national strategies to foster digital innovation and bridge the digital divide, demonstrating their commitment to modernizing their economies.

Kazakhstan's commitment to digitalization is exemplified by the Digital Kazakhstan program, which aims to modernize the economy and improve quality of life through digital technologies. The program was launched in 2017 as a strategic response to the global wave of digital transformation and the need to diversify Kazakhstan's economy away from its heavy reliance on oil and gas exports. This initiative reflects the government's vision to position Kazakhstan as a competitive player in the global digital economy. However, the program faces specific challenges, including the digital divide between urban and rural areas (OECD, 2023:26), the high level of deterioration of infrastructure facilities and unfavorable environmental circumstances (Kireyeva et al., 2023), and the shortage of qualified personnel in the industry (Nurbayev, 2023). Addressing these limitations is critical for achieving the program's overarching goals. Overall, key areas of this program include digitization of economic branches, transition to the digital state, Innovative ecosystem formation, evolution of the human capital assets, and realization of the Digital Silk Way (Digital Kazakhstan, 2017).

These efforts are complemented by the Concept of Digital Transformation, Development of the ICT Sector, and Cybersecurity for 2023–2029, underscores the country's forward-looking approach to digitalization. Its objectives include enhancing public administration through digital technologies, fostering a digital economy, establishing a unified data management system, implementing data-driven decision-making processes across government agencies, supporting ICT sector growth, and strengthening national cybersecurity. By 2029, the expected outcomes include a digitally transformed public sector offering efficient and accessible services, a strong ICT sector contributing significantly to the national economy, enhanced cybersecurity measures safeguarding national digital infrastructure, and strengthening the country's digital competitiveness overall (Decree of the Government of the RK No. 269, 2023).

Uzbekistan approved the Digital Uzbekistan 2030 strategy in 2020, which lays out a roadmap to use digital technologies for achieving global and national development goals (Khamdamova, 2020). The strategy focuses on five main priorities: upgrading digital infrastructure, introducing e-governance to improve public services, applying digital technologies in economic sectors, building a strong and competitive IT industry, and improving IT education to train a skilled workforce qualified to support digitalization (Decree of the President of the RU No. DP-6079, 2020).

While the strategy sets ambitious goals, challenges persist, especially with digital gaps between regions and genders. In Tashkent, higher incomes make high-speed internet and digital devices more affordable. However, in rural and regional areas, these items are often too expensive for many families. Additionally, basic digital skills, such as financial literacy and understanding online safety, are still lacking for much of the population (USAID, 2022: 10).

A central focus of the strategy is to improve the digital competencies of younger generations, enabling their participation in a competitive digital economy. This goal is supported by the establishment of IT Parks in every region, and a network of over 200 IT Centers nationwide. These initiatives aim to accelerate the growth of the digital industry, foster innovation, and enhance national economic competitiveness.

By advancing digital infrastructure, education, and governance, Uzbekistan's Digital Uzbekistan 2030 strategy underscores the country's commit-

ment to leveraging technology for sustainable development, improved governance, and societal progress (USAID, 2022: 10).

It is also noteworthy that Kazakhstan and Uzbekistan have improved broadband infrastructure and developed e-government programs to increase transparency and accountability (Ponczek, 2022). In this article, the authors will further check and analyze the indicators of subsequent years.

Regarding the social media, pre-COVID-19 data from the Central Asia Barometer Wave 4 survey (Central Asia Barometer, 2018) and Kudaibergenova's research (Kudaibergenova, 2019) indicated a growing popularity of social media platforms such as Instagram, Facebook, WhatsApp, and Telegram in Central Asia, and the data for post-COVID-19 period shows that the number of social media users and digital media consumption has increased, especially among the youth (Bekmagambetov et al., 2023). It is worth noting Instagram, which was rapidly gaining popularity in Kazakhstan, and as of January 2022, it became the most popular social media platform in the country (Dall'Agnola & Woods, 2022).

Ultimately, the pandemic highlighted the importance of leveraging digital technologies to address global challenges and inspire recovery, making them indispensable tools for navigating the post-pandemic world (Elyta & Daud, 2024). Building on this context, this article explores the digital transformation underway in Central Asia, particularly in Kazakhstan and Uzbekistan. By examining the dynamics of digitalization, the study seeks to better understand the developmental trajectories of digital evolution in these two countries.

Materials and Methods

This study employed quantitative and content analyses to explore the key differences and similarities between the digital landscapes of Kazakhstan and Uzbekistan. This approach was chosen to capture both numerical trends and nuanced contextual factors, ensuring an understanding of the digital transformation in these countries. The integration of quantitative data allowed for objective measurement of digital metrics, while content analysis provided deeper insights into the similarities and divergences between the two markets.

The primary data sources included official reports from the ICT Development Index (IDI), UN E-Government Survey 2024 report (E-Government Development Index, Online Service Index, Telecommunications Infrastructure Index), World Competitiveness Center's IMD World Digital Competitiveness Ranking (WDCR), DataReportal (Keipos team with the support of WeAreSocial and Meltwater), Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, and the Statistics Agency under the President of the Republic of Uzbekistan, Statista Market Insights, and Wunder Digital Agency. Complementary data were sourced from industry-specific organizations, such as the Central Asian Advertising Association (AACA), Statcounter, K Research Central Asia MMI, Adex, and TNS Central Asia, Admix Advertising, World Bank's The Digital Progress and Trends Report 2023.

To ensure the reliability and validity of the findings, data from multiple sources were cross-checked against criteria such as consistency with official statistics and alignment with internationally recognized standards, including those of the UN and World Bank. However, some discrepancies still persist due to a lack of unified metric systems. Standardized metrics were favored where applicable to maintain comparability and credibility across datasets.

Data visualization, including figures and pivot tables, was utilized to clarify patterns and relationships in the datasets, making the information easier to understand and supporting comparisons between the two countries.

In recent years, the digital technology sector has become a significant component of investment portfolios, consistently increasing its share. This trend is driven by the rising popularity of online consumption and the rapid expansion of digital platforms (Profit, 2024).

The growing number of populations in both countries (for the last two decades) shows this transition. According to the Bureau of National Statistics (2024) Kazakhstan's population reached 20.03 million (as of January 1, 2024), and Uzbekistan's population stood at 36.79 million (Statistics Agency, 2024). Key measurements: This paper investigates ten important criteria (some of them combined together in the list below) that together determine the digital transformation paths of Kazakhstan and Uzbekistan, therefore offering a quantitative and content analysis of their digital environments:

*Internet Penetration and Overall Count of Internet Users***:** Incorporating gender and demographic factors, the study assesses the percentage of the population having internet connection in order to provide insights on accessibility and inclusiveness between both countries.

Median Internet Speeds and ICT Development Indexes: A detailed examination of ICT development, with a focus on median internet speeds (mobile and fixed broadband) and global performance in the ICT Development Index (IDI). Additionally, the study considers scores, values, and rankings from the UN E-Government Survey 2024, including the E-Government Development Index (EGDI), Online Service Index (OSI), and Telecommunication Infrastructure Index (TII), to provide a comparative assessment of the two countries' digital infrastructure and governance capabilities.

*Media Market Volume and Share of Investments in Digital Marketing***:** An examination of the overall dimensions and composition of the media markets in Kazakhstan and Uzbekistan, concentrating on the proportion of investments allocated to digital marketing. This measure underscores the increasing importance of digital marketing within the wider media landscape.

*Social Media Statistics***:** Analysis of user statistics, trends in platform popularity, and comparative metrics to comprehend the influence of social media on digital engagement and cultural dynamics in the two nations.

*Messaging Platforms***:** An examination of essential metrics for messenger usage, investigating their role as communication instruments and their influence on digital connectedness and engagement.

Streaming Video-on-Demand (SVOD or Video Streaming): Evaluation of the growth and development of the Streaming Video-on-Demand sector, emphasizing its importance in the digital media landscape. The analysis highlights user penetration, revenue growth, compound annual growth rate (CAGR), and market trajectories to underscore the rising influence of SVOD platforms in the region.

Mobile Connectivity: Assessment of the number of mobile connections, growth dynamics in mobile traffic, and the shift toward mobile-first digital environments. This metric underscores the centrality of mobile connectivity in driving digital transformation in both countries.

This structured approach provides a comprehensive understanding of the similarities and differences in the digital ecosystems of Kazakhstan and Uzbekistan. By integrating international digitalization development indexes and analyzing regional digital media trends, the study offers valuable insights into their current trajectories, challenges, and future potential within the broader regional and global digital economy. This framework also identifies areas for strategic improvements and highlights the pivotal role of ICT in shaping sustainable digital growth in Central Asia.

Internet Penetration, Total Number of Internet Users:

In 2023, Kazakhstan achieved an impressive internet penetration rate of 92.3%, underscoring the nation's digitalization efforts. The country recorded 18.9 million internet users, with a gender distribution that was nearly balanced – 51.8% women and 48.2% men (Central Asian Advertising Association, 2024).

Users' online engagement remains fragmented. Current data reveals that individuals frequently go online for diverse purposes: searching for information (81.4%), watching films (65.9%), reading the news (59.6%), and communicating with others (55.6%) (Profit, 2024).

Uzbekistan, while demonstrating slightly lower Internet penetration at 83.3%, has shown significant user growth. By the beginning of 2024, the number of Internet users in Uzbekistan reached 29,52 million, with a balanced gender distribution of 49,9% women and 50,1% men (Kemp, 2024b). Notably, 26.5% of users in Uzbekistan accessed the Internet via mobile communication, underscoring the importance of mobile technology in the country's digital landscape (Marketing Association of Uzbekistan, 2024).

Median Internet Speeds:

Country's internet users experienced a median mobile download speed of 23.5 megabits per second and a median fixed broadband download speed of 40 megabits per second (World Bank, 2024: 141). However, as of November 2024, data from Ookla showed that internet users in Kazakhstan experienced a median mobile download speed of 53.69 Mbit/s (ranked 58th) and a median fixed broadband download speed of 66.38 Mbit/s (ranked 89th). Over the preceding 12 months, median mobile download speed increased significantly by 18.20 Mbit/s, and median fixed broadband download speed saw an impressive rise of 14,97 Mbit/s (Ookla, 2024a). For more detailed information on Kazakhstan's median internet speeds, please refer to Figure 1.

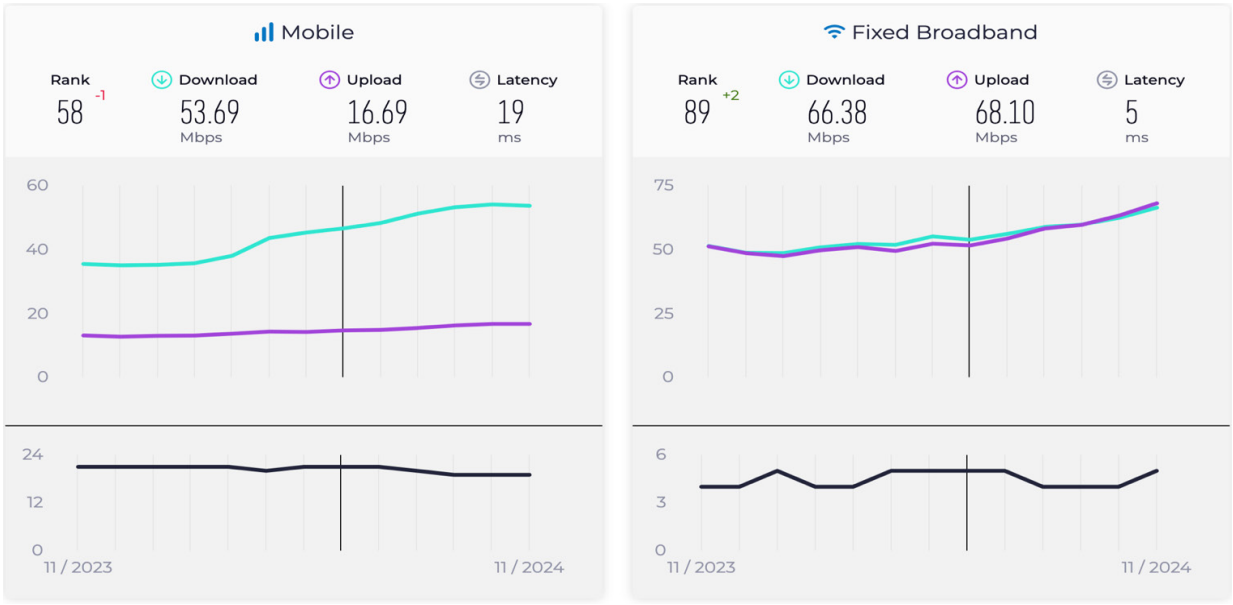


Figure 1 – Kazakhstan's Median Internet Speeds (period from 11/2023 to 11/2024).
source: Ookla (2024a)

Median mobile download speed was 15,5 megabits per second, median fixed broadband download speed was 45 megabits per second (World Bank, 2024: 147). As of November 2024, data from Ookla revealed that internet users in Uzbekistan experienced a median mobile download speed of 37.82 Mbit/s (ranked 73rd) and a median fixed broadband download speed of 79.06 Mbit/s (ranked 73rd). Over the previous 12 months, the median mobile download speed grew substantially by 13.12 Mbit/s, while the median fixed broadband download speed experienced significant increase of 23.61 Mbit/s (Ookla, 2024b). For more detailed information on Uzbekistan's median internet speeds, please see Figure 2.

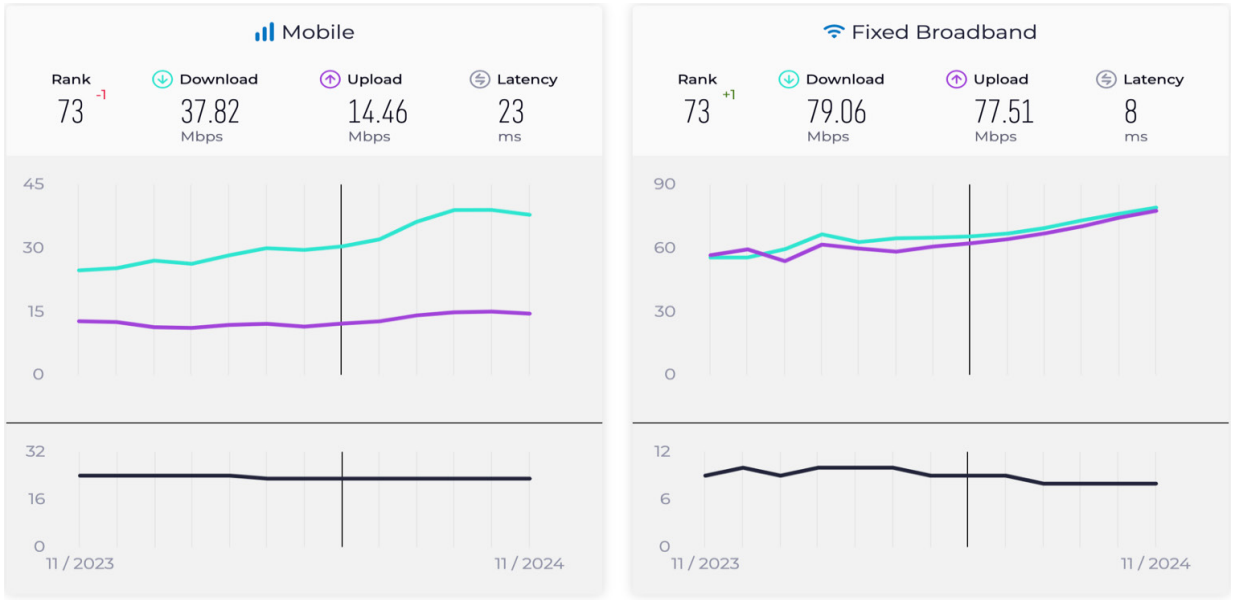


Figure 2 – Uzbekistan's Median Internet Speeds (period from 11/2023 to 11/2024).
source: Ookla (2024b)

International Digitalization Development Indexes:

The ICT Development Index (IDI), which measures progress in the information and communication technology sector, showed Kazakhstan's overall score at 88.9 in 2023, this included a Universal connectivity pillar score of 85.9 and a Meaningful connectivity pillar score of 91.9. By 2024, the overall score rose to 90.1, with the Universal connectivity pillar increasing to 87.1 and the Meaningful connectivity pillar reaching 93. Mobile broadband penetration remains the weakest indicator in the country, with a score of 64.1 out of 100. Fixed broadband affordability and the proportion of households with internet access are Kazakhstan's strongest indicators, each achieving a perfect score of 100. This overall improvement placed Kazakhstan 42nd among 170 countries.

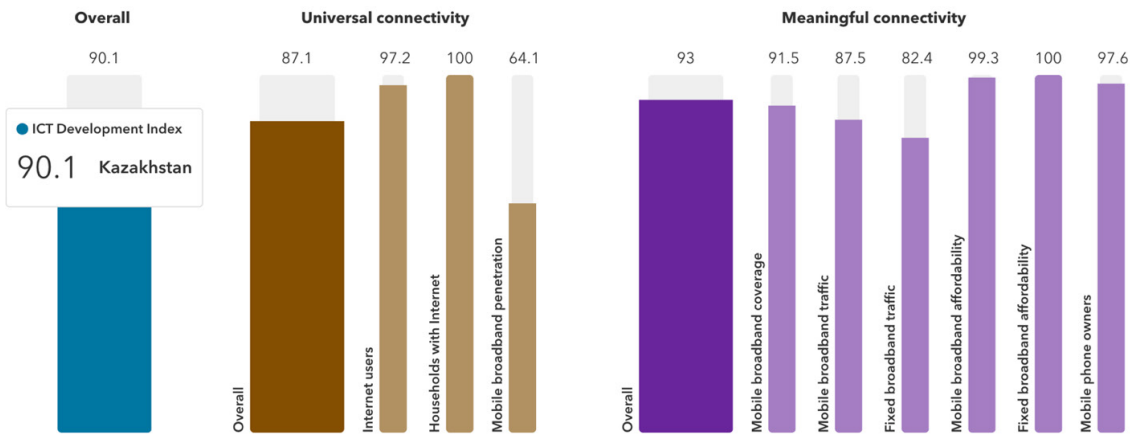


Figure 3 – A detailed overview of Kazakhstan's ICT Development Index (IDI).
source: ICT Development Index (2024)

Uzbekistan's overall ICT Development Index score was 81.7, with a Universal connectivity pillar score of 83.6 and a Meaningful connectivity pillar score of 79.7. By 2024, the country's overall IDI score increased to 84.9, with the Universal connectivity pillar rising to 86.5 and the Meaningful connectivity pillar improving to 83.3. Mobile broadband traffic (score: 63.5), fixed broadband traffic (score: 66.1), and mobile broadband penetration (score: 71.1) are the weakest indicators for Uzbekistan. In contrast, households with internet access (score: 100) and mobile broadband affordability (score: 99.9) are the strongest. These metrics position Uzbekistan 73rd among 170 countries.

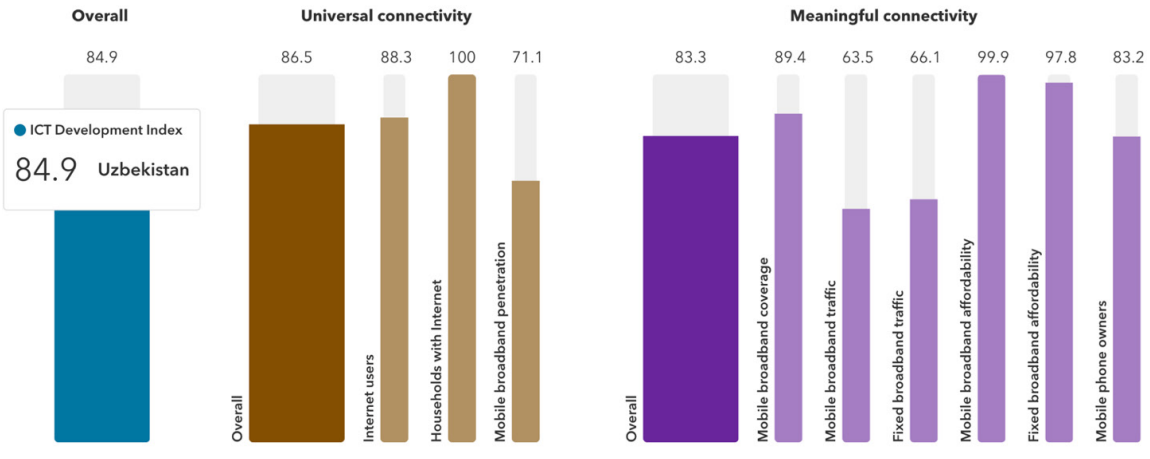


Figure 4 – A detailed overview of Uzbekistan's ICT Development Index (IDI).
source: ICT Development Index (2024)

The indicators for both countries show growth across nearly all parameters (year-on-year change from 2023 to 2024), reflecting a continued increase in Internet usage in both nations. You can read and learn in detail the definitions of the indicators and parameters in Figures 3, 4 and 5.

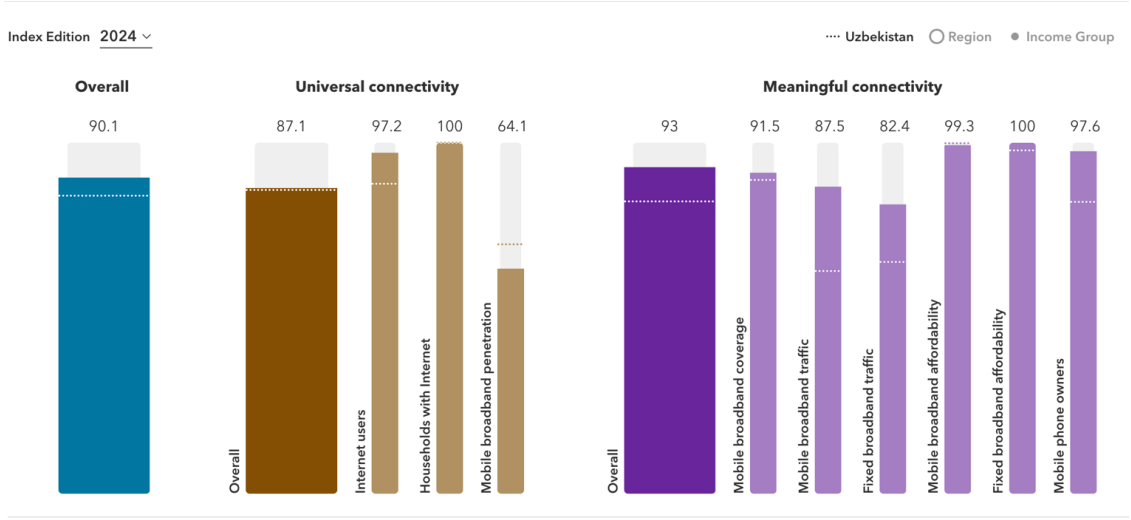


Figure 5 – A comparative overview of ICT Development Indexes for Kazakhstan and Uzbekistan. The dotted lines in the chart represent Uzbekistan's indicators.
source: ICT Development Index (2024)

According to the UN E-Government Survey 2024 report, Kazakhstan climbed four positions in the UN Global E-Government Development Index (EGDI), ranking 24th out of 193 countries with EGDI index 0.9009. This is an improvement from its 28th position in 2022 (index: 0.8628). For comparison: among the leaders Denmark (1st), Estonia (2nd), Singapore (3rd), UK (7th), Finland (9th), Sweden (14th), Ireland (20th), and Kazakhstan surpasses countries such as Switzerland (26th), Turkey (27th), Chile (31st) France (34th), China (35th), South Africa (40th), Argentina (42nd), Canada (47th), and Brazil (50th). Other key achievements of Kazakhstan include:

Telecommunications Infrastructure Index (TII): Kazakhstan made a lot of progress moving up 23 spots from 2022 to 2024 and earning a score of 0.92353. This improvement shows that the country's digital access has come a long way (UN Telecommunication Infrastructure Index, 2024);

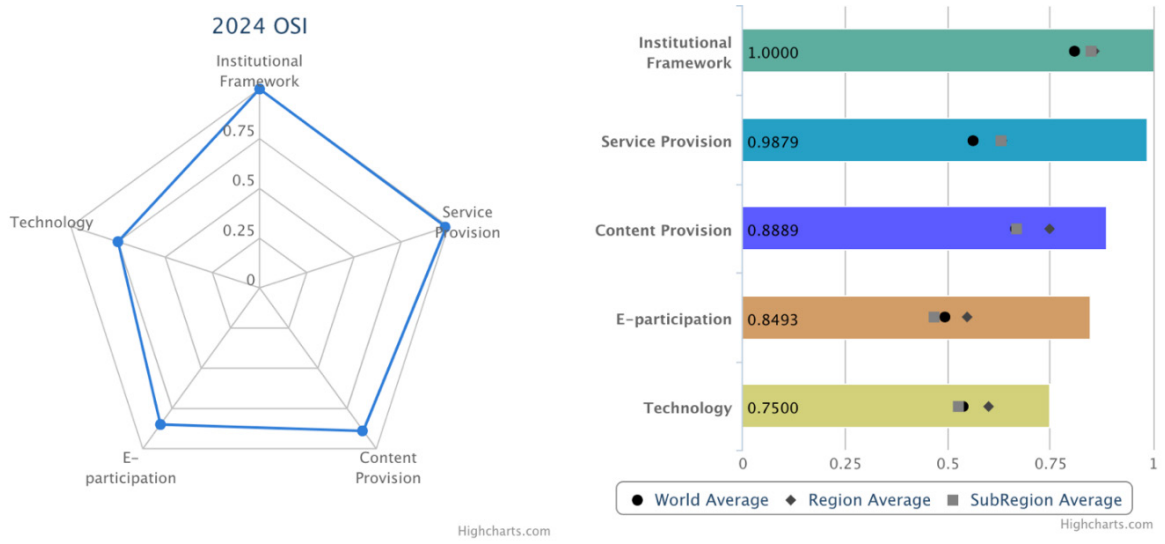
EGDI among landlocked nations: Kazakhstan ranks 1st among developing landlocked countries, achieving an EGDI score of 0.9009, followed by Mongolia, Armenia. Uzbekistan is 4th with a score of 0.7999 (UN E-Government Survey, 2024);

Online Services Index (OSI): With an index score of 0.9390, Kazakhstan ranks tenth worldwide, among world leaders including South Korea, Denmark, and Estonia, and outperforms major nations like China, Germany, and Australia. Although there is a decline of two positions compared to 2022, when the country was ranked 8th (UN Online Service Index, 2024).

Uzbekistan on the other hand, has risen in the e-government rating and falls into the category of nations with a Very High EGDI (for the first time). Previously a country was in the High EGDI group. At the end of 2022, Uzbekistan ranked 69th with an index of 0.7265. In 2024, the country rose by 6 positions, reaching 63rd place with an index of 0.7999.

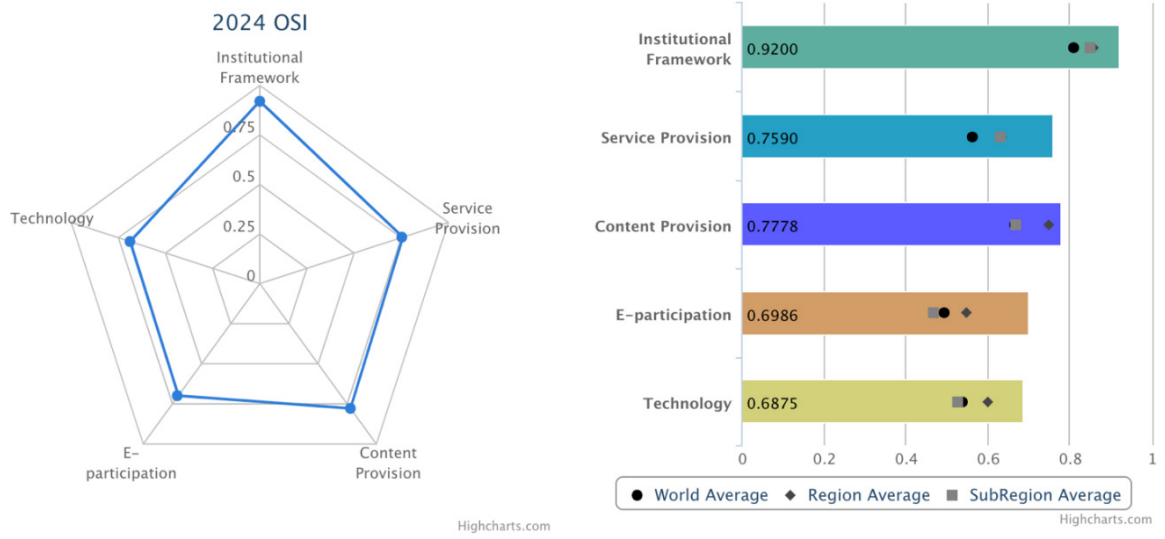
Despite a slight decline in the country's Online Services Index (OSI) ranking, from 57th place to 59th, Uzbekistan's overall OSI value increased from 0.74400 in 2022 to 0.76484 in 2024.

Another notable achievement is Uzbekistan's substantial progress in the Telecommunication Infrastructure Index (TII). Its TII value rose significantly from 0.65750 in 2022 (ranked 87th) to 0.87687 in 2024 (ranked 68th), marking an impressive improvement of 19 positions over the two-year period.



Online Service Index	2024	2022	2020	2018	2016	2014	2012	2010	2008	2005	2004	2003
Kazakhstan (Value)	0.93903	0.93440	0.92350	0.86810	0.76812	0.74803	0.78431	0.52698	0.32107	0.45000	0.32046	0.18777

Figure 6 – A detailed overview of Kazakhstan's Online Service Index (OSI), including values from previous years.
source: UN E-Government Survey (2024)



Online Service Index	2024	2022	2020	2018	2016	2014	2012	2010	2008	2005	2004	2003
Uzbekistan (Value)	0.76484	0.74400	0.78240	0.79170	0.68841	0.44881	0.49673	0.37777	0.27424	0.27307	0.23166	0.00000

Figure 7 – A detailed overview of Uzbekistan's Online Service Index (OSI), including values from previous years.
source: UN E-Government Survey (2024)

Media Market Volume and the Share of Investments in Digital Marketing:

Previous years' indicators show that digital budgets in Kazakhstan have grown faster than other segments of the country's media market. This is mainly due to the popularization of online consumption and the development of e-commerce. Thus, in 2019, the digital budget accounted for 29% of the total volume of Kazakhstan's media market, in 2020 34%, in 2021 – 37%, in 2022 – 40%, in 2023 – 47% (Profit, 2023). It is also worth considering that Kazakhstan's volume of the media market in 2020 showed

a 5% drop due to the pandemic. Advertisers lowered their budgets to reflect the shift in consumption. For example, advertising campaigns in outdoor advertising, radio, and indoor have been reduced. The entire year 2021 was spent on a slow but steady recovery. And next year, 2022, the media market showed positive dynamics, the results exceeded forecasts by 2% (Profit, 2023).

The media market of Uzbekistan is the fastest growing in the region, however, the lack of uniform measurements does not allow us to accurately assess the dynamics of its growth. The data from different sellers and sources may vary significantly depending on the approach. According to a media market study conducted by Ledokol Group, the volume of the country's media market in 2022 amounted to 1,195 billion sum (of which 25% was the digital market share), in 2023 it amounted to 1,617 billion sum which was 27% of the digital market share (Tribune, 2024, 4). But according to the International Media Service (IMS) company, the volume of the country's media market in the same year amounted to 1,225 billion sum (Spot, 2024), and based on the AACA (Advertising Association of Central Asia) experts commission, the volume of the Uzbek media market in 2023 amounted to 1,300 billion sum (Wunder Digital, 2024a).

The substantial Internet penetration and user growth have driven corresponding expansions in the media and digital markets of both countries. By the end of 2023, Kazakh media market surpassed the 100 billion tenge threshold (approximately 220 million US dollars, as of January 1, 2024), with the digital market acting as the primary growth driver. According to Dmitry Grigoriev, CBDO of Wunder Digital, the digital market achieved a growth rate of 56% in 2023, with projections for 2024 suggesting at least a 30% increase, adjusted for inflation (Profit, 2023). And as it was mentioned above, at the Digital Wave 2024 conference in Almaty, it was further highlighted that digital market budget growth in Kazakhstan reached 47% in 2023 (Advertising Association of Central Asian, 2024).

Total investments in Uzbekistan's digital market reached 440 billion sum in 2023 (Tribune, 2024), equivalent to approximately 36 million USD as of January 1, 2024. Moreover, according to Alexander Sidorov, CEO of Admixer Advertising in Uzbekistan, the media part of the digital advertising in the country accounts for 60% of the market, that is 50.3 million USD (Admixer Advertising, 2023). Regarding Uzbekistan's media market, it grew by 35% in 2023, with projections indicating a 28-30% growth rate for 2024 according to Dilshod Muzaffarov, Head of Ledokol Group (Tribune, 2024), and according to IMS Uzbekistan's media market is expected to grow by about 27% in 2024, amounting to 1.55 trillion sum, but based on Wunder Ddigital's expert assessment, the country's media market is expected to grow by 25% to 1.625 billion sum in 2024.

These figures underscore the accelerating shift towards digitalization in both countries, with digital platforms driving substantial transformations in their respective media industries.

Social Media Statistics and Messaging Platforms:

Another critical indicator of the digital market is the statistics on social media usage. As of January 2024, Kazakhstan reported 14.10 million active social media users (Kemp, 2024a), marking a significant increase of 3.7 million (+34.9%) from early 2023 (Kemp, 2024a). By March 2024, the most popular platforms in the country were TikTok, with 14.1 million users, and Instagram, with 12.5 million users (Profit, 2023). TikTok's audience profile in Kazakhstan reveals a near gender balance, with 51.1% female and 48.9% male users. The core age demographic consists of individuals aged 18-24 (39%), followed by 25-34 (30%) and 35+ (16%). In contrast, Instagram shows a stronger female presence, with 59.9% female users and 40.1% male. Its largest user group is aged 25-34 (29%), followed by 18-24 (27%) and 35-44 (21%) (Wunder Digital, 2024b).

Messaging platforms also play a significant role in Kazakhstan's digital landscape as communication tools. WhatsApp leads, used by 83.4% of cellular users, while Telegram ranks second with 38.6% of users (Wunder Digital, 2024b). Additionally, video content consumption is a notable trend, as 54% of Kazakh residents prefer YouTube for video viewing. According to the 2023 MMI study, YouTube ranks as the second most popular platform after Kaspi Bank's super app (70%) in terms of user reach (Wunder Digital, 2024b).

In Uzbekistan, as of January 2024, active social media users totaled 8.70 million, representing 24.6% of the population (Kemp, 2024b, 23). The period from early 2023 to January 2024 saw an extraordinary growth of 4.5 million users (+107%) (Kemp, 2024b, 27). This rapid expansion underscores the accelerating adoption of digital platforms in Uzbekistan, although the percentage of the population engaged with social media remains significantly lower than in Kazakhstan.

Instagram is the most popular social network in Uzbekistan, boasting an audience of 10.4 million users as of 2023 (Wunder Digital, 2024b). During the year, the platform experienced significant growth, with user numbers increasing by 53% – a record achievement for the country. Data analysis highlights Instagram's steady growth trajectory compared to other social networks. The platform's primary audience comprises young people aged 18-24 (36%), followed by users aged 25-34 (27%) and 13-17 (15%). Demographically, Instagram's users are predominantly male, with 63% men and 37% women.

Facebook follows with a smaller audience of 2.5 million users, maintaining a gender distribution of 69% men and 31% women. The age profile of Facebook users is concentrated in the 35-44 (31%) and 25-34 (31%) age groups, with a smaller proportion aged 18-24 (16%). Overall, social platform users in Uzbekistan grew by 25% in 2023, with LinkedIn experiencing an even higher growth rate of 31% (Wunder Digital, 2024b).

YouTube holds the top position as the most popular video hosting service in Uzbekistan, with 10.3 million users, or 45% of all Internet users, as of September 2023 (Wunder Digital, 2024b). The platform's core audience falls within the 25-34 age group (36%), followed by 18-24 (29%) and 35-44 (22%). Notably, 96% of users access YouTube via smartphones, spending an average of 20 minutes per day on the platform.

Among messengers, Telegram is the unequivocal leader in Uzbekistan, with 26 million active users as of September 2023 (Wunder Digital, 2024b). According to George Lobushkin, the platform owner Pavel Durov's former press secretary, Uzbekistan ranks 2nd globally after Russian Federation in terms of the number of channels and their audience. The total audience of Telegram channels in Uzbekistan is reported at 740 990 000, reflecting the platform's active and promising growth in the country. Uzbekistan hosts over 123,000 Telegram channels and approximately 18,000 chat groups, showcasing the rapid development and potential of its Telegram ecosystem (Kun, 2023).

Comparison of Platform Preferences: Based on the 2023 data, TikTok, Instagram, and WhatsApp emerged as the most popular platforms in Kazakhstan. In contrast, Uzbekistan's digital ecosystem is dominated by YouTube, Telegram, and Instagram. By the end of 2023, the penetration of social networks among Internet users was 77.5% in Kazakhstan and 29.5% in Uzbekistan (Wunder Digital, 2024b).

Streaming Video (Streaming Video-on-Demand or SVOD):

Statista reports that as more Kazakhs look to on-demand entertainment options, the country's video streaming business has grown substantially and become increasingly popular in recent years. As of March 2024, there are 2.4 million users in Kazakhstan, with an user penetration rate of 12%. Further, the user penetration rate is projected to reach 12.3% in 2025 and is anticipated to rise to 12.7% by 2027, reaching an estimated 2.7 million users by that time (Statista Market Insights, 2024a).

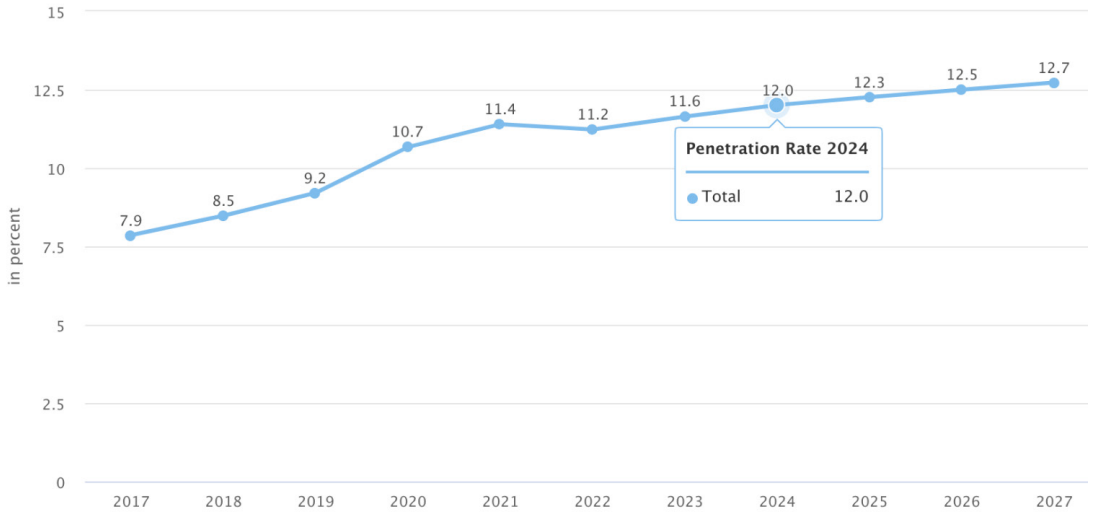


Figure 8 – SVOD User Penetration rate in Kazakhstan as of March, 2024.
source: Statista Market Insights (2024a)

Notably, since the pandemic, the revenue of Kazakhstan's SVOD market has shown consistent growth. As of March 2024, the market generated revenue amounting to 41.07 million USD, with projections indicating an increase to 46.25 million USD by 2025. The market is also expected to achieve a compound annual growth rate (CAGR) of 11.22% between 2025 and 2027, resulting in a projected market volume of 57.21 million USD by 2027. The Average Revenue Per User (ARPU) in the SVOD market is projected to reach 19.07 USD in 2025 and increase to 22.32 USD by 2027. (Statista Market Insights, 2024a).

Uzbekistan's Video Streaming (SVOD) market is projected to experience rapid growth, driven by increasing internet penetration and rising demand for on-demand entertainment. As of March 2024, the market is expected to reach a revenue of 66.49 million USD by 2025, with a compound annual growth rate of 12.22% between 2025 and 2027, resulting in a projected market volume of 83.73 million USD by 2027 (Statista Market Insights, 2024b).

Key user-related metrics for Uzbekistan's SVOD market include User Penetration, which is anticipated to reach 9.2% in 2025 and increase to 10.5% by 2027, and the number of users, expected to grow to 3.8 million by 2027. Additionally, the Average Revenue Per User is projected at 20.17 USD in 2025. These metrics underscore Uzbekistan's growing prominence in the global SVOD market and its potential for sustained expansion in the coming years (Statista Market Insights, 2024b).

Mobile Connectivity:

As of January 2024, Kazakhstan recorded 26.24 million cellular connections, surpassing the total population of 20.03 million. This discrepancy reflects the common practice of individuals maintaining multiple connections for personal and work-related purposes. According to GSMA Intelligence, mobile connections in Kazakhstan amount to 133.1% of the total population. From the beginning of 2023 to January 2024, mobile connections grew by 727,000, representing an increase of 2.8% (Kemp, 2024a). Concurrently, mobile traffic saw a notable increase of 10.7%, accounting for 65.62% of total traffic, while desktop traffic declined by 16.2%, falling to 33.49% (BYYD, 2024; Kemp, 2024a).

In Uzbekistan, mobile connections reached 33.81 million at the beginning of 2024, with 95.5% population coverage according to GSMA Intelligence. Over the course of the year, the number of mobile connections grew by 1.5 million, reflecting a 4.6% increase (BYYD, 2024; Kemp, 2024b). Since 2020, Uzbekistan has experienced a steady rise in mobile traffic, with annual growth rates of 31.9% in 2020, 8.2% in 2021, 9.8% in 2022, and 2.2% in 2023. By 2024, mobile traffic accounted for 70.60% of total traffic, while desktop traffic had decreased to 28.83% (BYYD, 2024; Kemp, 2024b) with a 4,6% decline (Statcounter, 2023).

It is also important to highlight data from the IMD World Digital Competitiveness Ranking (WDC) 2024, presented alongside The Digital Divide: Risks and Opportunities report. The ranking evaluated 67 economies, assessing their digital competitiveness from most to least competitive. Kazakhstan secured the 34th position with an overall score of 66.43. The evaluation was based on 59 criteria, incorporating both hard data, e.g., internet bandwidth speed, weighted at 2/3 and soft data, e.g., perceived company agility, weighted at 1/3 (IMD WDC Ranking, 2024: 49). Country's top strengths were observed in sub-factors such as Training and Education (ranked 2nd), Business Agility (ranked 5th), and Regulatory Framework (ranked 28th). However, weaknesses were identified in sub-factors like Technological Framework (ranked 52nd), Capital (ranked 52nd), and IT Integration (ranked 54th) (IMD WDC Ranking, 2024: 131). Unfortunately, Uzbekistan was not represented in this report.

Results and Discussion

The study revealed the following key findings, presented in a pivot table (Table 1) to enhance clarity and facilitate a nuanced understanding of patterns and relationships within the datasets. The table provides a detailed comparison of critical metrics and growth trends, highlighting notable differences and similarities in the digital landscapes of Kazakhstan and Uzbekistan, with a specific focus on the digital media market.

Table 1 – Comparison of indicators of the digital landscapes of Kazakhstan and Uzbekistan

Metric	Kazakhstan	Uzbekistan
Population (millions) as of January 1, 2024	20,03 million	36,79 million
Internet Penetration, %, as of January 2024	92,3%	83,3%
Total Internet Users (% of the total population), as of January, 2024	18,9 million (92,3%)	29,52 million (83,3%)
Median mobile and fixed broadband download speeds, Mbits/s (megabits per second). / as of November, 2024 (change since November, 2023)	Median mobile download speed was 53.69 Mbits/s. Rank: 58. (+18.20 Mbit/s since 11/2023); Median fixed broadband download speed was 66.38 Mbits/s. Rank: 89. (+14,97 Mbit/s since 11/2023)	Median mobile download speed was 37.82 Mbits/s. Rank: 73. (+13.12 Mbit/s since 11/2023); Median fixed broadband download speed was 79.06 Mbits/s. Rank: 73. (+23.61 Mbit/s since 11/2023)
Gender Distribution (among Internet users), % / as of January, 2024	51,8% women, 48,2% men	49,9% women, 50,1% men
ICT Development Index (IDI) score (position in ranking), 2024	90.1 (42nd out among 170 countries)	84.9 (73rd among 170 countries)
UN E-Government Development Index (EGDI) score (rank; change), 2024	0.9009 (Rank: 24; rose by 4 positions over the two-year period)	0.7999 (Rank: 63, rose by 6 positions over the two-year period)
UN Online Service Index (OSI) score (position in ranking among 193 countries), 2024	**0.9390** (Rank: 10; decline by 2 positions over the two-year period)	0.7648 (Rank: 59; decline by 2 positions over the two-year period)
UN Telecommunication Infrastructure Index (TII) score (rank; change), 2024	**0.92353** (**41st, rose by** 23 positions from 2022 to 2024)	**0.87687** (68th, **rose by 19** positions from 2022 to 2024)
The Volume of the Media Market, 2023 (equivalent in US dollars)	over 100 billion tenge (~220 million US dollars, as of January 1, 2024)	1,617 billion sum (~131 million US dollars, as of January 1, 2024)
Share of Investments in Digital Marketing, %, 2023 (equivalent in local currency and USD) / growth in %	47% (approx. 47 billion tenge = approx. 103 million US dollars, as of January 1, 2024) / 56% growth	27% (440 billion sum = approx. 36 million US dollars, as of January 1, 2024) / 30% growth
Social Media Users (% of the total population), as of Jan 2024	14,10 million (71,5 %)	8,70 million (24,6%)
Social Media Growth (growth %, from Jan. 2023 to Jan. 2024)	+3,7 million (+34,9%)	+4,5 million (+107%)
Popular Social Platforms, 2023: - number of users, millions - (gender demography, %) - the age distribution	TikTok: 14,1 million users (women 51,1%, men 48,9%). 18-24 y.o.: 39%; 25-34 y.o.: 30%; 35+ y.o.: 16% Instagram: 12,5 million users (women: 59,9%, men: 40,1%). 25-34 y.o.: 29%; 18-24 y.o.: 27%; 35-44 y.o.: 21%	Instagram: 10,4 million users (women 37%, men 63%). 18-24 y.o.: 36%; 25-34 y.o.: 27%; 13-17 y.o.: 15% Facebook: 2,5 million users (women 31%, men 69%). 35-44 y.o.: 31%; 25-34 y.o.: 31%; 18-24 y.o.: 16%
Messaging platform leaders (%), 2023	WhatsApp (83,4%), Telegram (38,6%)	Telegram (88%)
Projections for the Streaming Video-on-Demand (SVOD) sector; Compound Annual Growth Rate (CAGR) for 2025-2027	User penetration (2025): 12,3% Users (2025): 2,4 million Revenue (2025): 46,25 million USD CAGR (2025-2027): 11.22%	User penetration (2025): 9,2% Users (2027): 3,8 million Revenue (2025): 66,49 million USD CAGR (2025-2027): 12.22%

Continuation of the table

Metric	Kazakhstan	Uzbekistan
Most popular video hosting, 2023: Number of users (% of all internet users in the country); Gender demography	YouTube: ~10,2 million (54% of all Internet users); men: 62%, women: n.d.	YouTube: 10,3 million (45% of all Internet users); men: 62%, women: 38%
Mobile Connections, millions (% of population) / as of January, 2024	26,24 million (133.1% of population)	33,81 million (95.5% of population)
Growth in Mobile Connections, % (number of connections), 2023-2024	+2.8% (727,000 connections)	+4.6% (1,5 million connections)
Mobile Traffic Share, % (year-on-year change, %) 2023-2024	65,62% (+10,7%)	70,60% (+2,2%)
Desktop Traffic Share, % (year-on-year change, %) 2023-2024	33,49% (-16,2%)	28,83% (-4,6%)

Internet Penetration and Connectivity: The data sourced from official government reports, international digitalization development indexes, and other relevant publications. Measurements included internet penetration rates, gender distribution among internet users, and median download speeds. These indicators formed the basis for a comparative analysis of digital connectivity trends. Statistical analysis revealed significant progress in digitalization during the post-pandemic period. Kazakhstan achieved a penetration rate of 92.3%, with 18.9 million users distributed almost equally by gender (51.8% women, 48.2% men). Uzbekistan reached 83.3%, with 29.52 million users and a nearly balanced gender split (49.9% women, 50.1% men). Median download speeds showed disparities, with Kazakhstan leading in mobile speeds (53.69 Mbps), while Uzbekistan performed much better in fixed broadband (79.06 Mbps).

International Digitalization Development Indexes: Key metrics like the ICT Development Index (IDI) and UN indexes demonstrated both countries' advancements. In 2024, Kazakhstan scored 90.1 in IDI, ranking 42nd globally, and achieved 0.9009 on the EGDI, with high scores in Online Services Index (0.9390, two positions decline from 2022 to 2024) and Telecommunication Infrastructure (0.92353, rose by 23 positions over the two-year period). Uzbekistan's IDI score was 84.9, ranking 73rd, and its EGDI improved to 0.7999, with two positions decline in OSI ranking (but the overall performance has increased to 0.7648 from 0.74400), and with impressive TII progress (0.87687). Statistical IDI comparisons reveal Kazakhstan's strong performance in fixed broadband affordability and household internet access, while mobile broadband penetration remains the country's weakest indicator. Uzbekistan demonstrated notable gains in mobile broadband coverage and mobile broadband penetration, but lagged in mobile broadband traffic and fixed broadband traffic. Both countries demonstrated overall progress during the post-pandemic period, with Uzbekistan's scores increasing significantly compared to pre-pandemic levels.

Media Market Volume and the ***Share of Investments in Digital Marketing***: In 2023, Kazakhstan's media market exceeded 100 billion tenge (about 220 million USD as of Januay 1, 2024), with the digital market accounting for 47% of the total investment structure and achieving an impressive 56% growth rate, and projections for 2024 show an additional thirty percent gain, considering the inflation.

Total investments in the digital market of Uzbekistan has reached 440 billion sum (about 36 million USD as of January 1, 2024), which is about 27% of the overall investment structure and demonstrating an increase in growth of 30%, and regarding 2024, growth estimates between 28% and 30%, indicating continued expansion in the digital market sector. Direct comparisons are limited, though, by different approaches used throughout sources. Direct comparisons are limited, though, by different approaches used throughout sources.

Social Media Statistics and Messaging Platforms: 14.1 million people (71.5% of the population) regularly use social networks in Kazakhstan and that shows a higher social media penetration (as of January 2024) comparing to Uzbekistan, which has a much lower penetration rate of 24.6%, and that of 8.7 million users. But, Uzbek market expanded at an amazing 107% between January 2023 and January 2024, surpassing Kazakhstan's 34.9% growth rate over the same period. These numbers highlight Kazakhstan's saturated social media landscape in

contrast to Uzbekistan's fast growing user base, therefore suggesting that social media acceptance is still in its early years.

Messaging platforms show that people in these countries have different tastes, for example, WhatsApp is the most popular chat app in Kazakhstan, with 83.4% of users (Telegram comes in second, with 38.6%), on the other hand, 88% of Uzbek citizens use Telegram, which also shows that it works well in a variety of internet circumstances, especially in low bandwidth conditions, and has a lot of other features. Also, Telegram's dominance in Uzbekistan shows that it is used for both personal and business contact, which shapes the way people communicate online.

Video Streaming (SVOD): The Streaming Video-on-Demand markets in Kazakhstan and Uzbekistan are growing quickly. This is because more people want to watch films, TV shows or other content whenever they want, and digital access is getting better. In Kazakhstan, there were 2.4 million users (12% of the population) in 2024. By 2027, that number is expected to rise to 12.7% and there might be 2.7 million users. In March 2024 the Kazakh market was worth 41.07 million USD, and by 2027 it's estimated to have reached 57.21 million USD, having gone up at a rate of 11.22% per year.

In the south, the SVOD market in Uzbekistan is growing more quickly. With a growth rate of 12.22% per year, sales are expected to have gone from 66.49 million USD in 2025 to 83.73 million USD by 2027. User penetration, expected at 9.2% in 2025, is projected to rise to 10.5% by 2027, with the user base expanding to 3.8 million. While Kazakhstan reflects a steadily growing market, Uzbekistan's rapid expansion highlights its potential as an emerging player in the regional SVOD sector. These trends emphasize the importance of video streaming platforms in driving the digital media market across Central Asia.

Mobile Connectivity: In January 2024, Kazakhstan had 26.24 million mobile connections, which was more than its population and a penetration rate of 133.1%. This shows that many people use multiple connections for personal and business reasons, and the number of connections is growing at a rate of 2.8% per year. Their southern neighbours, Uzbek citizenz had 33.81 million mobile lines, which meant that 95.5% of the population was covered and annual growth rate was 4.6%. Kazakhstan's mobile traffic grew by 10.7% and now makes up 65.6% of all internet traffic. Desktop traffic, on the other hand, dropped by 16.2%, showing that the country has become a mature mobile-first digital environment. Similarly, Uzbekistan's internet traffic shifted toward mobile devices, and by 2024 with mobile traffic reaching 70.6% of all internet traffic, thanks to steady growth in mobile usage over the last four years that shows how its digital ecosystem is growing.

Uzbekistan is undergoing quick expansion as seen by its higher annual growth rate for mobile connections, and their northern neighbour Kazakhstan's mobile market is more established and saturated, with higher penetration, but slower rates of growth. Since mobile traffic will account for most of all traffic in 2024, both countries show clear trends toward mobile-first internet access. Conversely, the more obvious rise in mobile traffic in Uzbekistan suggests a continuous shift in consumption patterns resulting from increasing infrastructure development and digital adoption. The comparison research highlights the significance of mobile connectivity for the digital growth of Uzbekistan and Kazakhstan.

Limitations and Recommendations

Despite gathering data from various metrics, this study ran upon various constraints that influence the depth and breadth of its conclusions. Key difficulties arising from data sources are lack of detailed data (by the regions of the countries) and inconsistencies in statistical reporting. Uzbekistan's absence on the IMD World Digital Competitiveness Index complicated comparison study and leaves holes in benchmarking of its digital transformation. Furthermore, researchers neglected to closely investigate socio-cultural and geopolitical elements affecting digital adoption, therefore leaving significant contextual drivers of digital behavior for future studies.

Research had to concentrate on the official country-level data only since data on rural areas is still quite limited or completely absent, so preventing a comprehensive knowledge of the special possibilities and challenges in digitalization across both countries. These constraints highlight the need of future study to investigate the elements driving digital adoption and to apply more thorough and inclusive data collecting techniques.

Moreover, it is crucial to examine how emerging technologies like artificial intelligence, blockchain, and cybersecurity tools transform regional digital markets. This paper purposefully leaves out these subjects, saving them for the next research to

help to increase knowledge and guide the creation of reasonable strategies for the region's sustainable digital development.

Conclusion

The comparative analysis underscores the critical role of ICT in shaping digital transformation within these contexts. Kazakhstan's achievements in digital infrastructure, reflected in higher digital development rankings, position it as a regional model, while Uzbekistan's dynamic growth trajectory highlights its potential as an emerging digital economy. Driven by increased use of ICT tools, investments in digital infrastructure, and the growing importance of SVOD platforms in driving digital media consumption, both countries are clearly moving toward mobile-first internet access.

However, both countries' digitization approaches have distinct limitations that require careful planning. Discrepancies in data sources and measurement methodologies, hinder precise comparisons and complicate growth assessments. Kazakhstan must address persistent challenges in mobile broadband penetration and median internet speeds, which could constrain further progress in a saturated market. Meanwhile, Uzbekistan's ability to sustain its rapid expansion depends on achieving equitable digital access and strengthening its ICT and Internet speeds as well. The limited data availability on rural areas further restricts a comprehensive understanding of the digital divide, necessitating targeted interventions.

These problems should be taken into account in future digitalization plans, along with opportunities that are unique to each country. Kazakhstan should focus on fostering innovation and targeted investments to improve weak indicators, especially mobile broadband penetration and internet speeds, with focus on closing the gap between cities and rural areas. Uzbekistan, on the other hand, needs to prioritize diversifying its ICT infrastructure, and fixing socio-economic inequalities, so that everyone can benefit from digital growth. Both countries would also benefit from exploring the political, social, and cultural factors that affect people's use of technology in order to make effective policies. Collaborative initiatives between these countries could amplify their advancements, fostering Central Asia's integration into the global digital economy and positioning the region as a hub for sustainable and inclusive digital transformation.

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