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MEASURING AND COMPARING THE DEVELOPMENT OF THE DIGITAL ECONOMY OF THE SCO MEMBER STATES

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Abstract. With the implementation and further development of the Digital Silk Road initiative, the countries along the route have gradually formed common interests in the field of digital economy. The active development of the digital economy within the framework of the implementation of the Belt and Road initiative in these countries contributes to their socio-economic development, increasing the level of trade and openness, accelerating the growth of the green economy and forming a new development model both at the domestic and international levels. Most of the countries participating in the Belt and Road initiative and the Eurasian Economic Union (EAEU) are members or observers of the Shanghai Cooperation Organization (SCO). Economic ties between these countries are constantly strengthening, and the SCO has become an important regional economic and strategic platform. Since 2015, when the SCO began to develop cooperation in the field of digital economy, there has been insufficient research on the development of the digital economy and cooperation between China and the SCO member states. This article analyzes the current situation and development problems of the SCO member states from the perspective of the digital economy. By comparing the existing digital economy development index systems, a digital economy development index system for the SCO was developed, including six dimensions: digital infrastructure; digital connectivity; digital industry development; digital innovation competitiveness; digital economic environment; digital governance. The entropy method was used to measure the degree of digital economy development of China and the SCO member states, as well as the level of cooperation between them. The digital economy development indices of China and the SCO member states for the period from 2005 to 2022, as well as bilateral digital economy cooperation indices, were measured and compared. The comparative analysis shows that the SCO member countries have made rapid progress in the development of digital infrastructure, digital applications, digital development and digital innovation competitiveness. However, the level of digitalization has not grown so fast. China has an absolute advantage in the digital economy, but its development pace has slowed down at present. The level and speed of digital economy development of Russia, Belarus and India are above average, while the level of digital economy development of Uzbekistan and Pakistan is relatively low. In recent years, the digital development of the SCO member countries has grown rapidly, and economic and trade cooperation has become closely related to digital cooperation. In the future, the SCO member countries are expected to further strengthen cooperation in the digital economy, especially in building digital infrastructure, empowering digital innovation, promoting digital trade, cross-border e-commerce, digital finance, etc., as well as in digital security and privacy protection, helping to solve the problem of "digital inequality" and digital economic governance. All this is expected to further promote economic prosperity and sustainable development of the SCO member countries.

Keywords: digital economy, digital inequality, digital economic development, entropy method, SCO

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ИЗМЕРЕНИЕ И СРАВНЕНИЕ РАЗВИТИЯ ЦИФРОВОЙ ЭКОНОМИКИ СТРАН-ЧЛЕНОВ ШОС

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Аннотация. Благодаря реализации и дальнейшему развитию инициативы «Цифровой Шелковый путь» страны, расположенные вдоль Шелкового пути, постепенно сформировали общие интересы в области цифровой экономики. Активное развитие цифровой экономики в рамках реализации инициативы «Один пояс – один путь» в данных странах способствует их социально-экономическому развитию, повышению уровня торговли и открытости, ускорению роста зеленой экономики и формированию новой модели развития как на внутреннем, так и на международном уровне. Большинство стран-участниц инициативы «Один пояс – один путь» и Евразийского экономического союза (ЕАЭС) являются членами или наблюдателями Шанхайской организации сотрудничества (ШОС). Экономические связи между данными странами постоянно укрепляются, и ШОС стала важной региональной экономической и стратегической платформой. С 2015 года, когда ШОС начала развивать сотрудничество в области цифровой экономики, проведено недостаточно исследований по развитию цифровой экономики и сотрудничеству между Китаем и государствами-членами ШОС. В настоящей статье анализируется текущая ситуация и проблемы развития стран-членов ШОС с точки зрения цифровой экономики. Сравнивая существующие системы индексов развития цифровой экономики, была разработана система индексов для ШОС, включающая шесть измерений: цифровая инфраструктура; цифровая связность; развитие цифровой промышленности; конкурентоспособность цифровых инноваций; цифровая экономическая среда; цифровое управление. Метод энтропии используется для измерения степени развития цифровой экономики Китая и стран ШОС, а также уровня сотрудничества между ними. Были измерены и сопоставлены индексы развития цифровой экономики Китая и государств-членов ШОС за период с 2005 по 2022 год, а также двусторонние индексы сотрудничества в области цифровой экономики. Сравнительный анализ показывает, что страны-члены ШОС добились быстрого прогресса в развитии цифровой инфраструктуры, цифровых приложений, цифрового развития и конкурентоспособности цифровых инноваций. Однако уровень цифровизации рос не так быстро. У Китая есть абсолютное преимущество в цифровой экономике, но в настоящее время темпы ее развития замедлились. Уровень и скорость развития цифровой экономики России, Беларуси и Индии находятся на уровне выше среднего, в то время как уровень развития цифровой экономики Узбекистана и Пакистана относительно низок. В последние годы цифровое развитие стран-членов ШОС быстро росло, и экономическое и торговое сотрудничество стало тесно связано с цифровым сотрудничеством. Ожидается, что в будущем страны-члены ШОС еще больше укрепят сотрудничество в области цифровой экономики, особенно в сфере формирования цифровой инфраструктуры, расширения возможностей инноваций в области цифровых технологий, содействия развитию цифровой торговли, трансграничной электронной коммерции, цифровых финансов и т.д., а также в области цифровой безопасности и защиты конфиденциальности, содействия решению проблемы «цифрового неравенства» и цифрового экономического управления. Все это, как ожидается, будет способствовать дальнейшему экономическому процветанию и устойчивому развитию стран-членов ШОС.

Ключевые слова: цифровая экономика, цифровое неравенство, цифровое экономическое развитие, метод энтропии, ШОС

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Introduction

While continuing to play the role of an important security cooperation organization in Eurasia, the Shanghai Cooperation Organization (SCO) also continues to deepen its economic and trade cooperation.

Most of the countries participating in the Belt and Road Initiative (BRI) and the Eurasian Economic Union (EAEU) are members or observers of the SCO. Since BRI's inception, China has signed over 200 cooperation agreements with 149 countries and 32 international organizations. Trade between China and BRI partner countries reached 1.8 trillion dollars in 2021, reflecting year-on-year increase of 32.4%, exceeding 50% of China's total foreign trade for the first time[1]. This deepening synergy positions the SCO as a strategic regional platform for economic integration, particularly in promoting the Digital Silk Road, a cornerstone of BRI-SCO cooperation aimed at developing digital economy partnerships. In [1] the alignment between BRI infrastructure investments and the developmental needs of participating countries is noted, emphasizing its potential to stimulate regional economic growth and contribute to the economic development of countries along the route. In [2] this impact was further assessed through an extended gravity model, revealing that a 1% increase in investment facilitation levels within BRI host countries correlates with a 2.173% increase in China's foreign direct investment (FDI). The findings highlight the role of digital economy integration in enhancing economic productivity and promoting sustainable low-carbon development through collaborative innovation. In [3] these trends were confirmed using international trade data, attributing BRI's economic momentum to China's post-WTO (World Trade Organization) industrial transformation and trade expansion.

The development of the digital economy has contributed to the revitalization of global economic development and brought vital benefits to the people of the SCO member states. Infrastructure differences lead to different levels of digital economy development and spread of digital economy among the SCO member states. However, the SCO faces challenges in harmonizing digital economy development across member states. Differences in the information and communications technology infrastructure, legal framework and innovation potential have led to stratified growth models, with advanced economies (e.g. China, Russia) outperforming members from Central Asia [4]. Under the influence of the new situation, China has shifted from the traditional economic model to the digital one, from traditional services to modern ones, from production factors to innovation ones, and from high-carbon foreign trade to low-carbon one, optimizing and accelerating the transformation of China's dynamic economic development model [5, 6]. In [7] significant ICT trade deficit and pronounced structural technological dependence among post-Soviet member states within the framework of the SCO was revealed. The authors argue that the digital economy presents a critical pathway to overcoming entrenched economic inefficiencies and advocate policy measures based on three pillars:

- Technological Sovereignty Reinforcement (prioritizing the development of domestic ICT production and digital infrastructure);
- SCO-Driven Regional Collaborative Innovation (standardized technological protocols and cross-border digital ecosystems);
- Building Endogenous Capacity.

This analysis is consistent with the "premature deindustrialization" paradigm [8], emphasizing the necessity of knowledge network recalibration alongside import-substitution industrial policies in transitional digital economies. In [9], a panel data regression model was used to analyze the impacts of ICT, education level, and openness on GDP growth in 21 SCO member countries over a 20-year period. The objective of the analysis is to quantitatively and qualitatively assess the impact of selected exogenous factors on economic growth of the SCO countries. The proposed trade–digitalization–education model serves as a key path to overcome the middle income trap, while emphasizing the necessity to align regional cooperation within the SCO with individual national capacity building strategies. The study findings highlight the importance of narrowing the digital divide among member states through coordinated efforts in educational development, technological innovation, and trade liberalization. In [10], based on the analysis of how the Indian government regulates digital platforms, it is believed that as the

[1] Xinhua News Agency (2025) China foreign trade scale will reach a new high [online] Available at: https://www.yidaiyilu.gov.cn/p/04NDC9JS.html [Accessed 15.01.2025]

digital economy expands, changes in consumer protection and competition legislation continue to intensify. The adoption of the Digital Competition Bill has become a good example for India of deepening international cooperation in platform regulation within the BRICS and the SCO. Russian scholars in [11–13] have found that the SCO has accelerated its transformation from a security mechanism to an economic integration platform, and proposed infrastructure interconnection, industrial complementarity, and institutional coordination. They reveal the logic of SCO economic integration from the perspectives of "trade flow" and "institutional network", respectively.

This article quantitatively analyzes the challenges faced by the digital economy of the SCO countries and explores strategic countermeasures to promote high-quality development in order to enhance the growth potential and development prospects of the region. This study focuses on the heterogeneous development of the digital economy among the SCO member states. By constructing a multidimensional evaluation index system, it aims to achieve three main objectives:

1. Quantitative Assessment involves developing a comprehensive model covering six dimensions (digital infrastructure, industrial application, innovation ecosystems etc.) to reveal spatiotemporal patterns of digital economy development in the SCO member states from 2005 to 2022;

2. Bottleneck Identification involves diagnosing critical barriers to digital transformation in lagging countries (e.g., low ICT export dependency, insufficient venture capital availability in Central Asia);

3. Policy Design proposes multi-level cooperation strategies to narrow regional digital divides and advance the SCO Agenda 2030 on Digital Economy Cooperation.

Building on previous research, this study, first, introduces an innovative indicator system. Integrating the Organization for Economic Co-operation and Development (OECD) digital governance framework with BRI-specific indicators creates an evaluation model tailored to emerging economies. This addresses the underrepresentation of institutional contexts in existing indices [15]. Second, in terms of methodological improvement, this research employs dynamic entropy weighting to capture time shifts in indicator importance, revealing that "digital connectivity" replaced 'traditional infrastructure" as the main driver after 2015. This overcomes limitations of static models, proposed in [16]. Next, from the perspective of policy relevance, a "three-layer coordination framework" based on cluster analysis is proposed, enabling SCO member states to adopt customized "technology–industry–institution" strategies. This extends "premature deindustrialization" theory, proposed in [8], to the digital era and advocates the establishment of a regional digital public goods mechanism.

Construction of evaluation indicators for the digital economy development level of the SCO member countries

In the context of globalization and the development of information technology, the digital economy is increasingly regarded as an important indicator for assessing national competitiveness. Governments, international organizations and academia around the world have different definitions of the digital economy [14, 15]. The rapid development and deep integration of the digital economy with various industries after the pandemic have made it impossible to fully measure the value added by digital and digitally enhanced products and activities in the digital economy with data resources as the key activity factor [16, 17]. The pronounced cross-departmental, cross-industry, and cross-regional constraints have become limiting factors in assessing the development level of the digital economy. The OECD, the EU, the World Economic Forum (WEF), the International Telecommunication Union (ITU), and other international organizations have also released index systems for digital economy-related indicators based on the current development of the digital economy.

Index system for digital economy-related indicators for the international community

OECD digital economy indicators

The OECD, a well-known international economic organization, conducts research in the field of digital economy, aimed at the long-term perspective. The organization provides annual reports on these

studies. In the 2014 report [18], a comparative approach is mainly used for measurement of the digital economy, and the digital economy indicator system covers 38 indicators with international comparability (Table 1). Although it is unable to keep up with new and rapidly developing technologies and their use by individuals and companies. It also does not compare and does not evaluate the development of the digital economy in countries of the world. Nevertheless, it provides a detailed list of key areas of the digital economy. "A forward-looking international measurement agenda should be built around six areas:

- Improve the measurement of ICT investment and its link to macroeconomic performance;
- Define and measure skill needs for the digital economy;
- Develop metrics to monitor issues of security, privacy and consumer protection;
- Promote the measurement of ICT for social goals and the impact of the digital economy on society;
- Invest in a comprehensive, high-quality data infrastructure for measuring impacts;
- Build a statistical quality framework suited to exploiting the Internet as a data source" [18].

Table 1. OECD digital economy indicators (based on [18])

Primary indicators	Secondary indicators
Investing in smart infrastructure	1. Broadband penetration 2. Mobile data communication 3. The growth of the Internet 4. Toward higher speed 5. Prices for connectivity 6. ICT devices and applications 7. E-commerce across borders 8. Security 9. Perceiving security and privacy threats 10. Improving the evidence base for online security and privacy
Empowering society	1. Internet users 2. Online activities 3. User sophistication 4. Digital natives 5. Children online 6. ICTs in education 7. ICT skills in the workplace 8. E-consumers 9. Content without borders 10. E-government use 11. ICT and health
Unleashing innovation	1. ICT and R&D 2. Innovation in ICT industries 3. E-business 4. Unleashing the potential of micro-data 5. ICT patents 6. ICT designs 7. ICT trademarks 8. Knowledge diffusion
Delivering growth and jobs	1. ICT investment 2. ICT business dynamics 3. ICT value added 4. Labor productivity in information industries 5. Measuring quality in communication services 6. E-commerce 7. Human capital in ICT 8. ICT jobs and jobs in the ICT sector 9. Trade competitiveness and GVCs

EU Digital Economy and Society Index (*DESI*)

The European Commission has been monitoring Member States' digital progress through the Digital Economy and Society Index (DESI) reports since 2014 [19]. The DESI summarizes indicators of Europe's digital performance. Each year, the reports include country profiles helping Member States identify areas for priority action and thematic chapters providing an EU-level analysis in the key digital policy areas. The DESI 2022 report presents the state of the digital economy and society in the year of the pandemic, based on 2021data. It reflects two key policy initiatives that will affect the EU's digital transformation in the coming years: the Recovery and Resilience Facility (RRF) and the "Path to the Digital Decade". The DESI is a synthetic index of the degree of digital economy development in EU countries, which consists of four dimensions:

1. Human capital
2. Connectivity
3. Integration of digital technology
4. Digital public services

Table 2. EU DESI [19]

Dimension	Sub-dimension	Indicator
Human capital	Internet user skills	At least basic digital skills
		Above basic digital skills
		At least basic digital content creation skills
	Advanced skills and development	ICT specialists
		Female ICT specialists
		Enterprises providing ICT training
		ICT graduates
Connectivity	Fixed broadband take-up	Overall fixed broadband take-up
		At least 100 Mbps fixed broadband take-up
		At least 1 Gbps take-up
	Fixed broadband coverage	Fast broadband (NGA) coverage
		Fixed Very High Capacity Network (VHCN) coverage
	Mobile broadband	5G spectrum
		5G coverage
		Mobile broadband take-up
	Broadband prices	Broadband price index
Integration of digital technology	Digital intensity	SMEs with at least a basic level of digital intensity
	Digital technologies for businesses	Electronic information sharing
		Social media
		Big data
		Cloud
		AI
		ICT for environmental sustainability
		e-Invoices
	e-Commerce	SMEs selling online
		e-Commerce turnover
		Selling online cross-border

End of Table 2

Dimension	Sub-dimension	Indicator
Digital public services	e-Government	e-Government users
		Pre-filled forms
		Digital public services for citizens
		Digital public services for businesses
		Open data

WEF Network Readiness Index (*NRI*)

The WEF has published the Network Readiness Index (NRI) since 2002, focusing on the ranks, key experiences and practices of the leading countries and regions in the field of information technology. The latest edition of the NRI report was released in 2024 [20]. The WEF believes that Digital Public-Private Partnerships (DPPPs) are the key drivers of transformation, enabling governments to work with technology companies to create digital infrastructure and modernize public services. Compared with other indices, NRI focuses on the field of information technology, and informatization capability is a precondition for the development of the digital economy, so the indicators selected in the field of informatization, economic impact and other primary and secondary indicators are very concise and scientific (Table 3).

Table 3. WEF NRI [20]

Primary indicators	Secondary indicators
Technology	Access Content Future Technologies
People	Individuals Businesses Governments
Governance	Trust Regulation Inclusion
Impact	Economy Quality of Life SDG Contribution

UN ITU ICT Development Index (*IDI*)

From 2009 to 2017, the United Nations ITU published the ICT Development Index (IDI) annually, and in 2024, after extensive research, the ITU developed a new composite index [21]. By shifting the focus to the premise of the actual impact of digital technologies, the IDI assesses the contribution of digital technologies are to the achievement of the Sustainable Development Goals (SDGs).The IDI contains 11 indicators, divided into three groups: access, use and skills, – comparing different countries over time. Although the IDI measures indicators that are less significant from an economic point of view, it measures indicators related to ICT. The IDI has a comprehensive measurement of infrastructure development, industrial application, and human capital situation in the field, which is of great empirical importance for measuring the industry positioning, indicator selection, and even reference value establishment in the measurement of the digital economy in terms of information technology (Table 4).

Table 4. ITU IDI

Primary indicators	Secondary indicators
ICT access	Households with a computer (%) Households with Internet access (%) International Internet bandwidth (bit/s) per Internet user Population covered by 3G mobile networks Fixed-broadband subscriptions by speed tiers
ICT use	Individuals using the Internet (%) Active mobile-broadband subscriptions (per 100 inhabitants) Mobile-broadband Internet traffic (per mobile-broadband subscription) Fixed-broadband Internet traffic (per fixed-broadband subscription) Mobile phone ownership (%)
ICT skills	Mean years of schooling Secondary gross enrollment ratio (%) Tertiary gross enrollment ratio (%) Individuals with ICT skills (%)

China Academy of Information and Communication Technology Digital Economy Index (*DEI*)

The China Academy of Information and Communication Technology (CAICT) adopted the direct method from the "2017 China Digital Economy Development White Paper"[2] to evaluate the overall size of China's digital economy and proposed the Digital Economy Index (DEI), which uses comparative analysis to observe the development of the national digital economy. The significant difference between DEI and other indices of the same type is that it is a boom index, which includes three categories:

1) leading index,
2) consistent index,
3) lagging index.

It can reflect the state of the economic boom in different periods by comparing with the base period. The advantage of this index is that it fully considers the basic conditions necessary for the development of the digital economy, digital industrialization, industrial digitization and the impact of the digital economy on the macroeconomy and society. It selects many indicators specific to China and characteristics of the times, making it relatively large and comprehensive index. However, it should be noted that while certain indicators precisely capture prevailing industry trends, their suitability as sustainable monitoring components requires further validation.

Scholars from various countries are interested in the digital economy of the Silk Road, and their articles mainly assess the development level of the digital economy in the BRI-countries by constructing a system of various indicators [22–25]. In addition, studies are also conducted on the reasons why the level of digital economy development in the BRI-countries is so different [26, 27]. Compared with previous studies, this paper attempts to quantitatively analyze the characteristics of digital economy development in the SCO member countries by constructing a system of assessment indicators for the level of digital economy development. Based on the basic concept of digital economy proposed by the G20, the necessary conditions for the development of digital economy and the availability of data in the countries along the Belt and Road, indicators are selected based on the indicators related to the digital economy of international public organizations and the indicators selected in [28]. A comparison of the level of digital economy development in the SCO member countries is carried out using a system of assessment indices and a cluster analysis method. An analysis of the level of digital economy development in the SCO member countries is also carried out. Finally, the article analyzes the reasons for the differences

[2] 中国互联网经济白皮书：解读中国互联网特色 [online] https://www.zhiyanbao.cn/index/partFile/1/aliresearch/2022-02/1_38098.pdf [Accessed 25.03.2025]

in the level of digital economy development in the SCO member countries in order to create a basis for decision-making to accelerate the development of the digital economy in the SCO member countries.

Table 5. Digital economy assessment indicators of different organizations

Indicator Dimension	Indicator Name	OECD Indicator	EU Indicator (DESI)	WEF Indicator (NRI)	ITU Indicator (IDI)
Human Capital	Internet User Skills	○	○	–	–
	Advanced Skills & Development	○	○	–	Mean years of schooling
Connectivity	Fixed Broadband Usage	○	○	Infrastructure	Households with a computer
	Mobile Broadband	○	○	–	Population covered by 3G mobile networks
	Broadband Prices	○	–	–	–
Digital Technology Integration	Digital Technology in Enterprises	○	○	–	–
	e-Commerce	○	SMEs selling online	–	–
Digital Public Services	e-Government	–	○	–	–
Impact	Economic Impact	–	–	○	–
	Social Impact	–	–	○	–

Materials and methods

Development of SCO member States from the perspective of the digital economy

China, together with Egypt, Laos, Saudi Arabia, Serbia, Thailand, Turkey, the United Arab Emirates and other countries, launched the BRI, and signed cooperation documents with 16 countries to strengthen the construction of the Digital Silk Road. The latter has integrated the digital economy into the development of 65 countries along the Belt and Road, and has become an important part of the BRI. Accelerating the development of the digital economy and promoting the digital development of industry has become the consensus of countries along the route. At the same time, it is also necessary to ensure the foundation and prerequisites for digital industrialization, so that the two can complement each other and coordinate with each other to help the construction of digital economy. However, judging from the actual situation of the digital economy development in some countries along the Belt and Road, there are many problems and challenges in the digital trade between these and other developing countries, and the Digital Silk Road is a way to narrow the digital gap.

The SCO cooperation in the field of digital economy is an important part of the Digital Silk Road that the SCO is building together with the countries along the Belt and Road. In the context of the digital economy driving industrial change, accelerating the development of the digital economy and promoting the development of new digital productivity has huge dividends for SCO member states. In order to develop SCO cooperation in the field of digital economy, in 2017, at the regular summit, the SCO member states agreed that innovation and the digital economy are key factors for medium- and long-term economic growth and sustainable global development, and that the development of the digital economy as a way to achieve medium- and long-term economic growth of the country. At the SCO summit in Bishkek in 2019 the Concept of Cooperation of the SCO Member States in the Field of Digitization

and ICT was approved. As a practical extension of the "Cooperation Concept", the author follows the three core principles of comprehensiveness, scientificity and pertinence and systematically constructs a digital economy development assessment framework. This framework deconstructs the key driving factors of the digital economy (digital infrastructure, digital governance capabilities, etc.) and establishes a multi-dimensional indicator system to achieve dynamic monitoring and benchmarking analysis of the digital economy development process of member states.

Method for measuring and evaluating the digital economy development in the SCO member countries

Data source

This article focuses on measuring and assessing the digital economy development in ten SCO member countries. Based on the actual conditions of each country, this article conducts a comparative study of existing development indicators. Combining the principles of accessibility and comprehensiveness, a system of indicator for the digital economy development index of the SCO member countries is constructed, followed by a quantitative analysis and analysis of the results.

The Digital Economy Development Index for the SCO member countries includes six primary and 18 secondary indicators (Table 6).

Table 6. Digital Economy Development Index for the SCO member countries

Primary indicators	No.	Secondary indicators	Indicator attribute
Digital infrastructure	V1	Fixed telephone subscriptions (per 100 people)	Positive
	V2	Mobile cellular subscriptions (per 100 people)	Positive
	V3	Secure Internet servers (per 1 million people)	Positive
	V4	Access to electricity (% of urban population)	Positive
Digital connectivity	V5	Fixed broadband subscriptions (per 100 people)	Positive
	V6	Mobile broadband subscriptions (per 100 inhabitants)	Positive
	V7	Individuals using the Internet (% of population)	Positive
Digital industry development	V8	High-technology exports (% of manufactured exports)	Positive
	V9	ICT goods exports (% of total goods exports)	Positive
	V10	ICT service exports (% of service exports, BoP)	Positive
Digital innovation competitiveness	V11	Tertiary gross enrollment ratio (%)	Positive
	V12	Availability of latest technologies (1–7)	Positive
	V13	Venture capital availability(1–7)	Positive
	V14	Scientific and technical journal articles	Positive
Digital economic environment	V15	Foreign direct investment, net inflows (% of GDP)	Positive
	V16	Charges for the use of intellectual property (BoP, $)	Positive
Digital governance	V17	Government effectiveness: estimate (ranging from approximately −2.5 to 2.5)	Positive
	V18	Cost of business start-up procedures (% of GNI per capita)	Positive

The first two secondary indicators of Digital Infrastructure reflect the prevalence and convenience of communication technologies, while the latter two are crucial for ensuring the sustainable development and securing operation of the digital economy.

The first two secondary indicators of Digital Connectivity are key indicators of the degree of connectivity. Fixed broadband is typically used to connect to the Internet at home or work, and its penetration indicates the stability and speed of Internet access. In contrast, mobile broadband is more flexible and is suitable for mobile devices and for accessing the Internet on the move. The penetration of these indicators directly affects the availability and efficiency of online services, telecommuting, education, and

innovative applications in the digital economy. The last indicator measures the extent of Internet use, reflecting the level of penetration and coverage in a country or region. High levels of Internet use imply greater access to information, education, and business services, which positively affects various aspects of the digital economy, including e-commerce, online entertainment, and educational resources. Assessing these indicators helps to understand the extent of digital adoption in a country or region and to identify the penetration and influence of the digital economy across different industries and social levels.

The first secondary indicator of Digital Industry Development includes the share in international trade of innovative high-tech and products with high added value, including those in the ICT sector. This indicator reflects the international competitiveness of a country or region in technological innovation, R&D investment and technology application. ICT products include electronic devices, communication equipment, computers and components. Their export share indicates the production capacity and market share of a region in the ICT industry. ICT services include software development, data processing, and IT consulting. Their export share reflects the advantages and international competitiveness of a country or region in service production within the digital economy. Therefore, the Digital Industry Development indicator comprehensively reflects the innovation, production potential and international competitiveness of a country or region in digital economy development, helping to assess the contribution of digital transformation to the overall economic structure and social welfare.

The first secondary indicator of Digital Innovation Competitiveness reflects the degree of accessibility of higher education. Higher accessibility of higher education helps cultivate highly skilled personnel, promote technological innovation and improve digital literacy, thus providing fundamental support for digital economy development. Evaluating this indicator helps to understand the talent pool situation in a country or region. The second secondary indicator measures a country or region's readiness for R&D in new technologies (such as artificial intelligence, block-chain, and the Internet of Things), covering the development, application, and commercialization of new technologies, reflecting the advanced level of digital innovation. The third indicator assesses the level of venture capital support in the digital economy, reflecting the supply of risk capital in a country or region's entrepreneurial and innovation ecosystem, which directly affects the development of innovative enterprises and the innovation potential of the digital economy. The fourth secondary indicator serves as an important indicator of the level of research and innovation potential, reflecting the active contribution to the fields of mathematics and computer science in a country or region. The Digital Innovation Competitiveness indicator covers technological innovation, research potential and education levels, and entrepreneurial environment, comprehensively reflecting a country or region's innovation and competitiveness in the digital economy.

The first secondary indicator of Digital Economy Environment includes aspects such as capital inflow, industrial structure upgrading, internationalization level, policy environment and business climate, evaluating a country or region's development environment in terms of technology, innovation, and market competitiveness in the process of digital economy development. Foreign investment often brings advanced technology and management experience, promoting innovation and development in the domestic digital economy and facilitating economic activities. The second secondary indicator represents the level of intellectual property protection in a country or region. The amount of intellectual property fees reflects the country's commitment to intellectual property rights protection. A favorable protection environment is conducive to the reasonable use and transaction of intellectual property. The amount of intellectual property fees indicates the degree of innovation, technology transfer and cooperation, playing a decisive role in promoting innovation and technology application in the digital economy. Evaluating the amount of intellectual property fees helps determine how much attention a country or region pays to intellectual property rights. High fees indicate investment in talent cultivation and education, providing protection and incentives for innovators. These two secondary indicators provide a representative assessment of the policy environment for digital economy development in a country or region.

The first secondary indicator of Digital Governance represents people's views on the quality of public services, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. In essence, they transform the subjective judgments of social groups on government behavior, such as trust and satisfaction, into objective indicators that can be quantified and compared through measurement models. Cross-analyzing government effectiveness indicators in digital economy assessments can identify key constraints and transform abstract governance capabilities into quantifiable, comparable, and traceable policy tools.

The second secondary indicator of Digital Governance includes aspects such as the ease of starting a business, obtaining work permits, and cross-border trade, allowing to assess the degree to which a country or region facilitates commercial activities. A high level of the ease of doing business indicates a more friendly and efficient business environment, which is conducive to innovation and economic activity.

Two secondary indicators (Digital Economy Environment and Digital Governance) provide a representative assessment of the governance system and policy environment in the context of digital economy development in a country or region.

In general, the construction of these six indicators will allow a comprehensive assessment of the current state and potential of the digital economy of a country or region, providing a comprehensive system of indicators for government strategic planning and corporate investment decisions, thereby promoting the healthy and sustainable digital economy development.

Given the availability and completeness of data on SCO member countries, we selected data from 2005 to 2022. Furthermore, given that Belarus will become a new member of the organization in 2024, the final index covers a total of ten countries: China, Russia, India, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Pakistan, Iran, and Belarus.

As for data sources, they are mainly obtained from the World Bank WDI database and WEF reports. In case of missing data in the sample, this study uses trend analysis methods to calculate corresponding trend values.

Data normalization method

The entropy method is applied to assess the development level digital economy and the dynamics of the China–SCO cooperation. It is more objective than other methods. The entropy weight method (EWM) was chosen over principal component analysis (PCA) or data envelopment analysis (DEA) for the following reasons:

- Objective weighting: EWM calculates weights based on the data dispersion, avoiding errors introduced by PCA's subjective factor rotation or DEA's pre-set production function [27]. It is suitable for the heterogeneous SCO dataset.
- Dynamic adaptability: EWM can adjust weights annually according to the changing technological and regulatory dynamics (e.g., the weight of "secure internet servers" has increased by 37% since 2015), which is superior to static methods.
- Data robustness: The missing data rate for Central Asian countries is over 20%, and compared with PCA's requirement for a complete dataset, EWM is less sensitive to outliers and provides robustness even after trend-based interpolation.

In practical applications, the EWM calculates the entropy weight of each indicator based on the degree of variation, and then adjusts the entropy weight of each indicator to obtain a more objective weight. Since all the indicators selected in this study have positive values (the measured phenomenon is positive), the original data is standardized using the following formula:

$$Y_{ij} = \frac{x_{ij} - \min\left(X_i\right)}{\max\left(X_i\right) - \min\left(X_i\right)}, \quad (1)$$

where Y_{ij} is the standardized value of the j-th indicator in the year i; X_{ij} is the original data of the j-th indicator in the year I; $\min(X_i)$ and $\max(X_i)$ are the minimum and maximum values of the original data of the j-th indicator in the year i, respectively.

This normalization process eliminates dimensional differences between different indicators, allowing them to be compared and analyzed on the same scale.

The weight of the primary indicator is equal to the sum of the weights of the secondary indicators. The weights of the secondary indicators are calculated using the following formula:

$$P_{ij} = \frac{Y_{ij}}{\sum_{i=1}^{n} Y_{ij}}, \tag{2}$$

where P_{ij} is the proportion of the i-th sample value under the j indicator of each country in each year.

The information entropy of each indicator is calculated using the following formula:

$$E_j = -\left(\ln n\right)^{-1} \sum_{i=1}^{n} Y_{ij} P_{ij} \ln P_{ij}. \tag{3}$$

The redundancy of information entropy is calculated using the following formula:

$$D_j = 1 - E_j. \tag{4}$$

The weights of indicators are calculated using the following formula:

$$W_j = \frac{D_j}{\sum_{j=1}^{m} D_j}. \tag{5}$$

The comprehensive score is calculated using the following formula:

$$S_i = \sum_{j=1}^{m} w_j \cdot P_{ij} \cdot 1000. \tag{6}$$

Due to the relatively small values of the original data, this study has scaled the values by a factor of 1000 to facilitate observation. This adjustment is applied to the calculation of the original composite scores, allowing for a clearer representation and easier interpretation of the results.

Comparative analysis of digital economy development index of SCO member countries

Based on the calculation of the Digital Economy Development Index (DEDI) for the SCO member countries, this study conducts a comparative analysis by time, nation and indicator.

As shown in Fig. 1, from 2005 to 2022, the level of digital economy development in the SCO member countries has been steadily improving. The average DEDI in these countries increased from 3.475 in 2005 to 9.716 in 2022, corresponding to a growth rate of 179.5%.

In terms of specific countries, China, Russia and Belarus belong to the “first tier”, with their digital economy development levels above the average. Notably, China has consistently led the other countries in digital economy development, showing rapid growth since 2012.

Countries such as the India, Kazakhstan and Iran belong to the “second tier”, showing relatively comparable levels and rates of digital economy development. Among them, the digital economy development level in the India fluctuates around the average.

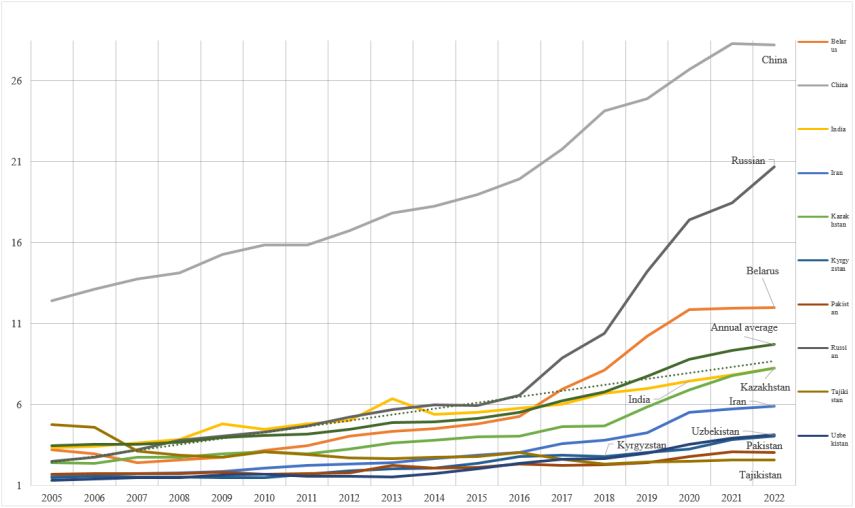

Fig. 1. Comparison of DEDI in the SCO member countries in 2005–2022

Table 7. Weights of the digital economy development levels of the SCO member states

Primary indicators	Weights	Secondary indicators	Sub-item weight
Digital infrastructure	19.79%	Fixed telephone subscriptions (per 100 people)	4.18%
		Mobile cellular subscriptions (per 100 people)	1.31%
		Secure Internet servers (per 1 million people)	13.93%
		Access to electricity (% of urban population)	0.38%
Digital connectivity	15.40%	Fixed broadband subscriptions (per 100 people)	7.03%
		Mobile broadband subscriptions (per 100 inhabitants)	5.33%
		Individuals using the Internet (% of population)	3.04%
Digital industry development	26.86%	High-technology exports (% of manufactured exports)	5.19%
		ICT goods exports (% of total goods exports)	15.84%
		ICT service exports (% of service exports, BoP)	5.82%
Digital innovation competitiveness	16.47%	Tertiary gross enrollment ratio (%)	2.70%
		Availability of latest technologies (1–7)	0.83%
		Venture capital availability(1–7)	1.22%
		Scientific and technical journal articles	11.73%
Digital economic environment	13.22%	Foreign direct investment, net inflows (% of GDP)	0.63%
		Charges for the use of intellectual property (BoP, $)	12.59%
Digital governance	8.25%	Government effectiveness: estimate (ranging from approximately –2.5 to 2.5)	2.06%
		Cost of business start-up procedures (% of GNI per capita)	6.20%

The “third tier” countries, which have a lower level of digital economy development, include Uzbekistan, Kyrgyzstan, Pakistan and Tajikistan, which have significant growth potential.

As can be seen from Fig. 2, all six primary indicators have shown significant growth from 2005 to 2022. Among them, the Digital Connectivity has shown the largest growth by 16.62 times, and its regional average level has increased significantly. The Digital Infrastructure indicator has also grown rapidly since 2013, with the regional average level has increased from 0.10 to 1.80, that is, by 7.20 times, which shows that digital infrastructure is a key indicator for the digital economy development and is advancing rapidly. The

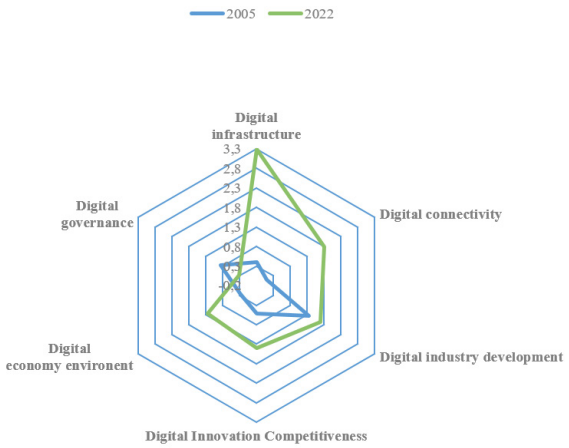

Fig. 2. Radar chart of DEDI in the SCO member countries in 2005–2022

Digital Economic Environment has grown significantly, with the regional average level has increased from 0.26 to 1.23, that is, by 4.69 times. The Digital Innovation Competitiveness dimension has also grown significantly, with the regional average level increasing from 0.5 to 1.39, that is, by 2.78 times. The Digital Industry Development indicator as a whole shows an upward trend, except for a slight decline in 2012 and 2017. The regional average level has increased from 1.34 to 1.68, that is, 24.8%. In contrast, the Digital Governance indicator is growing slowly, remaining at the same level or declining. In general, the growth rates of Digital Connectivity, Digital Infrastructure and Digital Economic Environment indicators exceed the growth rates of the overall index. It turned out, that during the period under review, the level of Digital Economic Development in SCO member countries was mainly determined by the improvement of Digital Connectivity, Digital Infrastructure and Digital Economic Environment indicators.

Table 8 shows the level of digital economy development in the SCO member countries. The countries with the highest rates are China, Russia and Belarus. Among them, China has consistently held the leading positions in the ranking from 2005 to 2022. The table shows that the overall level of digital economy development in the SCO member countries maintains a steady growth rate.

Fig. 3–8 present a comparison of the indices of the SCO member countries for six primary indicators.

From Fig. 3, it can be seen that Russia shows a higher level of Digital Infrastructure compared to other SCO member countries, particularly after 2015, when its digital infrastructure significantly improved. In contrast, China's growth in digital infrastructure has been relatively gradual. Additionally, Belarus, Kazakhstan and Iran have made rapid progress in Digital Infrastructure since 2015. Uzbekistan and Kyrgyzstan show a high degree of similarity in their progress regarding Digital Infrastructure, while Tajikistan and Pakistan have relatively low levels of Digital Infrastructure.

In terms of Digital Connectivity indicator shown in Fig. 4, Russia, China and Belarus are in the leading positions, with China showing the largest relative growth, while Russia remains more stable. The gap in Digital Connectivity between Uzbekistan, Kyrgyzstan and Iran is gradually narrowing. In contrast, countries such as India, Kazakhstan, Tajikistan and Pakistan are showing relatively slow progress in their Digital Connectivity.

In terms of Digital Industry Development indicator shown in Fig. 5, China is in the leading position. India, Kazakhstan, Belarus, Pakistan, and Russia are in the “second tier”, Kyrgyzstan, Uzbekistan, and Tajikistan are in the “third tier”, and Iran shows the lowest Digital Industry Development level.

In terms of Digital Innovation Competitiveness indicator, shown in Fig. 6, China has a significant advantage over ASEAN countries and shows high growth rates. India, Russia and Iran are in the “second tier” and the rest of the countries show a low level of this indicator.

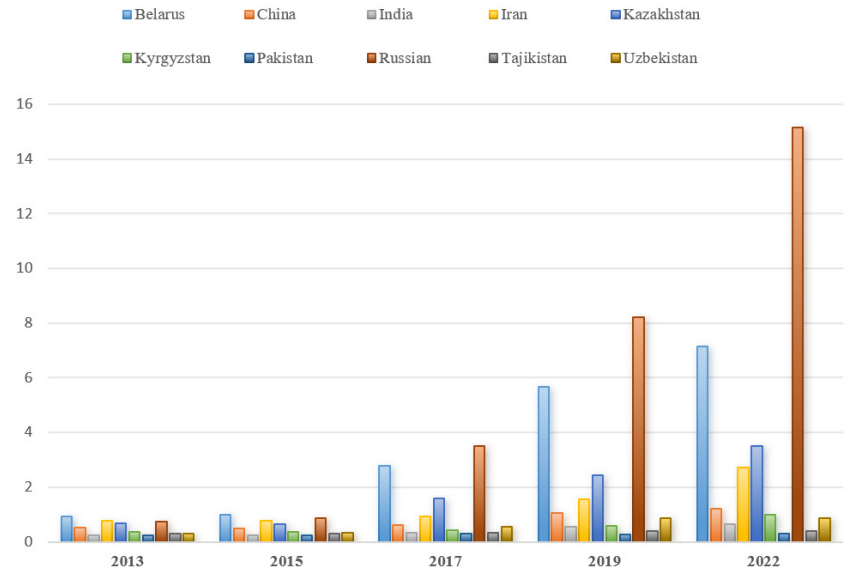

Fig. 3. Cross-national comparison of Digital Infrastructure for the SCO member states in 2013–2022

Table 8. Comparative analysis of DEDI of the SCO member states

Year	BY	CN	IN	IR	KZ	KR	PK	RU	TJ	UZ	Annual average
2005	3.21	12.41	3.35	1.56	2.39	1.48	1.72	2.52	4.78	1.34	3.47
2006	2.95	13.12	3.40	1.65	2.39	1.56	1.73	2.75	4.59	1.39	3.55
2007	2.43	13.75	3.61	1.72	2.73	1.53	1.76	3.21	3.13	1.48	3.53
2008	2.58	14.14	3.85	1.78	2.75	1.54	1.75	3.82	2.86	1.50	3.66
2009	2.77	15.29	4.82	1.88	2.95	1.49	1.81	4.06	2.75	1.67	3.95
2010	3.17	15.88	4.46	2.06	3.07	1.50	1.70	4.30	3.09	1.69	4.09
2011	3.47	15.88	4.82	2.24	2.96	1.69	1.75	4.67	2.91	1.57	4.19
2012	4.05	16.74	5.04	2.34	3.26	1.90	1.76	5.23	2.69	1.58	4.46
2013	4.36	17.84	6.36	2.41	3.64	2.03	2.23	5.68	2.65	1.55	4.88
2014	4.52	18.26	5.41	2.66	3.79	2.09	2.10	5.97	2.76	1.75	4.93
2015	4.79	18.98	5.52	2.86	4.02	2.39	2.14	5.93	2.79	2.02	5.14
2016	5.28	19.92	5.76	3.06	4.05	2.78	2.32	6.58	3.04	2.36	5.51
2017	6.97	21.77	6.02	3.59	4.63	2.89	2.23	8.90	2.61	2.61	6.22
2018	8.11	24.15	6.68	3.81	4.66	2.81	2.30	10.41	2.35	2.67	6.80
2019	10.21	24.89	6.98	4.28	5.84	3.04	2.40	14.22	2.46	3.00	7.73
2020	11.87	26.69	7.46	5.51	6.91	3.26	2.80	17.43	2.51	3.54	8.80
2021	11.97	28.31	7.85	5.75	7.79	3.84	3.08	18.47	2.57	3.93	9.36
2022	11.99	28.22	8.26	5.89	8.26	4.07	3.04	20.70	2.60	4.12	9.72
Ranking	3	1	4	7	5	8	10	2	6	9	

In terms of Digital Economic Environment indicator shown of Fig. 7, China has a clear advantage over other SCO member countries and is significantly ahead of them. India and Russia show higher growth over the period under review. The indicators of other member countries are relatively similar.

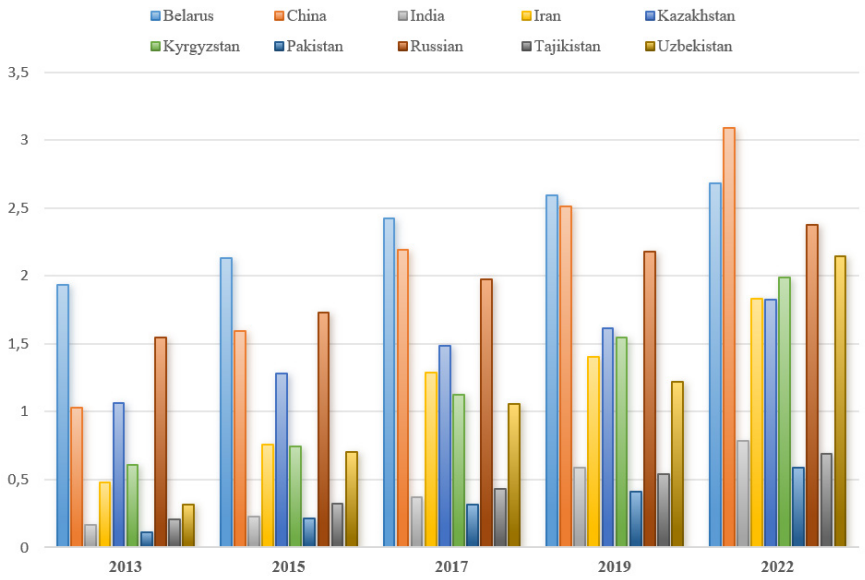

Fig. 4. Cross-national comparison of Digital Connectivity for the SCO member states in 2013–2022

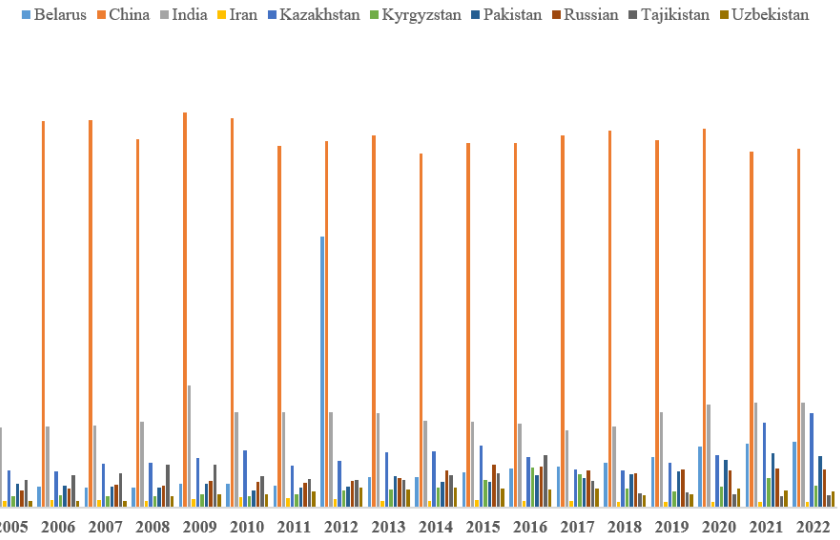

Fig. 5. Cross-national comparison of Digital Industry Development for the SCO member states in 2005–2022

In terms of Digital Governance indicator shown of Fig. 8, China's digital governance score is generally stable and has an upward trend. India's score peaked in 2013 (1.92) and then declined slightly, although it is still higher than most countries, indicating relatively high digital governance performance. Kazakhstan and Uzbekistan's scores fluctuated widely but were generally at the average level, indicating the need to improve digital governance in these countries. Pakistan and Kyrgyzstan's scores are relatively low, indicating that these two countries still need to further improve their digital governance, while the scores of other countries are relatively balanced.

Having analyzed the economic development indicators of the SCO member states, we can draw the following conclusions.

First, the level of the digital economy of each country is strongly correlated with the basis of its economic development. For example, China and Russia are at a high level in all aspects of digital economic

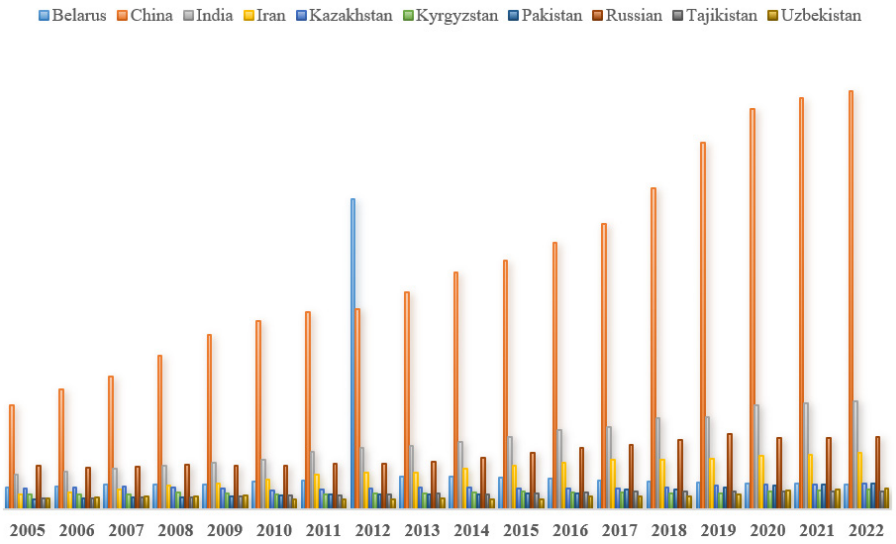

Fig. 6. Cross-national comparison of Digital Innovation Competitiveness of the SCO member states in 2005–2022

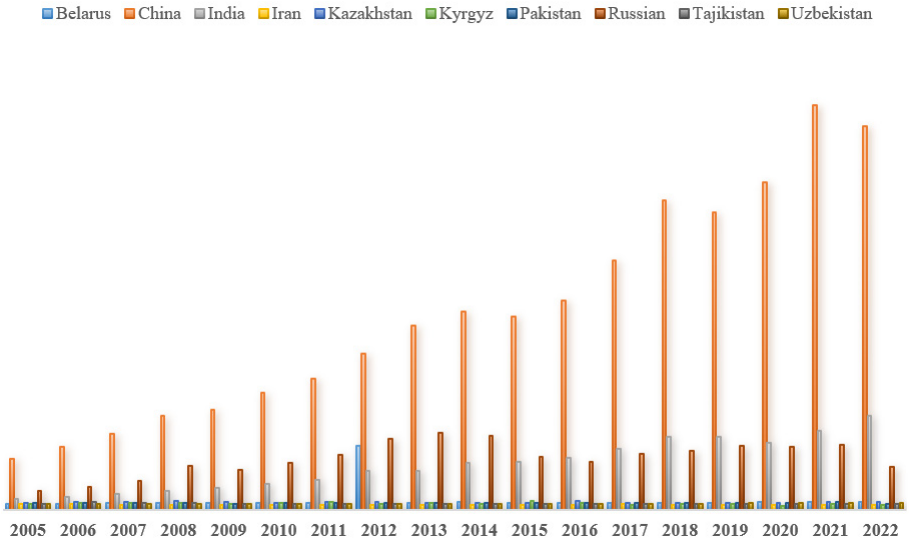

Fig. 7. Cross-national comparison of Digital Economy Environment of the SCO member states in 2005–2022

development. Tajikistan, Kyrgyzstan and Pakistan are at a low level in all indicators, and the rest of the countries are at an intermediate level in all indicators. This distribution generally corresponds to the level of economic development of the SCO member states, while India, Belarus and Kazakhstan are generally above average in all indicators.

Second, from the perspective of the study period, the level of digital economy development in each country has made significant progress. This is especially noticeable in such indicators as Digital Infrastructure, Digital Connectivity, Digital Industry Development and Digital Innovation Competitiveness. In addition, it can be seen that among the SCO member states, China maintains a leading position in digital development, although its growth rate has slowed down. China, Russia and India have maintained a high advantage in the digital economy development index for many years.

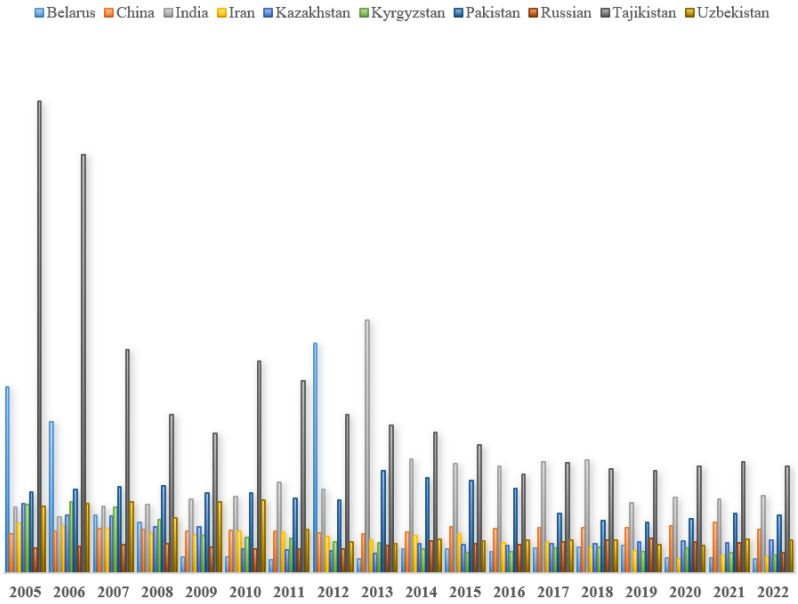

Fig. 8. Cross-national comparison of Digital Governance for the SCO Member States in 2005–2022

Discussion and Conclusion

Since 2015, the SCO cooperation in the field of digital economy has continued to deepen and achieved fruitful results. In terms of digital transformation and development, the SCO has signed a series of documents and agreements and made great progress in digital infrastructure, digital finance, digital agriculture, e-commerce, digital trade and other aspects.

The study shows that the digital divide among SCO member states is mainly due to differences in infrastructure investment (e.g. broadband coverage, security server density), education level (higher education enrollment rate) and insufficient coordination policies. For example, the Internet penetration rate of Central Asian countries (such as Tajikistan and Kyrgyzstan) is only one-third of that of China, while their ICT exports remain low, reflecting the dual gap in technology absorption and industrialization.

It is also found that the SCO has a core-periphery structure. The SCO digital economy is hierarchical, with China and Russia using ICT exports (accounting for 18.3% of total exports) to create a technological lock-in effect. There are bottlenecks in digital governance, and the contribution of the digital governance indicator to the growth of the Central Asian digital economy is less than 5%, indicating that the quality of institutions is an invisible barrier to digital transformation.

As for the threshold for accelerating digital economic growth, the broadband penetration rate is over 55% and the availability of venture capital is over 4.2 (level 1–7). However, the data for some Central Asian countries are based on interpolation estimates, which may weaken the heterogeneity of small countries. New indicators such as gender inequality in digital technologies and algorithm ethics were not included in the analysis. In 2023, the Statement of the Council of Heads of State of the Shanghai Cooperation Organization on Cooperation in the Field of Digital Transformation was signed and adopted, which contributed to the further advancement of the SCO in the creation and development of digital communications. Based on the results of the analysis of the digital economy development index of the SCO member states, it can be concluded that at present, the development of the digital economy of the SCO member states still has the following opportunities and challenges.

The economic strength and population of the SCO member countries are huge, and the potential for digital economy development is also very large. In the future, the development of digital economy will become an important driving force for economic growth on both sides. Judging from the closeness of

traditional economic and trade cooperation among the SCO member countries, they have a good foundation for cooperation and a market base in the field of digital economy. Most of the SCO member states have a relatively high Internet penetration rate and the development level of IoT technology, which provides strong support for the development and cooperation in the field of digital economy among the SCO member states. In addition, the governments of the SCO member states have strengthened their support for the development of digital economy and international cooperation, and have provided more opportunities for cooperation in digital transformation, innovation and development from a policy perspective. Therefore, there are generally four opportunities for the development of digital economy cooperation among the SCO member states:

1. Since the SCO launched cooperation in the field of digital economy, the SCO member states have laid a good foundation for cooperation in the field of digital economy and launched a new economic dialogue at the next SCO summit in 2024. Governments of various countries are also stepping up their efforts to cooperate with the SCO digital economy, providing more opportunities for innovation and development.

2. The SCO has launched internal organizational reforms and signed the Decision of the Council of Heads of State of the Shanghai Cooperation Organization on the Proposals of the Council of Foreign Ministers of the Shanghai Cooperation Organization Member States on Improving the Activities of the Shanghai Cooperation Organization at the next summit on July 4 last year. This will increase the scale of mutually beneficial cooperation between the SCO.

3. The cooperation of the SCO member states in the field of digital transformation continues to develop, which is not limited to e-commerce and other fields, but also helps in standard setting, healthcare, education and other fields. This will further improve the quality and level of digital economic cooperation, and provide more opportunities and challenges for cooperation among the SCO member states.

4. There is a high degree of complementarity and broad prospects for the development of the digital economy among the SCO member countries. China, Russia and India have the strongest comprehensive national strength in the SCO, and also occupy leading positions in high-tech industries.

Although some SCO member states have started developing the digital economy late, the momentum of digital development is very strong. Leading member states export part of their production capacity and plans, and cooperate with other member states to strengthen the construction of Internet infrastructure and improve the service capacity and quality of the digital economy.

In general, the digital economy, as a typical developing product of modern times, is another new economic model after the agricultural and industrial economy, and it can be said that the digital economy is national development and social progress.

The levels of economic development of the SCO member countries vary greatly, as do the levels of digital economic development. For example, the levels of economic development and digital economic development of the SCO member countries in Central Asia are relatively low, and the cooperation foundation is weak, which poses great difficulties for digital economic cooperation in the region [29, 30].

Due to the differences in the digital economic foundations of the SCO member countries, the pace of digital economic development is inconsistent, and the policy directions and effects of implementing digital economic development vary greatly. The institutional environment in each member country is different. There are discrepancies in government support, progress in working with businesses, and solution mechanisms in promoting various digital economic cooperation projects, as a result of which the recommended progress and effect of the same project vary in different countries, which in turn affects the willingness to cooperate in the future.

Data security and privacy issues are receiving increasing attention. How to ensure data security, data circulation, data privacy protection, and national security protection in the digital economic cooperation of the member countries has become the focus of attention of the member countries. However, the data protection systems and laws of the member countries are relatively imperfect, and there are some

security loopholes in the exchange of data. There are also problems with the verification of digital assets in the development of the digital economy. In the cooperation in the field of digital economy, there are differences in the recognition and regulation of intellectual property rights among the SCO member countries, which leads to hidden dangers in cooperation [31].

In light of the opportunities and challenges in developing the digital economy of the SCO member states, future cooperation can focus on the following aspects.

1. Strengthening the construction of Internet infrastructure, including improving Internet coverage, strengthening network security, ensuring reliable digital channels and data transmission. Based on the technological developments of leading countries such as China and Russia, it is necessary to establish a regional digital infrastructure fund to provide targeted support for the construction of 5G networks and cloud computing centers in Central Asian countries.

2. Increasing investment in training talents in the digital economy, establishing a professional education system in digital technology, cultivating more professional talents and raising the technical level in the digital economy.

3. Relying on the SCO University Alliance, it is necessary to develop cross-border digital talent training projects to enhance the core skills of member countries such as programming and data analysis. It is also necessary to strengthen cooperation and exchanges in digital education among member states, jointly study and formulate digital economy policies through bilateral and multilateral cooperation mechanisms, and share experiences and best practices in digital economy development.

4. Paying more attention to digital economy security, strengthening cooperation in network security, digital data protection and privacy, and jointly promoting the application, research and development of new technologies such as artificial intelligence, big data and blockchain. It is necessary to formulate a standardized data governance framework, the SCO Cross-Border Data Flow Agreement, to balance data security and data sharing needs, and reduce the cost of countering policies.

5. Establishing an industrial cooperation alliance, promoting cooperation in digital economy-related fields within member states, jointly promoting industrial innovation and development, and enhancing competitiveness.

To solve the challenges facing the SCO member states in developing the digital economy, it is necessary to strengthen infrastructure construction, cultivate digital talents, develop cooperation and exchanges, enhance security, promote innovation and technological cooperation, strengthen policy coordination and industrial cooperation. Through joint efforts, we can promote the rapid development of the digital economy in the SCO member states.

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