Оригинальная статья / Original article

УДК 004.89
http://doi.org/10.35854/1998-1627-2025-12-1634-1646

Smart cities driven by artificial intelligence: Comparing the strategic positioning and market competitiveness of China and the USA

Liu Mingzhu
Peoples' Friendship University of Russia, Moscow, Russia, 1768760311@qq.com, https://orcid.org/0009-0001-3719-9928

Abstract

Aim. The work aimed to compare systematically the differences in the strategic positioning of China and the USA in the development of smart cities driven by artificial intelligence (AI), and to study their impact on global market competitiveness.

Objectives. The work seeks to compare and analyze the differences in the strategic positioning of China and the USA in promoting the development of AI-driven smart cities, as well as assess how these strategic differences shape the competitive landscape in the global smart city market.

Methods. The author used a mixed research method, combining qualitative and quantitative methods, comparative analysis, calculations of indicators, statistical data induction, and literature analysis to compare systematically the strategic positioning and market competitiveness of China and the USA in the field of AI-driven smart cities.

Results. China employs a government-led top-down model, promoting pilot projects and infrastructure construction through national policy, emphasizing rapid technology implementation and the integration of all stages of the production chain. The United States of America is market-oriented, relying on the innovative capabilities of Silicon Valley technology companies and a public-private partnership model, focusing on technological originality and commercial applications.

Conclusions. The study results revealed that in the future, China, owing to its government-led, large-scale advantages, will be able to take a leading position in smart city infrastructure construction and advancement in emerging markets. While the USA, relying on a market-oriented innovation ecosystem and accumulated core technologies, will continue to dominate the high-tech market, maintaining superiority in fundamental AI research and high-value-added fields.

Keywords: *artificial intelligence, smart cities, strategic positioning, market competitiveness, technological progress, international cooperation*

For citation: Liu Mingzhu. Smart cities driven by artificial intelligence: Comparing the strategic positioning and market competitiveness of China and the USA. *Ekonomika i upravlenie = Economics and Management*. 2025;31(12):1634-1646. (In Russ.). http://doi.org/10.35854/1998-1627-2025-12-1634-1646

Умные города на базе искусственного интеллекта: сравнение стратегического позиционирования и рыночной конкурентоспособности Китая и США

Лю Минчжу
Российский университет дружбы народов имени Патриса Лумумбы, Москва, Россия, 1768760311@qq.com, https://orcid.org/0009-0001-3719-9928

Аннотация

Цель. Системное сравнение различий при стратегическом позиционировании Китая и США в области развития умных городов, стимулируемых искусственным интеллектом (ИИ), а также изучение их влияния на глобальную рыночную конкурентоспособность.

Задачи. Сравнить и проанализировать различия при стратегическом позиционировании Китая и США в продвижении развития умных городов на базе ИИ; оценить, каким образом эти стратегические различия формируют конкурентную среду на глобальном рынке умных городов.

Методология. Автором использованы смешанный исследовательский метод, сочетающий качественный и количественный методы, методы сравнительного анализа, расчет показателей, индукции статистических данных и анализ литературы для систематического сравнения стратегического позиционирования и рыночной конкурентоспособности Китая и США в области умных городов на базе ИИ.

Результаты. Китай применяет государственно ориентированную модель «сверху вниз», продвигая пилотные проекты и инфраструктурное строительство через национальную политику, делая акцент на быстрой реализации технологий и интеграции всех этапов производственной цепочки. США ориентированы на рынок, полагаются на инновационные способности технологических компаний в Силиконовой долине и модель публично-частного партнерства, фокусируясь на оригинальности технологий и коммерческих приложениях.

Выводы. С учетом результатов исследования стало очевидным, что в будущем Китай, благодаря правительственно ориентированным масштабным преимуществам, сможет занять лидирующие позиции в строительстве инфраструктуры умных городов и продвижении на развивающихся рынках. США, опираясь на рыночно ориентированную инновационную экосистему и накопленные ключевые технологии, продолжат доминировать на рынке высокотехнологичной продукции, сохраняя преимущество в области фундаментальных исследований ИИ и сфер с высокой добавленной стоимостью.

Ключевые слова: *искусственный интеллект, умные города, стратегическое позиционирование, рыночная конкурентоспособность, технологический прогресс, международное сотрудничество*

Для цитирования: Лю Минчжу. Умные города на базе искусственного интеллекта: сравнение стратегического позиционирования и рыночной конкурентоспособности Китая и США // *Экономика и управление.* 2025. Т. 31. № 12. С. 1634–1646. (На англ.). http://doi.org/10.35854/1998-1627-2025-12-1634-1646

Introduction

The continued acceleration of urbanization worldwide, intertwined with breakthroughs in the field of artificial intelligence (AI), is profoundly reshaping the development paradigm of smart cities, driving them from early conceptual blueprints toward achievable realities. According to the latest forecast released by authoritative institution Statista, the global smart city market size is expected to reach USD 82,673 billion by 2030[1]. Against this backdrop, China and the United States, leveraging their significant first-mover advantages and technological accumulation in AI research and smart city applications, have emerged as two core driving forces shaping the global smart city landscape.

China and the United States exhibit significant differences in their strategic approaches to smart city development, which are reflected in key areas such as government policy, market drivers, and public-private partnership models. China is promoting new urbanization based on the 14th Five-Year Plan. The Digital Silk Road is regarded as a digital extension of the Belt and Road Initiative, aiming to redefine the global digital landscape [1]; while the Unites States promotes a public-private partnership model through the "Smart Cities Challenge Program". In the process of promoting smart city development, China has demonstrated a clear characteristic. At the national level, strong policy guidance and resource integration have driven the implementation of a series of large-scale smart city projects, reflecting a top-down approach to overall planning and centralized implementation. In contrast, the United States relies more on the innovative vitality of the private sector and the self-regulating role of market mechanisms, forming a more decentralized and self-organized development model that highlights its traditional strengths in technological innovation and market-driven operations.

[1] Artificial intelligence (AI) market size worldwide from 2020 to 2031 (in billion U.S. dollars) // Statista. May 23. 2025. URL: https://www.statista.com/forecasts/1474143/global-ai-market-size (accessed on 28.08.2025).

This study focuses on the differences in the strategic positioning of China and the United States in the fields of smart cities and AI, aiming to explore the different choices in policy orientation, industrial layout, and technological pathways. By systematically comparing the development paths of the two countries, this article further analyzes the key factors influencing their global competitiveness and assesses the profound implications of these two different models on the future landscape of global smart city development.

Literature Review

Many scholars have explored the technological architecture, policy framework and typical application cases of China's smart cities, and they believe that the integration of technologies such as big data, IoT and AI can effectively improve the effectiveness of urban governance. In smart city projects, the effective application of technologies such as big data analytics, artificial intelligence, machine learning, and deep reinforcement learning has significantly improved the operational efficiency of key areas such as intelligent transportation, cybersecurity, smart grids, and UAVs-assisted next-generation communication(5G/B5G) [2]. Artificial intelligence enabled smart city solutions offer numerous advantages, including more adequate water supply, energy management, and waste management, as well as reduced traffic congestion, noise, and pollution [3]. AI optimizes real-time monitoring and big data analytics of smart infrastructure in smart cities through machine learning and solves the algorithmic transparency challenge through Explainable Artificial Intelligence (XAI) [4]. Smart cities are connected globally through management functions such as decision-making, control and funding [5]. As a global discourse network system, cities act as "testing grounds" for smart innovation and are redefining the future path of urban governance and development [6]. China's smart city construction adopts a government-led promotion model and has formed multiple smart city clusters in the Yangtze River Delta, Pearl River Delta and other regions [7]. The United States uses the "Clean Network Initiative" as a link to prevent Europe and other countries from using Huawei equipment to build 5G networks [8].

The evolution of smart city theory reflects a paradigm shift from technological determinism to the social technical systems theory. The development of artificial intelligence has also brought challenges such as ethics, privacy, and technological uncontrollability. Technological development needs to consider various factors, including social, cultural, economic, and political aspects, to achieve a deep integration of artificial intelligence and smart cities.

In addition, our attention is drawn to the fact that, despite existing literature has initially explored the comparisons of the AI technologies and smart city development paths and strategies in China and the United States, the differences in the strategic positioning of the two countries and their impact on global market competitiveness have not been fully considered, especially the importance of geopolitical factors is still being overlooked.

Theoretical Foundation

This study uses the National Innovation System (NIS) theory as the analytical foundation. The theory points out that a country's technological innovation capabilities do not rely solely on the efforts of a single entity such as enterprises and universities but are shaped by the combined influence of national institutional design, policy orientation, and industrial structure. China is leveraging its strong national coordination capabilities and large-scale application advantages to excel in technology deployment and industrial chain integration, while the United States is relying on its top research universities and active venture capital to maintain a lead in basic research and disruptive innovation. Therefore, the competitiveness differences between the two countries in the smart city domain are essentially the manifestation of their respective distinctive national innovation systems within a specific technological field.

This theory helps to why China and the United States, under the same wave of technological development, have developed two distinct paths: government-led and market-driven. China, through national-level initiatives such as the New Urbanization Plan and the Digital Economy Strategy, has established a "top-down design" innovation system led by the government and centered around in-

frastructure. In contrast, the United States has relied on market mechanisms and the vitality of the private sector, forming a "market-driven" innovation system centered on enterprises and powered by technological innovation.

Based on the above theory, this paper constructs a comparative analytical framework from four dimensions: policy system, driving model, technological path, and globalization strategy. This framework aims to systematically reveal the strategic differences between China and the United States in the field of AI smart cities and their impact on the global market competition landscape. These theories collectively form the analytical foundation for this study, supporting a comparative study of the two countries' strategic positioning, market competitiveness, technological advancement, and global cooperation in the smart city domain.

Research Methodology

The author adopts a mixed research method that combines both qualitative and quantitative approaches, specifically utilizing comparative analysis methods, methods of calculating indices, generalizations of statistical data, and the methods of literature analysis to systematically compare the strategic positioning and market competitiveness of China and the United States in the field of AI-driven smart cities. By constructing a multidimensional comparative indicator system, a comparative framework is developed across four dimensions: policy system, driving model, technological path, and globalization strategy, revealing the essential differences between China and the United States in top-level design and market ecosystems. Based on the framework constructed for this study, we focused on selecting relevant data from 2021 to 2024, conducting a comparative analysis across four evaluation dimensions: strategic positioning, market competitiveness, technological advancement, and globalization and international cooperation. To ensure the authority and credibility of the data, the study primarily relied on sources such as market size statistics from the internationally renowned research firm Statista, industry blue books published by the China Academy of Information and Communications Technology (CAICT), unicorn company data from Tencent Research Institute, and relevant academic journals. Through both horizontal and vertical comparisons of AI market size, the number of AI companies, the number of emerging unicorn companies, and industry distribution between China and the United States, we reveal the competitive landscape and development trends in this field. This multi-perspective, cross-period comparison enhances the timeliness and credibility of the research data. In the analysis process, we focus on extracting meaningful findings from actual data, aiming to establish a close connection between theoretical exploration and empirical analysis, thus deepening the understanding of the differences between China and the United States in the AI-driven smart city sector.

Case Study

According to the 2023 Smart City Index released by the International Institute for Management Development (IMD) in Lausanne, Switzerland, Shenzhen ranks second in Asia for smart city development, while San Francisco ranks third in North America. This study selects these two cities as typical cases because they respectively represent the typical paths and core models of smart city construction in China and the United States. Shenzhen's development path reflects China's characteristic model of combining government leadership with market operations in advancing smart cities, while San Francisco demonstrates the United States' strengths in a market-driven approach and technological innovation. However, we also recognize that a single city case study may not comprehensively reflect the overall landscape of smart city development in both countries. Therefore, future research that incorporates more regionally representative city cases would enhance the applicability and explanatory power of the conclusions.

Shenzhen's smart city development is based on a "government coordinates and market operate" model, aiming to create cutting-edge ICT infrastructure and foster the development of industrial clusters. In 2011, the Shenzhen Industrial and Information Technology Bureau published the "Smart Shenzhen Planning Outlines" to promote the construction of smart cities [9]. Shenzhen, China's "new smart city" pioneer, has a core project, the Pengcheng Intelligent Body, that integrates 5G communications, the Internet of Things

(IoT), and the city's digital twin technology (A technical system that constructs real-time dynamic mirror models of physical entities in virtual space through digital means, and leverages data-driven methods to achieve interaction and simulation optimization between the virtual and physical worlds).

The Shenzhen Academy of Social Sciences released the "Shenzhen Blue Book: Shenzhen Smart City Construction Report" showing that Shenzhen has built a globally leading digital infrastructure covering network, arithmetic, government cloud, digital twin, etc., and vigorously pushed forward the application of AI technology, making breakthroughs in the fields of government affairs, healthcare, and education[1]. Shenzhen, with the support of its tech giants Huawei and Tencent, has positioned itself at the forefront of China's smart city movement, deploying cutting-edge technologies such as next-generation networks and big data to enhance urban operations. Huawei's "Smart City" program aims to make Shenzhen "smarter, safer, and more efficient" and is being piloted in over 160 cities across 40 countries [10]. Shenzhen's approach to smart city development is heavily technology-centric, focusing on leveraging advanced technologies to improve urban management and services. While this approach has accelerated economic growth and innovation, it risks neglecting long-term sustainability challenges unless institutional adaptation and broader social and environmental considerations are integrated into future urban planning.

San Francisco's energy management system, as a global model for smart city emissions reduction, uses AI to dynamically optimize grid load, driving energy efficiency and urban transformation. The city has set an ambitious goal to become carbon-free by 2030, integrating smart technologies such as solar potential tracking, energy efficiency initiatives, and smart parking solutions [11]. San Francisco's "Go Green" initiative has effectively curbed reliance on private vehicles by promoting diverse low-carbon transportation modes such as cycling, walking, car-sharing, and smart offices, resulting in a cumulative reduction of 40,000 tons of carbon emissions over the past three years [12]. While this framework provides a model for urban low-carbon transformation, its long-term sustainability depends on sustained public engagement and innovation.

Strategic Positioning Analysis

Through the "National New-type Urbanization Plan (2021–2035)", and the Digital Silk Road and other policy frameworks, it promotes the export of technical standards and infrastructure cooperation, and China has signed smart city cooperation agreements with over 16 countries. China is actively deepening its strategic cooperation with Saudi Arabia in the digitalization sector under the "Vision 2030" initiative, helping Saudi Arabia build a knowledge-based economy, making it a core partner in the "Belt and Road" initiative. Sino-African cooperation in digital technology is focused on strengthening Africa's internet connection and digital infrastructure and encouraging Chinese companies to participate in projects such as optical cable networks, mobile communication networks, and data centers in Africa [13].

The U.S. international strategy for smart cities is not limited to technology export, but also includes standard-setting, competing for market dominance and expanding geopolitical influence. Its global strategic positioning centers on technological innovation, private sector leadership, and market-driven approaches, leveraging the innovative capacities of Silicon Valley tech giants such as Google, IBM, and Microsoft, along with numerous startups, to promote smart city solutions worldwide. The Trump administration has enriched and improved the Indo-Pacific Strategy by launching a series of policies related to economy, security, and democratic governance, with the goal of making the Indo-Pacific Strategy a major platform through which to counter the Belt and Road Initiative [14]. Both countries' strategies focus on standard-setting and market expansion, but China emphasizes intergovernmental cooperation and systematic layout, while the United States highlights corporate innovation and competition for dominance of rules, reflecting the two countries' different paths to globalization and concepts of technology governance.

According to Statista data, the smart city market size in China increased from 14,9 tril-

[1] Shenzhen Municipal Government. 2025. URL: https://www.sz.gov.cn/cn/xxgk/zfxxgj/zwdt/content/post_12181023.html (accessed on 28.08.2025). (In Chin.).

Table 1

Comparative analysis of the strategic positioning of China and the United States of America

Таблица 1. Сравнительный анализ стратегического позиционирования Китая и США

Dimension	China	The United States	Key differences
Policy system	National New Urbanization Plan (2021–2035), Digital Silk Road	Smart City Challenge, Clean Network Initiative	Top-level design vs local incentives
Drive model	Government-led	Market-Driven	Planned vs Incentive
Technical path	Application-Driven	Basic innovation-driven	Application scenario-driven vs Core technology-driven
Globalization path	Infrastructure export	standard control	Scale expansion vs rule monopoly
Challenge	Data governance, privacy protection, and independent control of core technologies	High costs of infrastructure upgrades, ethical controversy	Internal governance tensions vs External structural contradictions

Source: Compiled by the author.

lion yuan in 2020 to 33 trillion yuan in 2024, achieving double growth[1]. During the same period, the U.S. smart city market revenue increased from 14,15 billion USD in 2020 to 25,16 billion USD in 2024[2], with relatively slower growth. During the "14th Five-Year Plan" period, China's smart city development entered a phase of rapid growth, while the United States market maintained a relatively steady growth path. Future trends indicate that China is expected to further expand its share in the global market by leveraging its large-scale infrastructure deployment capabilities and comprehensive national digitalization strategy. Meanwhile, the United States will continue to leverage its leadership in cutting-edge technology research and development, along with its deeply driven and highly collaborative private-sector-led innovation ecosystem, to consolidate its dominant position in the high-end smart city solutions market.

AI, as a new but critical factor affecting the relative distribution of power, makes the competition for technological innovativeness become a contest for global leadership [15]. China has elevated the development of AI to a national strategy, has emphasized the promotion of research and development, product application, and industry cultivation in a "three-in-one" manner. The United States has strengthened R&D investment and public-private partnerships through the National Artificial Intelligence Initiative Act (2020) to maintain global AI leadership. The U.S. smart city adopts a "market-driven + local autonomy" model, relying on Google, IBM and other companies to provide standardized solutions, and radiating high-value markets such as North America and Europe through the Silicon Valley technology ecosystem. The difference between the two countries is reflected in China's emphasis on overall policy synergy and scale landing, while the United States focuses more on enterprise innovation and global technology output, but both regard AI and smart city as the core hand to enhance national competitiveness.

Market Competitiveness Assessment

As global urbanization accelerates, smart cities have become one of the core areas of technological competition between China and the United States. The wave of AI has swept across the globe and is changing the way of production and life with unprecedented speed, breadth and depth. Major countries around the world have taken the promotion of AI technology innovation and application as an important direction of national strategy. Promoting AI technology innovation and application has become a core area of national strategy for both China and the United States. The Chinese government has successively released guiding documents such as the "14th Five-

[1] Size of the smart city industry in China from 2016 to 2023 with an estimate for 2024 (in trillion yuan) // Statista. Jun. 10. 2025. URL: https://www.statista.com/statistics/1276583/china-size-of-the-smart-city-industry/ (accessed on 28.08.2025).

[2] Revenue of smart city market revenue in the United States from 2018 to 2029 (in billion U.S. dollars) // Statista. Jun. 10. 2025. URL: https://www.statista.com/forecasts/1490673/smart-city-revenue-in-the-us (accessed on 28.08.2025).

Year Plan for Digital Economy Development" and the "New Generation Artificial Intelligence Development Plan", clearly identifying AI as a strategic technology guiding the country's future and smart cities as a key application scenario. Through strategies such as the "National New Urbanization Plan" and the "Digital Silk Road", China has systematically advanced smart city pilot projects and infrastructure construction, achieving full-process coordination from policy guidance to industrial implementation. This "national chessboard" strategic model ensures the efficient allocation of resources and the rapid implementation of technology, thereby demonstrating remarkable operational efficiency and cost-effectiveness in AI-driven smart city solutions. The United States regards maintaining global leadership in the field of AI as an important national strategy and safeguards it through legislation and nationwide initiatives. For example, the "National Artificial Intelligence Initiative Act of 2020" aims to coordinate and accelerate AI research and applications across the country, ensuring U.S. leadership in the AI domain.

While establishing AI as a national strategic priority, both countries have also developed distinctive public-private partnership models to promote the R&D and application of related technologies. China's PPP model reflects the characteristics of "government-led, enterprise-participated". The government sets the direction and provides initial motivation through national-level planning, with state-owned capital and leading enterprises taking the lead, attracting private sector involvement in infrastructure construction and ecosystem operations. The Hangzhou City Brain project is based on a digital platform, the platform was declared a success as early as 2017 by Alibaba, with positive outcomes including a 15,3 % increase in average travel speed and a 9,2 % reduction in peak-hour congestion [16]. Hangzhou's "City Brain" project is technically supported by Alibaba Cloud and other enterprises, but its data integration, scenario openness, and cross-department coordination strongly rely on the leadership and integration of local governments. The United States adopts a bottom-up public-private partnership (PPP) governance model, focusing more on technological innovation and commercial application. Relying on the Silicon Valley ecosystem and flexible market mechanisms, it promotes original technological breakthroughs and high-value-added service output of artificial intelligence in smart cities. Its "SF Energy Map" shows the location of buildings with solar installations and lets users calculate the photovoltaic potential for properties [17].

Both countries show significant growth in AI market size from 2020 to 2024, but the U.S. is always ahead of China. In 2024, the U.S. artificial intelligence market reached approximately 50 billion USD, while China's market was about 40 billion USD (Fig. 1). The U.S. currently dominates the global AI market, thanks to its advanced technological infrastructure, high private sector participation, and continued investment in AI research and development. However, China's rapid growth reflects its positioning of AI as the centerpiece of its smart city building and national technology strategy. Despite the gap, China is gradually closing the competitiveness gap through active policy support and market expansion to become a key competitor in the global AI-powered smart city solutions space.

In 2024, the global artificial intelligence industry revenue reached $642,18 billion in 2024, a year-on-year growth of 22,2 %[1]. In terms of the number of enterprises, as of the third quarter of 2024, the number of global AI enterprises is 31,206, of which 10,840 are U.S. enterprises, accounting for 35 % of the global total, and 4,676 are Chinese enterprises, accounting for 15 % of the global total[2]. Tech giants are key drivers of smart city development, but the paths of Chinese and American companies show significant differences. Benefiting from the Chinese government's strong emphasis on public security and policy support, Hangzhou has rapidly developed into a surveillance technology center. Its Binjiang District has attracted technology firms such as Hikvision, Dahua, and Uniview, the three companies' combined revenues accounted for 30 % of the global video surveillance sales [18]. Tencent builds "digital twin cities" relying on the WeChat ecosystem, focusing on connecting public services. As one of the key players in the development of 5G, Huawei owns 37 %

[1] Blue Book on artificial intelligence governance // CAICT. 2024. URL: http://www.caict.ac.cn/kxyj/qwfb/bps/202412/P020241227660032159191.pdf (accessed on 28.08.2025). (In Chin.)

[2] Ibid.

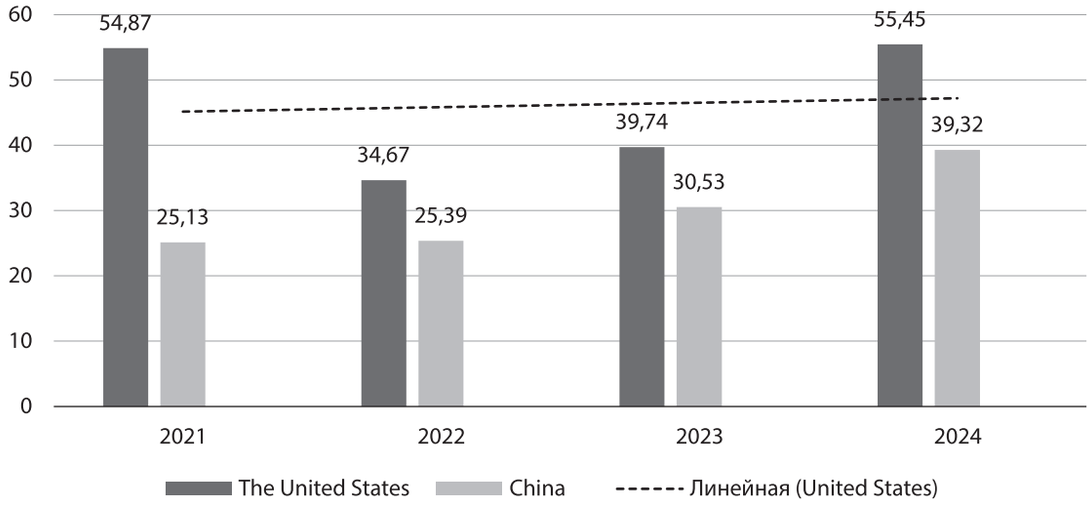

Fig. 1. Artificial intelligence market size in China and the United States of America, 2021–2024, $ billion
Рис. 1. Объем рынка искусственного интеллекта в Китае и США в 2021–2024 гг., млрд долл.

Sources: Statista; Market size of AI in the United States from 2021 to 2031 (in billion U.S. dollars) // Statista. Jun. 06. 2025. URL: https://www.statista.com/forecasts/1451309/market-size-of-ai-us (accessed on 28.08.2025); Artificial intelligence (AI) market size in China from 2016 to 2023 with an estimate for 2024 (in billion yuan) // Statista. Jun. 06. 2025. URL: https://www.statista.com/statistics/1262377/china-ai-market-size/ (accessed on 28.08.2025).

of the patents, has established 28 innovation centers around the world, and invests at least 10 % of its annual sales revenue in R&D every year [19]. Tech companies in the United States have also made notable contributions. Google, through its subsidiary Sidewalk Labs, is dedicated to smart city technology development and application. Microsoft uses AI technology to optimize carbon footprint monitoring and renewable energy management, with plans to achieve a net-zero emissions goal for cloud services by 2030. IBM's early "Smarter Planet" initiative has waned, but it still retains the application of Watson AI in disaster prediction.

China's investment in smart cities has been expanding, with total investment in smart city-related projects amounting to about 2,4 trillion yuan in 2020[1] and China's smart city industry reaching 28,6 trillion yuan in 2023[2]. In the United States, cities are expected to invest USD 41 trillion over the next 2 decades to upgrade and benefit from digital technologies [20]. China attracts high-end global talent in AI and smart cities through national talent recruitment programs, supported by local government policies. Through national strategies like the "AI Initiative" and visa facilitation policies, the United States attracts top international talent while encouraging domestic universities and companies to cultivate high-skilled AI professionals. In conclusion, China focuses on consolidating resources for rapid catch-up, while the United States maintains technological dominance through market and academic advantages. However, both face challenges related to data governance and sustainable models.

In summary, whether it's China's state-led approach that emphasizes top-level design and large-scale deployment or the U.S. market-driven model that stimulates corporate innovation and technological leadership, both fully demonstrate that promoting AI technological innovation has become a crucial area of national strategy for both countries. Through the "national chessboard" approach, China has achieved rapid growth in smart city infrastructure deployment and market size, showcasing the institutional advantage of concentrating resources to accomplish major tasks. Meanwhile, the United States, relying on market-driven forces and original innovation capabilities, continues to strengthen its leadership in basic research and high-value industrial chains. The sustained investments

[1] New smart city industry mapping research report // CAICT. 2021. URL: http://www.caict.ac.cn/kxyj/qwfb/ztbg/202112/P020211229521169407866.pdf (accessed on 28.08.2025). (In Chin.)

[2] Smart cities in China — statistics & facts // Statista. 2021. URL: https://www.statista.com/topics/5794/smart-city-in-china/ (accessed on 28.08.2025).

Table 2

Comparison of competitiveness of the market of artificial intelligence and smart cities between China and the United States of America

Таблица 2. Сравнение конкурентоспособности рынка искусственного интеллекта и умных городов между Китаем и США

Competitiveness indicators	China	The United States
AI market size in 2024	39,32 (billion $)	50,16 (billion $)
AI enterprises in 2024	4 676	10 840
Number of freshman unicorns in 2024	17	54
Leading enterprise	Huawei, Tencent, Alibaba	Google, Microsoft, IBM
Advantages	Large-scale infrastructure deployment, cost advantages	core technology innovation, standard setting

Source: Author; Market size of AI in the United States from 2021 to 2031 (in billion U.S. dollars) // Statista. Jun. 06. 2025. URL: https://www.statista.com/forecasts/1451309/market-size-of-ai-us (accessed on 28.08.2025); Artificial intelligence (AI) market size in China from 2016 to 2023 with an estimate for 2024 (in billion yuan) // Statista. Jun. 06. 2025. URL: https://www.statista.com/statistics/1262377/china-ai-market-size/ (accessed on 28.08.2025); Blue Book on artificial intelligence governance // CAICT. 2024. URL: http://www.caict.ac.cn/kxyj/qwfb/bps/202412/P020241227660032159191.pdf (accessed on 28.08.2025); The number of new unicorn companies has declined, what is the reason behind this? // Tencent Research Institute. Nov. 19. 2024. URL: https://mp.weixin.qq.com/s/2t5R2PqgEM6n88UpeASwkg (accessed on 28.08.2025). (In Chin.)

and competition between the two countries in areas such as AI market size, the number of AI companies, and smart city investments further confirm that AI is not only a focal point of technological competition but also a crucial reflection of national strategic capabilities and future governance models.

Technological Advancements

The construction of smart cities is rapidly relying on AI technologies. Relying on the advantages of technology accumulation, data resources and market demand, China has made breakthroughs in key areas of AI and plans to realize the high-end development of the entire industrial chain of artificial intelligence by 2030, build a leading global innovation center, and promote the deep empowerment of social governance and economic transformation by intelligent technology[1]. In 2018, Hangzhou's "City Brain" establishes a data-centric digital platform, the system was expanded to cover 420 square kilometers, and the sensor network was expanded to cover 1 300 traffic lights [16]. In the United States, AI applications are promoted through public-private partnerships, with cities like San Francisco using IoT technology to manage smart grids, leveraging big data analysis to predict infrastructure maintenance needs, and utilizing machine learning and computer vision to improve traffic flow. China has demonstrated a clear application-oriented characteristic in the field of AI data processing algorithms. Large models such as Google's BERT and OpenAI's GPT-4 demonstrate strong general-purpose language representations and excel at handling complex tasks [21]. In the field of AI for smart cities, a differentiated competitive model of "application-driven" versus "innovation-led" has already emerged between China and the United States, and the competition for technological standards and data sovereignty will intensify in the future.

The data shows that the United States maintains its lead in most years, especially peaking at 191 in 2021, while China has a significant gap of only 33 in 2021. Although China briefly overtook the United States in 2018 (112) and 2020 (84) (Fig. 2), the overall trend shows that the United States has a more sustained and explosive tech innovation ecosystem, especially in cutting-edge areas such as artificial intelligence. This difference reflects the U.S. well-established strengths in venture capital, academic research, and technology commercialization, while China's volatility reflects policy-driven innovation. In the future, the United States is likely to continue its global technology leadership, but China will remain locally competitive in specific areas (e.g., smart city applications) through policy support and market potential. The tech competition between the two countries will continue to shape the global AI and smart city development landscape.

[1] Development plan for a new generation of artificial intelligence // State Council of China. 2017. URL: http://www.gov.cn/zhengce/content/2017-07/20/content_5211996.htm (accessed on 28.08.2025).

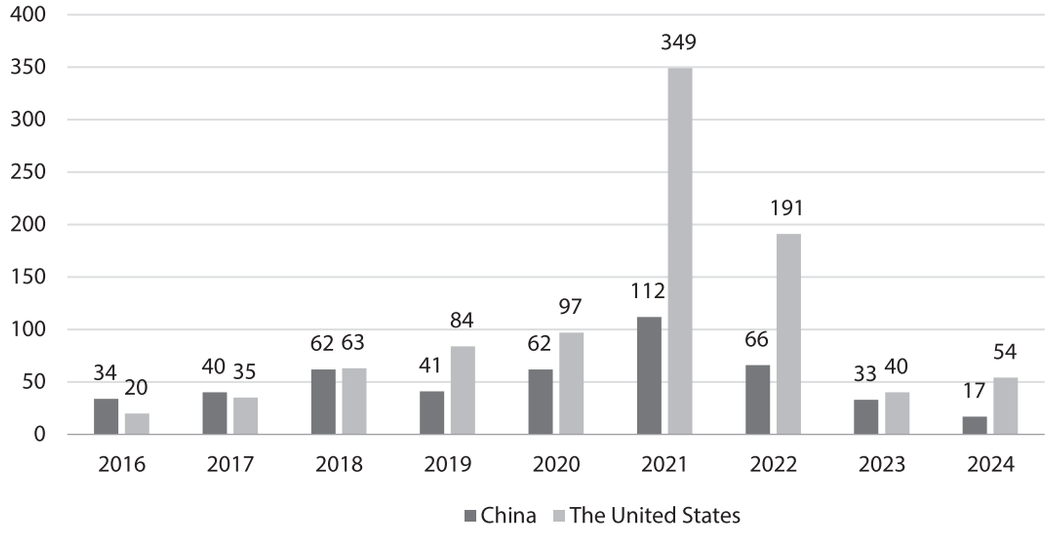

Fig. 2. Number of new unicorns in China and the United States of America, 2016–2024
Рис. 2. Количество новых «единорогов» в Китае и США, 2016–2024 гг.

Sources: The number of new unicorn companies has declined, what is the reason behind this? // Tencent Research Institute. Nov. 19. 2024. URL: https://mp.weixin.qq.com/s/2t5R2PqgEM6n88UpeASwkg (accessed on 28.08.2025). (In Chin.).

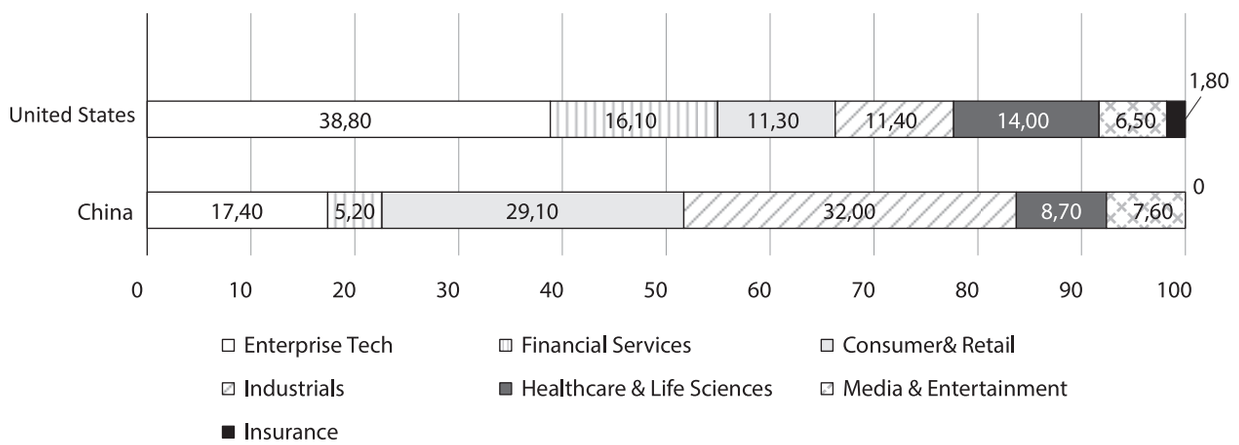

Fig. 3. Distribution of unicorns by industry in China and the United States of America, %
Рис. 3. Распределение «единорогов» по отраслям в Китае и США, %

Sources: Tencent Research Institute [22].

The difference in the industry distribution of U.S. and Chinese unicorns significantly reflects the strategic divide between the two sides in terms of science and technology innovation paths. U.S. unicorns are mainly concentrated in high-tech service sectors such as enterprise technology (38,8 %), financial technology (16,1 %) and healthcare (14 %), demonstrating their technological advantages in basic R&D and high-end service industries. In contrast, China's unicorns are most prevalent in industrial manufacturing (29,1 %) and consumer retail (32 %) (Fig. 3), reflecting its distinctive characteristic of "industrial digitization". This pattern suggests that the United States continues to lead the way in underlying technology innovation and business model breakthroughs, while China is better at applying technology to the real economy and consumer markets. In the field of smart cities, the U.S. advantage may be reflected in the intelligent upgrading of city management systems, while China emphasizes the integration of industrial Internet and consumer data infrastructure construction. In the future, the global competition in science and technology may show a dual-track pattern of "the United States leading the source of innovation and China leading the scale of application", but the cross-competition between

the two sides in key areas such as artificial intelligence will become increasingly fierce.

Globalization and International Collaboration

China cooperates with emerging markets through the Belt and Road Initiative, providing high-quality infrastructure and software and building demonstration projects in ASEAN, Africa and other regions [23]. At the same time, relying on companies like Huawei and Alibaba Cloud, China has established multinational data cooperation platforms to promote the implementation of standardized solutions. The United States, on the other hand, uses the "Clean Network Initiative" as a link to prevent Europe and other countries from using Huawei equipment to build 5G networks [8]. To curb China's 5G expansion and technological innovation, the U.S. Department of Commerce strengthened its technology blockade policy against Huawei in 2022, placing 36 affiliated companies on the Entity List [24]. The United States has added over 30 Chinese tech companies, including ZTE and Hikvision, to its sanctions list under the pretext of "national security", directly impacting the global supply chain. In the future, there is greater potential for collaboration between China and the United States in promoting smart city solutions globally, especially in the areas of IoT, AI, and big data applications. This collaboration can enhance technological inclusiveness and provide new models for global governance. For example, the United States can provide advanced algorithms and an innovative ecosystem, while China contributes large-scale application experience and infrastructure capabilities to jointly develop solutions for developing countries. Although the U.S.'s technological containment policy has temporarily delayed China's AI advancements, it has also accelerated China's independent innovation. However, global technological fragmentation could lead to the fragmentation of smart city standards, increasing the costs of multinational cooperation. In the future, the China-U.S. competition may focus on "technology alliances", and the choices of third-party markets such as the EU and ASEAN will become key variables.

Conclusions

Based on a systematic comparison of the strategic positioning and market competitiveness of China and the United States, this study reveals that the two countries have formed a differentiated and complementary "dual-track parallel" pattern in the field of AI-driven smart cities. China, with its government-led top-level design and large-scale infrastructure capabilities, has demonstrated significant advantages in smart city infrastructure deployment and cost efficiency. Its smart city market size has doubled from 14,9 trillion yuan in 2020 to 33 trillion yuan in 2024[1]. The United States, relying on its market-driven innovation ecosystem and core technological accumulation, maintains a leading position in AI basic research and high-value-added sectors. Its AI market size is projected to reach approximately $50,16 billion in 2024, far exceeding China's $39,32 billion[2]. China still lags the United States in the number of AI enterprises (4,676 vs. 10,840) and the number of Emerging unicorns (17 vs. 54), reflecting the U.S.'s continued dominance in original technologies and high-end markets. The future may present a "dual-track parallel" landscape: China will take a leading position in smart city infrastructure construction and emerging markets expansion, while the United States will maintain a clear advantage in original technologies and high-end markets. Although the United States has employed technological restrictions such as the "Clean Network Program" to suppress Chinese enterprises in the short term, this has objectively accelerated China's independent innovation in areas such as 5G and city brain technologies. It is worth noting that both countries face common challenges in data governance and sustainability. Future competition will focus on technical standard setting, third-party market cooperation, and the construction of global governance rules.

[1] Size of the smart city industry in China from 2016 to 2023 with an estimate for 2024 (in trillion yuan) // Statista. Jun. 10. 2025. URL: https://www.statista.com/statistics/1276583/china-size-of-the-smart-city-industry/ (accessed on 28.08.2025).

[2] Market size of AI in the United States from 2021 to 2031 (in billion U.S. dollars) // Statista. Jun. 06. 2025. URL: https://www.statista.com/forecasts/1451309/market-size-of-ai-us (accessed on 28.08.2025); Artificial intelligence (AI) market size in China from 2016 to 2023 with an estimate for 2024 (in billion yuan) // Statista. Jun. 06. 2025. URL: https://www.statista.com/statistics/1262377/china-ai-market-size/ (accessed on 28.08.2025).

Building international cooperation and multilateral governance frameworks will be essential to achieving inclusive and sustainable smart city goals.

This study provides the first systematic comparison of the differences in strategic positioning and global market competitiveness between China and the United States in the field of smart cities, highlighting the interactive relationship among policy systems, market mechanisms, and technological pathways. In practice, the study provides policymakers and enterprises with a clear analysis of the competitive landscape, pointing out China's strengths in rapid implementation and scale expansion, and the United States' dominance in original technology and high-end markets. This provides valuable reference for other countries in selecting smart city development models, suggesting that emerging markets can choose suitable cooperation paths based on their own institutional conditions. While also indicates that China and the United States need to strengthen coordination in data governance, technical standards, and sustainable development.

This study has certain limitations. For instance, the cases are limited to Shenzhen and San Francisco, and future research should include more cities to enhance representativeness. The data sources primarily rely on public reports and policy documents, lacking first-hand research data. In addition, the impact of geopolitical factors on the competition over technical standards still requires further exploration. Future research should consistently focus on the strategic choices of third-party markets (such as the EU and ASEAN) in the US-China technological competition, as well as their role in shaping the global governance landscape of smart cities.

References / Список источников

1. Oreglia E., Zheng W. The Digital Silk Road between national rhetoric and provincial ambitions. *The China Quarterly*. 2024;261:183-195. https://doi.org/10.1017/S0305741024000936
2. Ullah Z., Al-Turjman F., Mostarda L., Gagliardi R. Applications of artificial intelligence and machine learning in smart cities. *Computer Communications.* 2020;154:313-323. https://doi.org/10.1016/j.comcom.2020.02.069
3. Herath H.M.K.K.M.B., Mittal M. Adoption of artificial intelligence in smart cities: A comprehensive review. *International Journal of Information Management Data Insights*. 2022;2(1):100076. https://doi.org/10.1016/j.jjimei.2022.100076
4. Luckey D., Fritz H., Legatiuk D., Dragos K., Smarsly K. Artificial intelligence techniques for smart city applications. In: Toledo Santos E., Scheer S., eds. Proc. 18th Int. conf. on computing in civil and building engineering (ICCCBE 2020). Cham: Springer; 2021:3-15. (Lecture Notes in Civil Engineering. Vol. 98). https://doi.org/10.1007/978-3-030-51295-8_1
5. Kubina M., Šulyová D., Vodák J. Managing global smart cities in an era of 21st century challenges. *Sustainability*. 2021;13(5):2610. https://doi.org/10.3390/su13052610
6. Joss S., Sengers F., Schraven D., Caprotti F., Dayot Y. The smart city as global discourse: Storylines and critical junctures across 27 cities. *Journal of Urban Technology*. 2019;26(1):3-34. https://doi.org/10.1080/10630732.2018.1558387
7. Huang K., Luo W., Zhang W., Li J. Characteristics and problems of smart city development in China. *Smart Cities.* 2021;4(4):1403-1419. https://doi.org/10.3390/smartcities4040074
8. Gu X. The illusion of "the clean network". In: Structural power in the global age. Global power shift. Cham: Springer; 2022:123-131. https://doi.org/10.1007/978-3-031-15467-6_13
9. Xie S., Luo N., Yarime M. Data governance for smart cities in China: The case of Shenzhen. *Policy Design and Practice.* 2024;7(1):66-86. https://doi.org/10.1080/25741292.2023.2297445
10. Hu R. The state of smart cities in China: The case of Shenzhen. *Energies*. 2019;12(22):4375. https://doi.org/10.3390/en12224375
11. Yigitcanlar T., Han H., Kamruzzaman M., Ioppolo G., Sabatini-Marques J. The making of smart cities: Are Songdo, Masdar, Amsterdam, San Francisco and Brisbane the best we could build? *Land Use Policy.* 2019;88:104187. https://doi.org/10.1016/j.landusepol.2019.104187
12. Lee J.H., Hancock M.G., Hu M.-C. Towards an effective framework for building smart cities: Lessons from Seoul and San Francisco. *Technological Forecasting and Social Change*. 2014;89:80-99. https://doi.org/10.1016/j.techfore.2013.08.033
13. da Vinha L.M., Liang H. China vis-à-vis the EU: The competition for Africa's smart cities. In: Li Y., Leandro F.J.B.S., Tavares da Silva J., Rodrigues C., eds. The Palgrave handbook on China-Europe-Africa relations. Singapore: Palgrave Macmillan; 2024:211-231. https://doi.org/10.1007/978-981-97-5640-7_10
14. Zhao M. The Belt and Road Initiative and China — US strategic competition. *China International Strategy Review.* 2021;3(1):248-260. https://doi.org/10.1007/s42533-021-00087-7

15. Retzmann N. 'Winning the technology competition': Narratives, power comparisons and the US-China AI race. In: Müller T., ed. Comparisons in global security politics: Representing and ordering the world. Bristol: Bristol University Press; 2024:237-256. https://doi.org/10.51952/9781529241846.ch012
16. Caprotti F., Liu D. Platform urbanism and the Chinese smart city: The co-production and territorialisation of Hangzhou City Brain. *GeoJournal*. 2022;87(3):1559-1573. https://doi.org/10.1007/s10708-020-10320-2
17. Ching T.-Y., Ferreira J. Smart cities: Concepts, perceptions and lessons for planners. In: Geertman S., et al., eds. Planning support systems and smart cities. Cham: Springer; 2015:145-168. (Lecture Notes in Geoinformation and Cartography). https://doi.org/10.1007/978-3-319-18368-8_8
18. Marvin S., While A., Chen B., Kovacic M. Urban AI in China: Social control or hyper-capitalist development in the post-smart city? *Frontiers in Sustainable Cities.* 2022:4:1030318. https://doi.org/10.3389/frsc.2022.1030318
19. Yan X., Huang M. Leveraging university research within the context of open innovation: The case of Huawei. *Telecommunications Policy*. 2022;46(2):101956. https://doi.org/10.1016/j.telpol.2020.101956
20. Smart city data governance: Challenges and the way forward. Paris: OECD; 2023. 185 p. URL: https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/10/smart-city-data-governance_fc19e878/e57ce301-en.pdf (дата обращения: 28.08.2025).
21. Tu X., He Z., Huang Y., Zhang Z.-H., Yang M., Zhao J. An overview of large AI models and their applications. *Visual Intelligence*. 2024;2(1):34. https://doi.org/10.1007/s44267-024-00065-8
22. Eight judgments and conclusions about unicorns. Tencent Research Institute. Oct. 30, 2023. URL: https://mp.weixin.qq.com/s/MfEiy3k3GPKyfzFhOnv-7g (accessed on 28.08.2025).
23. Hussain F., Hussain Z., Khan M.I., Imran A. The digital rise and its economic implications for China through the Digital Silk Road under the Belt and Road Initiative. *Asian Journal of Comparative Politics*. 2023;9(2):238-253. https://doi.org/10.1177/20578911231174731
24. Sheng E.L. U.S.-China relations in Donald Trump's Administration: The Belt and Road Initiative and the Thucydides trap. In: China's Belt and Road Initiative and the Triangle Great Game of contemporary international politics. Singapore: Palgrave Macmillan; 2023:35-59. https://doi.org/10.1007/978-981-99-7865-6_2

Информация об авторе

Лю Минчжу

аспирант

Российский университет дружбы народов имени Патриса Лумумбы

117198, Москва, ул. Миклухо-Маклая, д. 5, корп. 2

Information about the author

Liu Mingzhu

postgraduate student

Peoples' Friendship University of Russia

5 Miklukho-Maklaya St., bldg. 2, Moscow 117198, Russia

Поступила в редакцию 29.08.2025
Прошла рецензирование 10.11.2025
Подписана в печать 19.12.2025

Received 29.08.2025
Revised 10.11.2025
Accepted 19.12.2025

Конфликт интересов: автор декларирует отсутствие конфликта интересов, связанных с публикацией данной статьи.

Conflict of interest: the author declares no conflict of interest related to the publication of this article.