*Economic Society and Humanities Vol. 2 No. 2, 2025*

# Research on AI and High-Quality Development of Urban Economy

**Xiaoran Shen**
*Franke College of Business, Northern Arizona University, America*

**Abstract:This research explores the role of artificial intelligence (AI) in promoting high-quality urban economic development. It examines how AI impacts urban economies through innovation and marketization effects, using both theoretical analysis and practical case studies. The study identifies key issues in urban management, such as low enforcement efficiency, insufficient interdepartmental coordination, and inadequate management in non-central urban areas. It also reviews international and domestic experiences in applying AI for urban management, highlighting successful models like Baltimore's CitiStat program and Beijing's grid-based management system. The research concludes that AI has a significant and regionally heterogeneous impact on urban development, with urban innovation and marketization levels acting as mediating factors. Policy recommendations include optimizing AI industrial layouts, enhancing regional technological capacity, and increasing R&D investment to boost urban innovation capabilities.**

**Keywords: Artificial Intelligence; High-Quality Development; Urban Economy; Regional Disparities; Innovation**

## 1 Introduction

### 1.1 Background of the Study

High-quality development is an essential part of comprehensively building a socialist modern country. Since the 19th National Congress of the Communist Party of China, China's economy has gradually shifted from high-speed growth to high-quality development, marking a new historical stage in the high-quality development of China's economy. This shift affirms the achievements of high-quality economic development since the reform and opening-up. The total economic output continues to rise, China's international status has significantly improved, and the living standards of the people have greatly improved. On the other hand, high-quality economic development is also a proactive response to the challenges and problems facing China's economic high-quality development. As China's economic scale continues to grow, the traditional extensive model of high-speed growth is no longer sustainable, and it faces a series of critical issues, such as the "bottleneck" of key core technologies [1], and the weak ability to transform scientific and technological achievements into practical productivity [2]. High-quality economic development has entered the "Lewis Turning Point" [3], and new growth drivers and development paths need to be found.

### 1.2 Research Significance

Artificial intelligence (AI) has significantly impacted economic and social development since its emergence in the 1950s. From symbolic logic reasoning to neural networks and behaviorism, AI has evolved rapidly, especially after 2006. Now, it permeates all aspects of life. Studying its role in high-quality economic development is crucial.

## 2. Literature Review

### 2.1 Research on Artificial Intelligence

The debate on whether artificial intelligence is beneficial or detrimental to high-quality economic development has been ongoing in academia. On one hand, technological optimists (Techno-Optimists) emphasize that artificial intelligence and automation can replace human labor to complete production tasks, helping enterprises release and develop productivity, and improving enterprise production efficiency (Sun and Hou, 2021; Du Zhizhong, 2021). On the other hand, technological pessimists (Techno-Pessimists) believe that "machine substitution" reduces the

role of labor in the production process, allowing capitalists to obtain more profits, changing the relationship between production factors and technology, leading to "production stagnation" (Raisch and Krakowski, 2021), "diminishing marginal cost disease" (Aghion et al., 2019), and "labor polarization" (Mellaacher and Scheuer, 2021). Although there are still debates in current research, from the perspective of the long-term development planning of countries around the world, major economic bodies continue to strengthen the top-level design of artificial intelligence strategy. Germany's "Industry 4.0 Strategy" and China's "Made in China 2025" plan all regard artificial intelligence as an important driving force for economic revitalization and technological innovation, and artificial intelligence has significant effects on and impacts on the future economic society.

### 2.2 Research on High-Quality Economic Development

Research related to high-quality economic development mainly revolves around the connotation of high-quality economic development and the construction of indicators. Li Bianhua (2004) improved the economic growth quality evaluation system established based on economic growth connotation, and proposed a systematic and practical economic growth quality evaluation system, including economic level, environmental level, and people's livelihood, composed of eight indicators. Subsequently, scholars such as Xiao Sheng and Hui Kang (2009), You Wei (2013), Li Jinlong (2019), Li Mengjie and Bao Ping (2019), and Sun Mengxue (2020) constructed economic high-quality development indicator systems from different perspectives, including economic benefits, social progress, environmental protection, technological innovation, and government governance at multiple levels. Due to different research angles, scholars have different understandings of the connotation of high-quality economic development, leading to different weighing results of high-quality economic development indicators. China has a vast territory, and the development speed of some regions is relatively fast, while the high-quality development of some regions is relatively slow. Therefore, in the process of constructing the indicator system, it is necessary to comprehensively consider the development stage of different cities, and set high-quality development indicators based on the current stage of high-quality economic development.

## 3. Issues of Urban Fine Management in Jingjiang City's High-Quality Development of Urban Economy

### 3.1 Low Enforcement Levels

(1)Low Enforcement Efficiency: Rapid urbanization has led to frequent conflicts between public and personal interests. Citizens often prioritize personal gains, leading to issues like urban disorder. Street vendors, seen as a vulnerable group, frequently clash with law enforcement officers, and public opinion tends to support the vendors, which exacerbates enforcement difficulties. To balance these interests, flexible enforcement methods such as persuasion and guidance are used, but persistent and recurring urban issues result in low enforcement efficiency. Statistics show a case rework rate of 3.5% for issues like street vending.

(2)Poor Enforcement Timeliness: While high-definition cameras monitor some key road sections to detect illegal activities in real-time, coverage is limited and many vendors ignore alerts. Most violations rely on officers for handling, leading to poor timeliness since enforcement can only occur after violations have taken place. The overdue disposal rate for cases related to illegal vending and road occupation is 12.5%.

### 3.2 Insufficient Interdepartmental Coordination

(1)Vertical Coordination Problems: Under the three-tiered management system, responsibilities between city, streets, and communities are unclear. Many management permissions are centralized at the city level, causing excessive interference and pushing responsibilities to the grassroots. This reduces the enthusiasm of street and community officials and weakens coordination between city and street-level authorities.

(2)Horizontal Coordination Problems: Responsibilities are fragmented among departments like the Urban Management Bureau and the Market Supervision Bureau, both having enforcement rights over street

vendors but rarely conducting joint law enforcement. Confusion over ownership and responsibility for areas like rainwater grates and park landscaping leads to departmental shirking. There are 244 unassigned cases in the system, and repeated coordination meetings have had minimal effect on clarifying responsibilities.

### 3.3 Inadequate Management in Non-Central Urban Areas

(1) Poor Environment in Back Streets, Alleys, and Urban Villages: Due to outdated planning, infrastructure is damaged to varying degrees, such as severely broken sidewalk tiles, disconnected pedestrian paths, missing or sunken drainage grates, corroded street poles, and damaged utility boxes. Additionally, back streets, alleys, and urban villages lack adequate sanitation facilities, parking facilities, and market development, resulting in problems like indiscriminate garbage disposal, illegal parking, and difficulties in guiding street vendors and illegal businesses.

(2) Insufficient Cleaning Efforts on Sidewalks and Auxiliary Roads: Due to limited road space, cleaning machines cannot enter, and cleaning of sidewalks and auxiliary roads mainly relies on manual labor, which is insufficient. Cleaning frequency is also insufficient. For example, the cleaning frequency on Xingye Road and Dongjin Road is once a week, but such a low frequency fails to maintain long-term cleanliness, leading to visible garbage. Moreover, due to varying cleaning staff competence, cleaning work is sometimes done poorly, with some workers even throwing garbage into greenbelts or other parts of the road, severely affecting the quality of cleaning.

## 4. Practical Experiences of Artificial Intelligence Applications in Urban Fine Management at Home and Abroad

### 4.1 Innovation in Management Models

The integration of institutional systems with AI-driven information management, as demonstrated by Baltimore's CitiStat program, provides significant insights into how urban management processes can be refined to ensure better efficiency, transparency, and accountability. This model is built on the foundation of systematic data collection, performance monitoring, and public involvement, which enhances the decision-making process and facilitates rapid identification and resolution of urban challenges.

The CitiStat program in Baltimore is one of the pioneering efforts in using artificial intelligence and data-driven methodologies for urban management. Its core feature is its ability to track performance in real-time by collecting data from multiple sources, including public service hotlines, community liaison officers, and public government reports. The system compiles this data into detailed reports, which are then reviewed during bi-weekly meetings with city officials, community representatives, and the mayor. This direct feedback loop allows for the swift identification of areas requiring improvement, enabling real-time decision-making and policy adjustment.

### 4.2 Emphasis on Collaborative Management

The Singaporean model of collaborative management, particularly in the context of its AI-based supervision system, highlights the critical role that interdepartmental coordination plays in effective urban governance. In contrast to fragmented systems where departments operate in isolation, Singapore's model emphasizes the importance of collaboration, creating an integrated approach that ensures all stakeholders work in unison to address urban challenges.

A key feature of Singapore's approach is its AI-driven supervision system, which collects and analyzes public feedback, identifies issues in real-time, and provides actionable insights to the relevant authorities. This system ensures that urban management is responsive and adaptable, allowing for rapid intervention when problems arise. However, the success of this system depends on strong coordination between multiple departments and agencies. For instance, when a complaint regarding public safety or cleanliness is received, the system ensures that the relevant department – whether it be the police, public health, or urban planning – is alerted and provided with all the data they need to take immediate action.

### 4.3 Expansion of Grid-based Management

Beijing's East District has developed a

pioneering grid-based management system that exemplifies how urban governance can be improved by dividing the city into manageable sections, each overseen by a designated grid. This approach allows for a more detailed, localized management strategy that ensures no area is overlooked, resulting in a more responsive and efficient system. The success of Beijing's grid management system offers valuable lessons for other cities seeking to implement or expand their urban governance frameworks.

The core idea behind grid-based management is to break down the city into smaller, more manageable units (grids), each responsible for a specific area or set of issues. These grids are supported by technology, particularly geographic information systems (GIS) and big data platforms, which provide real-time information on each unit's needs and challenges. For example, if a particular area experiences an influx of residents due to a new development project, the grid management system can identify this trend and allocate resources such as healthcare, transportation, and social services accordingly.

## 5. Conclusions and Policy Recommendations

### 5.1 Research Conclusions

The research results show:

(1) Artificial intelligence technology has a continuous and stable promoting effect on urban high-quality development, and the regression results remain robust on the basis of changing core explanatory variables.

(2) The promoting effect of artificial intelligence on urban high-quality development has significant regional heterogeneity, with a more significant promoting effect on the eastern and northeastern regions, while the promoting effect on the central and western regions is not significant.

(3) Urban innovation plays a mediating role in the process of artificial intelligence promoting economic high-quality development, and artificial intelligence promotes urban innovation, further promoting urban high-quality development.

(4) The level of marketization plays a mediating role in the process of artificial intelligence promoting economic high-quality development, and artificial intelligence promotes the level of marketization, further promoting urban high-quality development.

### 5.2 Policy Recommendations

The following efforts can be made:

First, improve and optimize the industrial layout of artificial intelligence, based on regional resource advantages, to build a new development pattern. The development of artificial intelligence technology may further expand the regional development gap. It should be based on the comparative advantages of regions, fully consider the resources, geography, human resources, technology, and other advantages of each region.

Second, improve the supporting infrastructure of artificial intelligence, enhance the ability of regional technology to bear, and narrow the regional development gap. It is necessary to increase the cultivation and introduction of talents, improve the technical bearing capacity of the regional market in the production, consumption, and other aspects of artificial intelligence.

Third, continue to increase investment in the research and development of artificial intelligence technology and related fields to improve urban innovation capabilities. Innovation is the primary driving force for high-tech development. According to the research of this paper, urban innovation plays a mediating role in the process of artificial intelligence promoting economic high-quality development, and the improvement of urban innovation level is conducive to better promoting the positive role of artificial intelligence.

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