

# Research on Handan City's Urban Competitiveness and Industrial Economic Agglomeration Under the "532" Industrial Layout



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**Abstract:** With the continuous development and expansion of the global economy, urban competitiveness has become an important indicator of a city's overall development potential, affecting its ability to attract talent, investment and enterprises. The purpose of this paper is to examine the urban competitiveness and industrial agglomeration of Handan, China. Handan is characterized by stable economic growth, a well-developed transport infrastructure and a base of higher education institutions, but industrial agglomeration is not as pronounced as might be expected given its size and economic status. Handan needs a mix of traditional manufacturing and services with high-tech or cutting-edge industries and needs to transform itself into a more diversified and technology-driven city.

**Keywords:** urban competitiveness; industrial agglomeration; policy recommendations

## 1. Introduction

### 1.1. Research background and significance

In the era of economic globalization, cities are facing increasingly fierce competition. Urban competitiveness is a crucial indicator of a city's comprehensive strength and a significant driving force for regional economic development. It is assessed from various perspectives, including politics, economy, society, culture, and the environment. Industrial agglomeration refers to the concentration of industrial production activities in a specific region. The study of the relationship between Handan's urban competitiveness and industrial agglomeration can guide the adjustment of Handan's industrial structure and promote the sustained and stable growth of its economy.

In recent years, both domestic and international scholars have extensively researched the impact of urban competitiveness on industrial agglomeration. The following section provides a review of relevant literature:

This text outlines the requirements for an environmental management system that organizations should establish, implement, maintain

and continually improve. However, the lack of available voluntary greening options means that companies may resist or seek win-win solutions, resulting in slow progress. ISO 14001 focuses on both regulatory compliance and continual improvement of the environmental system. Therefore, companies attempting to adopt this standard are likely to have already made improvements to their environment. The standard's commercial benefits may reduce the likelihood of financial issues compared to environmental issues. While the environmental benefits are clear, the commercial benefits are relatively minor. Some businesses remain undecided. Xu (2012) investigated the impact of urban competitiveness on industrial agglomeration, including its mechanism and path. The authors argue that urban competitiveness can enhance the technological level, innovation capabilities, and market competitiveness of enterprises, thereby promoting the formation and development of industrial clusters. In addition, government policies can also be supportive by providing preferential treatment and optimizing the business environment (Qiu, 2017). According to Professor Zhang's (2016) paper, the economic growth model of most Chinese cities is characterized by high resource consumption,

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high pollution, and low efficiency. China needs to develop the theory of a green economy. China's industry still relies on a development model characterized by high input, consumption, and emissions, which places significant pressure on scarce resources and the environment. Therefore, there is an urgent need to accelerate the construction of a green industrial system with high technological content, low resource consumption, and minimal environmental pollution.

### 1.2. Purpose and content of the study

The aim of this thesis is to examine the effect of Handan's urban competitiveness on industrial agglomeration and analyse its mechanism. The study focuses on the development status of Handan's '532' industrial plan, which includes the five advantageous industries of high-quality steel, equipment manufacturing, food processing, modern logistics, and cultural tourism, as well as the three strategic emerging industries of new materials, new energy, and bio-health. At the same time, the future development industries take into account the roles of electronic information, network security, and emergency response. This text presents policy recommendations aimed at promoting the improvement of Handan's urban competitiveness and the clustering and high-quality development of industrial industries. The recommendations are based on a comprehensive analysis of Handan's urban competitiveness and the current situation of specific industrial clusters.

This study aims to explore the influence mechanism of urban competitiveness on industrial agglomeration by constructing a relationship model between the two. The study focuses on identifying the role path of urban competitiveness in industrial agglomeration. The impact of urban competitiveness on industrial agglomeration is primarily examined through urban planning and construction, scientific and technological innovation capacity, and government support (Qiu, 2017).

Additionally, a practical case analysis is conducted, and corresponding policy recommendations are proposed to promote urban competitiveness and the healthy development of industrial industries in Handan. The policy recommendations' effectiveness is verified by analyzing actual cases.

## 2. Conception

### 2.1. Concept of urban competitiveness

Urban competitiveness refers to a city's productivity, success in external markets, and growth in local income and employment. Jurgita et al. (2012, pp. 256–270) argue that the economic performance of a city is crucial, and therefore, the terms city competitiveness and city economic competitiveness can be used interchangeably.

The term competitiveness was initially used in industry and commerce. Urban competitiveness is a concept that some equate with competitive firms, primarily in terms of productivity and profitability. Others emphasize the local conditions that make cities competitive. (Guo, 2024) argue that enterprise competitiveness and the operating environment are crucial factors in determining urban competitiveness.

## 3. Theoretical Review

### 3.1. The direct impact of Handan's urban competitiveness on industrial agglomeration

Handan City has a favourable geographical location in the middle of the North China Plain, with convenient transportation links, making it an important transport hub connecting North China, Northwest China and Northeast China. This geographical advantage promotes the agglomeration of industries and attracts many enterprises to invest and build factories.

Furthermore, Handan's expanding urban area and increasing market demand have further stimulated the concentration and growth of industrial sectors. The city is constructing a high-end intelligent cluster for the development of equipment manufacturing, aiming to transform equipment manufacturing services. Furthermore, the government is actively promoting the development of industrial clusters and has devised a plan to offer preferential treatment in terms of land and tax relief, as well as attracting talent.

### 3.2. The indirect effect of Handan City's urban competitiveness on industrial agglomeration

In addition to its direct effect, Handan City's urban competitiveness also has an indirect impact on the agglomeration of industrial industries.

Handan City's urban attractiveness can attract more investment and talent, which in turn can lead to the growth of industrial agglomeration. As Handan City's attractiveness increases, investors and

entrepreneurs may become more optimistic about its investment environment and development prospects, thereby increasing their willingness to invest and start businesses.

Additionally, Handan City's urban competitiveness can stimulate collaboration and innovation among enterprises.

Ultimately, enhancing the urban competitiveness of Handan City will promote the influence and visibility of the entire city. Due to the rise in competitiveness, Handan City is gaining more attention both domestically and internationally, which is increasing the city's influence and reputation.

## 4. Research Methodology

### 4.1. Research methods

Through the study of literature, the basic theory and relevant reference of the project research are refined; the literature research method is used to conduct a comprehensive survey of the sample city and collect research data.

### 4.2. Comparative research method

Comparative analysis between Handan and other larger cities is conducive to a comprehensive and objective evaluation of the comprehensive competitiveness of Handan city, and finally, theories such as system theory, urban economics and strategic management are used to study the countermeasures to enhance the competitiveness of the city.

## 5. Practical Case Analysis and Recommendations

### 5.1. Hefei's labour supply-mobility model activates economic vitality

Hefei has innovated its labour model and implemented employee sharing. Under the coordination and guidance of the Hefei Human Resources and Social Security Bureau, numerous local small and medium-sized enterprises (SMEs) in Hefei have overcome temporary labour difficulties through the localized employee-sharing method (Guo, 2013). As a result, the industry has experienced rapid growth, with the industrial value-added growth rate reaching 15.7% in 2021. The above-schedule industry growth rate is even higher, at 19.6%, ranking among the top three in the country's large and medium-sized cities.

Anhui Province is experiencing a resurgence of labour between 2020 and 2022. However, there is

still a significant shortage of skilled workers in the high-end manufacturing sector. To address this issue, Hefei's Human Resources and Social Security Bureau is collaborating with local SMEs. This collaboration aims to leverage the potential of the labour force while also supporting businesses to enhance the city's competitiveness and efficiency.

Handan City is a populous and resource-rich city. Its population mainly flows to Beijing and Tianjin. The government's policy of talent introduction and employment has improved the employment situation, resulting in a small-scale population reflux. The Hefei model is referenced as an example of government-led promotion of enterprise personnel movement without displacement, which has brought about a new breakthrough for the city's development.

### 5.2. Foshan '2+2+2' industry cluster

Foshan has accelerated the development of new productivity in recent years.

Additionally, Foshan has been developing and expanding new industries through recruitment and nurturing. The aim is to promote the growth of eight industries: equipment manufacturing, home furnishing, automotive and new energy, civil-military integration and electronic information, intelligent manufacturing equipment and robotics, new materials, food and beverages, biomedicine and health. This will create core industry clusters, pillar industry clusters, and emerging industry clusters, forming the '2 + 2 + 2' echelon industry pattern.

Foshan and Handan are both prefecture-level cities that adhere to the real economy of old industrial cities. Foshan relies on electrical equipment manufacturing, while Handan relies on iron and steel, machinery, and equipment manufacturing. The municipal government is focused on highlighting the scientific and technological empowerment of the iron and steel industry and promoting the high-quality development of the advanced manufacturing industry. They have launched a '532' leading industry development blueprint.

Handan City should first focus on upgrading the quality of its advantageous industries. This can be achieved by promoting high-end, intelligent, and green steel and machinery. Additionally, the city should leverage its strengths in food processing, culture, business, and tourism to accelerate the

development of new-generation information technology and the construction of a digital city. Secondly, it is important to focus on resource concentration and establish joint city complexes with government, schools, enterprises, and associations. This will help to expand the level of openness and create a convincing business environment. This will help to expand the level of openness and create a convincing business environment.

### 5.3. Strengthening Handan City's urban industrial planning and management to improve its competitiveness

Handan City's level of urban industrial planning and management has a direct impact on its competitiveness as an important city in Hebei Province. To achieve this, the following aspects can be considered:

Industrial planning and layout should be strengthened by prioritizing scientific and rational approaches. The industrial planning and layout program should be formulated by taking into account the city's resource endowment, industrial foundation, and market demand, among other factors, to ensure it aligns with the city's actual situation. Simultaneously, attention should be given to the coordinated development of industries to prevent redundant construction and resource wastage, and to achieve industrial upgrading and transformational development.

Additionally, it is crucial to enhance urban

environmental management and protection. Strengthening the governance and protection of the urban environment is crucial for the development of urban industries. This includes reducing pollutant emissions and environmental pollution, and improving the environmental quality and ecological benefits of the city. To promote ecological sustainability in steel cities and industrial concentration areas, such as electric power, it is important to protect industrial heritage and strengthen waste treatment and environmental restoration of former industrial land. The principle of local conditions is used to guide comprehensive management, with a focus on developing a circular economy and coordinating the relationship between air, water, and land. This will create a new situation for ecologically sound industrial cities (Jurgita et al., 2012, pp. 256-270).

Finally, to enhance cooperation and exchange with renowned domestic and international enterprises and research institutions, introduce advanced technology and management experience to promote the city's industrial upgrading and transformational development. Additionally, actively guiding local enterprises to the international market and expanding their overseas business will improve the city's internationalization and competitiveness (Liu, 2021).

### 5.4. Overall assessment of the competitiveness of Hebei provincial cities

Chart 1

Source: Municipal Statistical Offices, Government Work Report, 2024.

Cities in Hebei Province, 2023							
No.	Cities	GDP, 2023 (Unit: billions)	Avg GDP (Million)	Growth Rate	land Area (Unit: KM)	Population (Unit: Million)	Public budget (Unit: billions)
1	TangShan	9133.3	11.55	5.00%	13472	770.6	936.9
2	ShiJiaZhaung	7534.2	6.33	6.10%	14464	1122.35	1215.2
3	CangZhou	4440.1	6	1.20%	13419	731.48	709.5
4	HanDan	4382.2	4.58	0.80%	12066	949.83	844.4
5	BaoDing	4012.2	4.24	3.40%	22810	914.4	833.4
6	LangFang	3608.3	6.49	1.20%	6429	549.53	604.8
7	XingTai	2586.1	3.63	1.50%	12400	702.56	615.6
8	OingHuangDao	2001.01	6.16	4.80%	7812.4	309.81	316.11
9	HengShui	1888.1	3.9	4.90%	8815	461.65	422.1
10	ChengDe	1851.7	5.34	4.00%	39519	333.63	436.4
11	ZhangJiaKou	1842.7	4.36	3.80%	36873	407.46	603.08

This paper analyses the basic development indexes of 11 cities in Hebei province and presents descriptive statistical analyses. The aim is to explore

the factors influencing the competitiveness of cities. Various rankings of Chinese cities in recent years are considered. The following sections present the results

of the analysis (Ni, 2017).

**5.4.1. Overall analysis**

The rankings of all 11 GDPs in Hebei Province have changed based on the same evaluation index. When ranked according to the total GDP in 2022 and 2023, the growth rates of the 11 cities show the following trends.

Some cities, such as Shijiazhuang and Tangshan,

consistently rank in the top two for growth rate, while other cities lag behind. Cangzhou and Handan have high total GDP rankings, but their growth rates are low, indicating a decline in competitive advantage. Some cities, such as Qinhuangdao, and Hengshui, have a moderate growth rate but possess significant potential for development. Their growth has been consistently upward in recent years.

**Chart 2**

**Source: Municipal Statistical Offices, Government Work Report, 2024.**

No.	Cities	GDP,2023(Unit: billions)	Avg GDP(Milion)	Growth Rate	land Area(Unit: KM)	Population(Unit: Million)	Public budget(Unit: billions)	Weighted Score
1	TangShan	9133.3	11.55	5.00%	13472	770.6	936.9	5343.175
2	ShiJiaZhaung	7534.2	6.33	6.10%	14464	1122.35	1215.2	4928.223
3	ChengDe	1851.7	5.34	4.00%	39519	333.63	436.4	4847.12
4	ZhangJiaKou	1842.7	4.36	3.80%	36873	407.46	603.08	4626.924
5	BaoDing	4012.2	4.24	3.40%	22810	914.4	833.4	4235.864
6	CangZhou	4440.1	6	1.20%	13419	731.48	709.5	3406.736
7	HanDan	4382.2	4.58	0.80%	12066	949.83	844.4	3318.784
8	XingTai	2586.1	3.63	1.50%	12400	702.56	615.6	2538.435
9	LangFang	3608.3	6.49	1.20%	6429	549.53	604.8	2317.735
10	HengShui	1888.1	3.9	4.90%	8815	461.65	422.1	1813.88
11	QingHuangDao	2001.01	6.16	4.80%	7812.4	309.81	316.11	1707.444

Simultaneously, a weighted ranking based on total GDP (40%), average GDP (10%), area (20%), population (20%), and public budget (10%) in addition to the original data indicates that.

Tangshan and Shijiazhuang remain the top two cities in terms of overall strength due to their significantly higher GDP totals compared to other cities; Handan, Xingtai, Langfang, Hengshui, and Qinhuangdao have a lower overall ranking due to their smaller land area and lower GDP. Handan has the lowest GDP growth rate in the province at 0.8%, well below the provincial average.

**5.4.2. Comprehensive analysis of Handan**

Due to the spatial distance, the co-development of Beijing-Tianjin-Hebei mainly focuses on the north and central regions of Hebei Province. As Handan is located in the southernmost part of Hebei Province, it has limited opportunities for development. The Central Plains City Cluster, centred on Zhengzhou with Henan as the main body, does not currently have a strong sense of belonging or presence for Handan. In recent years, the iron and steel industry and coal industry have been subject to checks and balances due to environmental pollution. However, the cultural and tourism industry has also faced challenges in terms of development. The overall

industrial structure is imbalanced, making transformation and upgrading difficult. This has led to a significant increase in production capacity and environmental protection pressures.

Handan’s development position within the Beijing-Tianjin-Hebei urban agglomeration has always been at the junction of four provinces, giving it a unique geographical location and rich resource advantages. Its strategic position is more prominent, and it has historically been a populous city. Handan is not only the largest city in southern Hebei Province, but it also combines Yanzhao and Central Plains cultures. As a result, it brings together the economic bloodlines of both the east-west and the north-south. Handan has the potential to become a powerful engine of regional development, promoting cooperation and exchange between the Central Plains Economic Zone and the Beijing-Tianjin-Hebei economic region.

**6. Conclusions**

**6.1. Internal control**

Establish characteristic industrial parks: Relying on Handan’s resource advantages and industrial foundation, plan and build a series of characteristic industrial parks, such as high-tech parks and

eco-industrial parks. Provide perfect infrastructure and service support in the parks to attract enterprises upstream and downstream of the relevant industrial chain to gather and develop.

Implement brand strategy: support enterprises to create their own brands, improve the quality of products and services, and increase the market recognition and influence of Handan products through certification and standard setting.

Promote green development: advocate clean production, promote energy-saving and emission-reducing technologies, strengthen environmental protection, and enhance the sustainable development capacity of industrial clusters. At the same time, make use of Handan's abundant solar energy, wind energy and other new energy resources to promote the development of a new energy industry.

## 6.2. External control

Cultivate market players: create a favourable market environment, lower the threshold of entrepreneurship, encourage and guide the development of the private economy and small and medium-sized enterprises, and enhance market vitality.

Optimize industrial layout: according to the characteristics of Handan City's location and resource conditions, plan industrial layout scientifically to avoid double construction and unregulated competition. Promote industrial clustering and intensive development to achieve economies of scale and synergy effects.

Strengthen the industrial chain: focus on the existing leading industries in Handan City, improve the upstream and downstream industrial chain, and enhance the support capacity of the industry. Through policy support and guidance, promote the division of labour between small and medium-sized enterprises and large enterprises to enhance the competitiveness of the entire industrial chain.

## Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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