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How Can the Business Environment Promote Urban Innovation and High-Quality Development?—A Qualitative Comparative Analysis Based on the Perspective of Configuration

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Abstract: The high-quality development of urban innovation provides important support for implementing new development concepts, constructing new development patterns, and promoting high-quality development. Based on the Technology–Organization–Environment (TOE) theoretical analysis framework, this paper takes 19 first-tier cities and 30 second-tier cities as research samples, explores the multiple path combinations of the business environment on urban high-quality development from a configuration perspective, and uses the fsQCA method. The research results show that the following are true: (1) The innovation ecology is the sole necessary condition for the high-quality development of urban innovation development; (2) efficient financial services and comprehensive market size play a crucial role in enabling cities to achieve high-quality innovation development; and (3) there are three configurations driving high-quality urban innovation development, namely the "Balanced Synergy Pathway", the "Organizational Synergy Pathway", and the "Technological Synergy Pathway". This study explores the impact of the coupling of the business environment on the high-quality development of urban innovation, reveals the diverse configuration relationships of the business environment in urban high-quality development, and has important theoretical and practical significance for the high-quality development policies of cities.

Keywords: high-quality development of innovation; TOE theoretical framework; configuration; fuzzy set qualitative comparative analysis (fsQCA)

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1. Introduction

The 20th National Congress of the Communist Party of China report articulates that "Chinese modernization is the modernization of common prosperity for all people". Cities, characterized by high concentrations of labor, capital, and information, significantly contribute to high-quality economic and social development, and to achieving a high standard of living. The high-quality and innovative development of cities is essential for advancing common prosperity [1,2]. In the new phase of economic and social development, which transitions from rapid growth to high-quality development, cities actively explore advanced development models through conceptual renewal, transformation of driving forces, and methodological improvements. This innovation-driven and coordinated development approach has become the main catalyst for fostering high-quality development in cities [3].

Existing research on urban innovation development primarily focuses on exploring its influencing factors: Based on the panel data of 211 cities in China from 2007 to 2016, Jiang et al. (2020) [4] use the entropy weight method to construct a evaluation index of urban living environment, and empirically analyze the impact of improving living environments

on urban innovation. Zhou et al. (2023) [5] construct difference-in-difference (DID) models to study the impact of a national innovative-city-pilot policy on urban innovation, and their research conclusion is that the innovative-city-pilot policy significantly improved the level of urban innovation. Zhang et al. (2023) [6], from a multidimensional perspective, further applied grounded theory to identify three major factors influencing urban innovation development: natural, economic, and social factors. However, existing research on the factors influencing urban innovation development primarily focuses on single dimensions, with limited exploration of the multidimensionality of influencing factors. Furthermore, studies on the quality of urban innovation remain relatively insufficient.

The business environment is a multifaceted and dynamic system shaped by the interactions among political institutions, the economy and the market, social culture, and regulatory policies. A favorable business environment is pivotal for enhancing a city's technological innovation capacity and demonstrating microeconomic vitality [7]. Firstly, a positive business environment is essential for attracting business clusters, unlocking investment potential, and driving economic growth. Secondly, such an environment fosters high levels of entrepreneurial activity. Lastly, an improved business environment is critical for increasing corporate innovation efficiency. Optimizing aspects of the business environment, such as human resources, innovation ecologies, and administrative services, creates a supportive atmosphere for corporate innovation and research and development, thereby significantly enhancing innovation efficiency [8].

In practice, the pursuit of high-quality urban innovation development in China has garnered significant attention. On 1 January 2020, the government officially implemented the "Regulations on Optimizing the Business Environment". According to the "Doing Business Report" released by the World Bank, China scored 77.9 points in 2020, ranking 31st in the world in terms of business environment, 15 places higher than that in 2019, indicating that China has achieved certain results in business environments, but there is still a lot of room for improvement.

In academia, existing research on the relationship between the business environment and innovation primarily focuses on the micro-level of individual firms. Jiao et al. (2015) [9], using the World Bank's Investment Climate Survey's data in China, found that the local legal environment and government effectiveness have had a significantly positive effect on a firm's product, technological, process, and management innovation. Gogokhia et al. [10], using a firm-level panel dataset for Vietnamese manufacturing firms, explore the influence of technological, organizational, and environmental factors on the innovation decision of firms in the context of a developing country. Yang et al. [11], using data from small- and medium-sized enterprises (SMEs) in Latin America and the Caribbean, found that the impact of the governance environment is significantly greater on innovative SMEs compared to non-innovative SMEs. At the macro level, Ignatov (2018) [12] finds a strong interdependence between entrepreneurial innovation and regulatory efficiency for many of the European Union states. Lee and Law [13], using a sample of 62 developed and developing countries, explore the impact of formal institutions and social capital on countries' innovation activities. Focusing on the meso level, Zhong et al. [14], using provincial panel data from China and employing the system GMM method, conducted an empirical study that found that optimizing the business environment significantly promotes high-quality economic development. However, these studies primarily focus on the net effect of single factors, neglecting a multidimensional comprehensive analysis of the business environment. Therefore, the impact of business environment configurations on high-quality urban innovation development at the meso level remains to be explored.

The existing literature offers valuable insights and references for further exploration in this study, while also indicating future research directions and areas for optimization.

This research contributes to the understanding of the relationship between the business environment and high-quality urban innovation development, with marginal contributions evident in three key areas:

First, existing studies have made significant progress in examining urban innovation development. However, they often focus on general innovation processes without explicitly distinguishing the unique characteristics of high-quality urban innovation development, such as its emphasis on innovation-driven and coordinated growth. To address this, our study, supported by the Technology–Organization–Environment (TOE) framework, utilizes objective data granted patents to measure high-quality urban innovation development. This approach contributes to a deeper understanding of its innovative and collaborative nature.

Second, a substantial body of literature has explored the relationship between the business environment and innovation, particularly at the micro-level, focusing on corporate innovation. These studies have provided valuable insights into how organizational and environmental factors drive firm-level innovation. Building on this foundation, our research expands the focus to the meso-level by investigating the interplay between the business environment and urban innovation development, thereby bridging the gap between micro- and macro-level studies.

Finally, current research has extensively examined the factors influencing urban high-quality innovation development, often emphasizing the impact of individual elements such as technology, institutions, or infrastructure. These studies have significantly advanced our understanding of key drivers. However, there remains a gap in exploring how combinations of business environment elements collectively shape high-quality urban innovation. To address this, our study employs Qualitative Comparative Analysis (QCA), grounded in configurational thinking. By leveraging set theory and Boolean operations, this approach complements traditional statistical methods by capturing the complex interplay among multiple factors, offering a more holistic perspective.

In summary, this paper constructs a configurational model of how business environment elements facilitate high-quality urban innovation development, based on the TOE theoretical framework. It introduces fuzzy set qualitative comparative analysis (fsQCA) as a tool for examining the configurational effects of various business environment factors on urban innovation. The aim is to reveal the complex causal relationships underlying high-quality urban innovation development in China, providing theoretical foundations and practical references for enhancing urban innovation through the business environment.

2. Theoretical Basis and Research Framework

2.1. Business Environment Assessment

Currently, various evaluation systems for the business environment have been developed by scholars worldwide, each from different perspectives. In 2001, the World Bank established the Global Business Environment Assessment Task Force, and began publishing the annual "Global Business Environment Report" in 2003. In May 2023, the World Bank revised the original Doing Business evaluation system to the new Business Ready evaluation system. This system assesses the business environment using ten primary indicators: business entry, property location, public infrastructure, labor force, financial services, international trade, taxation, dispute resolution, market competition, and business insolvency. Additionally, three new themes were introduced: digital technology application, environmental sustainability, and gender [15]. The World Bank's revision of its business environment evaluation indicators provides global guidance for improving the business environment.

In October 2019, China issued "Regulations on Improving the Business Environment", outlining aspects such as the market environment, administrative services, regulatory enforcement, and legal protections, thereby providing a direction in which to optimize the domestic business environment. Considering the actual development conditions of various Chinese cities, and referencing existing business environment evaluation indicators, Li Zhijun [16] constructed an evaluation system based on ecosystem theory. This system evaluates the urban business environment through seven primary indicators: public services, human resources, market environment, innovation environment, financial services, legal environment, and administrative services.

2.2. The T-O-E Theoretical Framework

Existing studies on innovation development are predominantly based on the theoretical framework of innovation systems. Technical, scientific, social, economic, and political factors collectively influence innovation as an integrated whole, driving transformation through technological development. With the continuous evolution of theory, various concepts of innovation systems have emerged, such as National Innovation Systems (NISs), Regional Innovation Systems (RISs), and Sectoral Innovation Systems (SISs), each focusing on different levels of analysis. In NISs, the boundaries are defined by national or ethnic borders, and the focus is on studying the impact of different subsystems on national innovation within these boundaries [17]. In RISs, the boundaries are geographical, emphasizing regional innovation at the local or sub-regional level [18]. In SIS, the boundaries are primarily defined by interactions among actors within a sector, who collaborate to achieve innovation within that sector [19]. The innovation ecosystem, as a system composed of cross-organizational, political, economic, environmental, and technological subsystems, fosters favorable conditions for innovation, thereby driving sustainable innovation development. Similarly, the TOE theoretical framework, based on the "Technology-Organization-Environment" model, categorizes influencing factors into three broad dimensions. However, it does not specify the exact variables of technology, organization, and environment, granting it considerable flexibility [20]. Therefore, the core subsystems of the innovation ecosystem can be mapped onto the three dimensions of the TOE framework, forming a more comprehensive analytical framework for evaluation.

The "Technology-Organization-Environment" (TOE) theoretical framework, introduced by Tornatzky and Fleischer in 1990, serves as a comprehensive analytical tool based on the context of technology application [21]. This framework is applicable for analyzing organizational behavior and decision-making across different contexts, categorizing influencing factors into three main categories: technological, organizational, and environmental. Technological factors include an organization's technological capabilities and infrastructure; organizational factors refer to key characteristics such as management and services; and environmental factors encompass external conditions like market and financial environments. The innovation-driven, coordinated development approach necessitates the interaction of these factors, collectively determining the level and trajectory of urban innovative high-quality development. Hence, utilizing the TOE theoretical framework for urban innovative high-quality development is highly practical.

2.3. Research Framework

Building on existing research, this paper develops a theoretical analytical framework for the business environment pathways influencing urban innovative high-quality development within the "Technology-Organization-Environment" (TOE) framework, incorporating both holistic and configurational perspectives (see Figure 1).

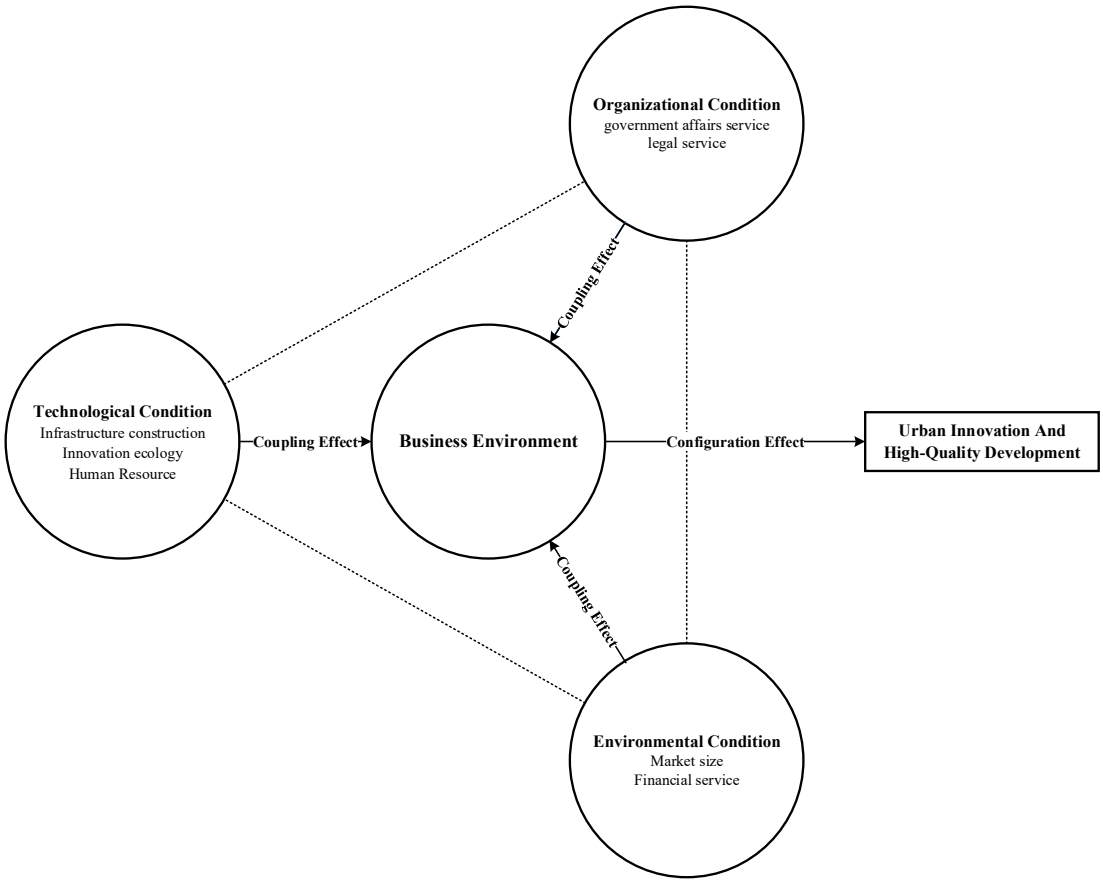


Figure 1. Research framework and path model.

(1) Technological Conditions. This dimension is primarily composed of three secondary factors: infrastructure construction, innovation ecology, and human resources. Technology is the core driving force behind urban innovative high-quality development. Firstly, improvements in transportation infrastructure have been found to promote the integration of industrialization and informatization, thereby enhancing levels of technological development. Additionally, living infrastructure not only meets the production and development needs of urban residents, but also influences technological innovation activities and affects the location of business investments, which can boost local employment and economic development [22]. Secondly, innovation is a critical component of high-quality development. Enhancing innovation ecology can improve corporate innovation efficiency and outputs, thus promoting urban innovative high-quality development. Lastly, talent is a crucial support for economic and social development. Scientific and technological talent plays a central role in improving total factor productivity and is a key force in driving high-quality economic development by enhancing independent innovation capabilities and accelerating the adoption of frontier technologies. Ultimately, scientific and technological talent promotes high-quality economic development by increasing total factor productivity [23].

(2) Organizational Conditions. This dimension consists mainly of two secondary factors: administrative services and the legal environment. Research indicates that geographical proximity fosters collaborative innovation between government and businesses [24]. Consequently, harmonious government–business relationships within a city promote continuous and advanced technological innovation. Furthermore, a robust legal environment is essential for ensuring fair competition in the market. The protection of intellectual property rights, in particular, allows businesses to confidently

engage in research and technology and product development, thereby stimulating technological innovation and ultimately leading to high-quality urban innovation development.

(3) Environmental Conditions. This dimension consists of two main secondary factors: market size and financial services. Market size, as a crucial indicator of urban economic development, reflects a city's economic strength, and provides a solid foundation for high-quality urban innovation. It also offers intangible capital that supports and promotes innovation [25]. Furthermore, a favorable financial environment effectively fosters technological innovation within cities, driving high-quality urban innovation development through external environmental conditions.

In summary, this paper examines two primary questions within the Technology–Organization–Environment (T-O-E) theoretical framework: first, whether specific business environment factors are essential for achieving high-quality urban innovation development; and second, how the seven identified business environment factors interact synergistically to either enable or obstruct the attainment of high-quality urban innovation development.

3. Research Method and Data Construction

3.1. Research Method

The fsQCA method, grounded in set theory and Boolean algebra, combines qualitative and quantitative analysis to investigate "multiple conjunctural" causation from both holistic and configurational perspectives [26]. It is capable of analyzing multiple cases under complex conditions, providing insights into why certain combinations of factors influence outcomes in some scenarios but not in others. This method is particularly useful for elucidating the causal complexities arising from the synergistic effects of multiple factors. Compared to traditional regression methods, the fsQCA method offers the following advantages.

1. Low sample size requirements: Traditional quantitative research methods, such as regression analysis, typically require a sample size of over 200 to ensure the robustness of the results. Conversely, conventional qualitative research methods, such as grounded theory and case studies, analyze one or a few samples. The fsQCA method breaks through these limitations, handling cases where the sample size is too large for qualitative research but too small for quantitative analysis [27].
2. The capability to address causal complexity: Traditional regression analysis assumes no multicollinearity among variables and focuses on identifying the net effects of each variable. In contrast, fsQCA adopts a configurational perspective, emphasizing the relationships and configurational effects among causal factors to explain specific outcomes. Based on set theory principles, fsQCA identifies individual factors as insufficient but necessary conditions for a given result, while configurational conditions formed by these factors are sufficient but unnecessary for the outcome. Unlike traditional regression, which is limited to linear relationships, fsQCA can explore nonlinear relationships among multiple factors [28].
3. Focus on causal asymmetry: Traditional regression yields conclusions about correlations rather than causation, requiring further theoretical inference. Unlike regression analysis, which relies on statistical principles, fsQCA examines the membership relationships between sets, identifying sufficient, necessary, and jointly sufficient and necessary conditions between causal configurations and outcome variables. This enables direct causality assessment from the data analysis results. Thus, fsQCA can analyze asymmetric causal relationships [29], where configurations leading to high levels of the outcome variable may differ from those leading to low levels. This re-

flects the presence of different causal factors rather than variations in the same factors' levels.

In summary, this study employs the fuzzy set qualitative comparative analysis (fsQCA) method for its research.

3.2. Sample Data

Currently, research on the relationship between the business environment and high-quality urban innovation development has not differentiated among urban samples. First-tier cities, as core regions for political, economic, social, and cultural activities, not only hold significant importance, but also possess substantial leadership and radiative effects, making them the most likely candidates for achieving high-quality urban innovation development. In China, the recognized first-tier cities are Beijing, Shanghai, Guangzhou, and Shenzhen. However, as the country shifts from rapid economic growth to high-quality development, an increasing number of other large cities are improving their institutional environments, influencing neighboring cities and facilitating resource allocation. Consequently, this paper uses the "2022 City Commercial Attractiveness Ranking" published by New First-Tier Cities Research to classify urban tiers. The study samples include 19 first-tier cities: Shanghai, Beijing, Guangzhou, Shenzhen, Chengdu, Chongqing, Hangzhou, Xi'an, Wuhan, Suzhou, Zhengzhou, Nanjing, Tianjin, Changsha, Dongguan, Ningbo, Foshan, Hefei, and Qingdao, as well as 30 second-tier cities: Kunming, Shenyang, Jinan, Wuxi, Xiamen, Fuzhou, Wenzhou, Jinhua, Harbin, Dalian, Guiyang, Nanning, Quanzhou, Shijiazhuang, Changchun, Nanchang, Huizhou, Changzhou, Jiaxing, Xuzhou, Nantong, Taiyuan, Baoding, Zhuhai, Zhongshan, Lanzhou, Linyi, Weifang, Yantai, and Shaoxing. The distribution of city samples is shown in Figure 2.

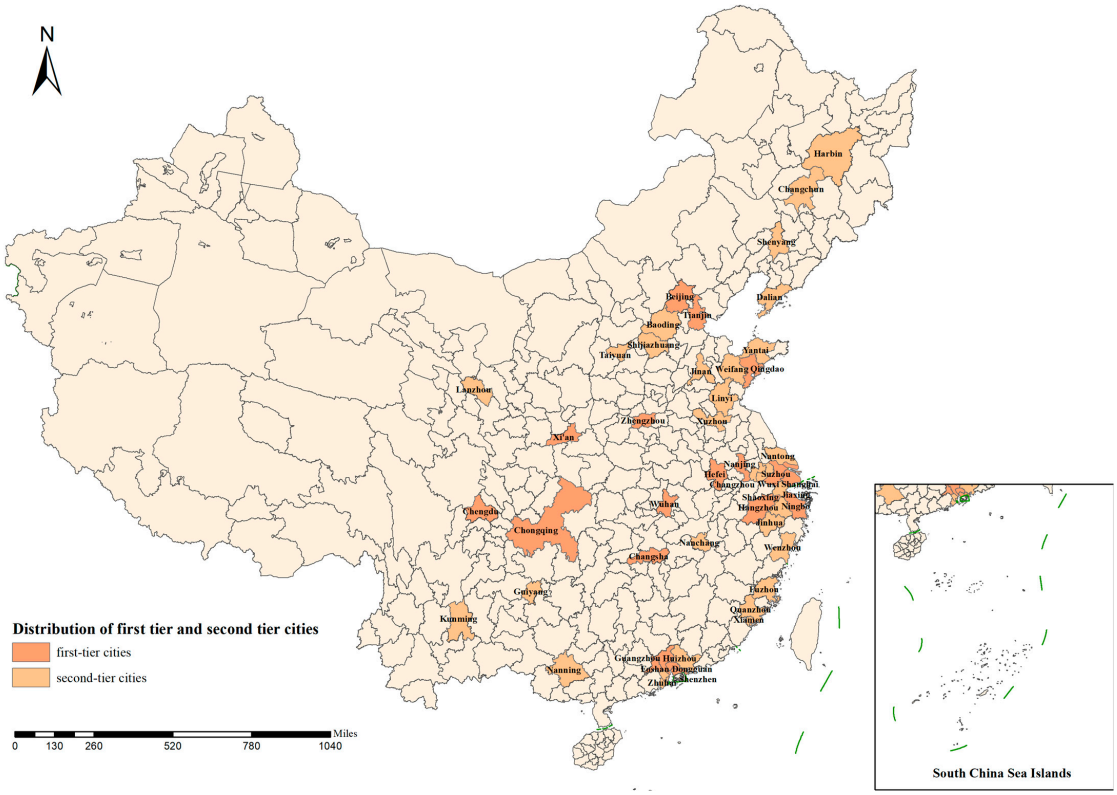


Figure 2. Distribution of first-tier and second-tier cities.

3.3. Research Data

The data for this study are sourced from two primary areas. The condition variables, which encompass the business environment factors, include infrastructure construction, innovation ecology, human resources, administrative services, legal environment, market size, and financial services. Specifically, the infrastructure construction indicators and measurement weights are based on the "2020 Business Environment Report for 296 Chinese Cities" from the Guangdong–Hong Kong–Macao Greater Bay Area Research Institute. The indicators and measurement weights for the innovation ecology, human resources, administrative services, legal environment, market size, and financial services are derived from the "2020 Evaluation of Doing Business in Chinese Cities" [30] report. Firstly, these two reports establish a systematic indicator system for the business environment, comprehensively capturing the characteristics of business environment elements across various cities. This system has been widely accepted and applied in the evaluation of China's business environment (Guo et al. [31], Yu et al. [32], Du et al. [33]). Secondly, the research data are derived from publicly available data from different cities, objectively reflecting the impact of social, economic, and other factors on the urban business environment, ensuring authenticity and accuracy. Finally, for missing and anomalous data, methods such as mean imputation, regression imputation, and Bayesian simulation have been employed, ensuring scientific rigor and effectiveness.

Referring to these two reports, the weights of the indicators are determined using a combination of subjective and objective methods. The coefficient of variation method directly utilizes the information contained within each indicator, measuring the amount of information based on the degree of variation in the indicator, and calculates the weight accordingly [34]. This method is commonly applied to determine the weights of indicators in comprehensive evaluation systems involving multiple dimensions, such as new-type urbanization [35] and digital governance ecology [36]. As a comprehensive innovation ecosystem, the business environment is composed of various environmental factors that exhibit significant differences. Therefore, the coefficient of variation method is used as the objective weighting method. The specific calculation process is as follows:

Suppose there are n samples and p indicators. First, calculate the standard deviation and the sample mean for each indicator.

$$\overline{x}_i = \frac{1}{n}\sum_{i=1}^{n} x_{ij} \tag{1}$$

$$s_j = \sqrt{\frac{\sum_{i=1}^{n}(x_{ij} - \overline{x}_j)^2}{n-1}} \tag{2}$$

The coefficient of variation for each indicator is calculated as

$$v_j = \frac{s_j}{\overline{x}_j} \tag{3}$$

The weight for each indicator is then calculated as

$$w_j = \frac{v_j}{\sum_{j=1}^{p} v_j} \tag{4}$$

Finally, a weighted comprehensive calculation is performed. The weighting process is conducted hierarchically and progressively. After dimensionless processing of the basic

indicators, weighted aggregation is conducted step by step at each level to obtain the final business environment index.

Both reports provide a comprehensive view of the business environment characteristics across various cities. Following established research methodologies, each business environment factor is calculated as the weighted average of its secondary indicators. These secondary indicators are derived using the utility value method from data collected from the cities, with a value range of [0, 100], where values closer to 100 denote a superior business environment. The details of the business environment factors are presented in Table 1.

Table 1. Measurement standards of business environment factors.

Conditions Dimension	Business Environment Elements	Secondary Indicators (Weights)	Measurement Criteria (Weights)	Data Sources
Technology Condition	Infrastructure construction	Traffic construction (0.67)	Built-up area road length/built-up area (km/km^2) (0.08)	China urban statistical yearbook
			Per capita road area (Square meters per person) (0.08)	
			highway freight volume(ton) (0.167)	
			Waterway freight volume (ton) (0.167)	
			Air traffic volume (ton/person) (0.167)	
			Subway length (km) (0.167)	
			The number of taxis (each vehicle) (0.167)	
		Information construction (0.11)	Number of mobile phones with Internet (set) (0.5)	China urban statistical yearbook
			The number of households with broadband (household) (0.5)	
		Life construction (0.22)	Gas supply capacity (ten thousand tons) (0.5)	China urban statistical yearbook
			Public water supply capacity (million cubic meters) (0.5)	
	Innovation ecology	Innovation input (0.5)	Scientific expenditure (CNY ten thousand)	China City database
		Innovation output (0.5)	The number of invention patent applications (unite)	China urban statistical yearbook
	Human resources	Manpower reserve (0.7)	The number of students enrolled in higher education institutions (person) (0.4)	China City database
			Year-end number of employees (person) (0.3)	
			Net inflow of population (thousands of people) (0.3)	Statistical Bulletins of Various Cities
		Labor cost (0.3)	Average wage level (CNY)	China City database
Organizational Condition	Government affairs service	Government expenditure (0.5)	General budget expenditure (CNY ten thousand)	China City database
		Government–business relationship (0.5)	Government–business relationship ranking	Ranking of China's urban political and commercial relations
	Legal service	Social security (0.3)	Number of criminal cases in 10,000 people (pieces per 10,000 people)	China judgment document network
		Judicial service (0.4)	The number of law firms (unit)	TianYanCha (https://www.tianyancha.com/, accessed on 29 November 2022)
		Judicial openness (0.3)	Index of judicial information openness	Municipal Judicial Bureaus/Intermediate People's Courts

Table 1. *Cont.*

Conditions Dimension	Business Environment Elements	Secondary Indicators (Weights)	Measurement Criteria (Weights)	Data Sources
Environmental Condition	Market size	Economic index (0.4)	Regional GDP per capita (CNY) (0.6)	China City database
			Gross investment in fixed assets (CNY ten thousand) (0.4)	
		Import and export (0.3)	Actual foreign investment used in the year (CNY ten thousand) (0.6)	China City database
			Number of new projects or contracts signed in the year (units) (0.4)	
		Business institution (0.3)	Number of large-scale industrial enterprises (units)	China City database
	Financial service	Employment scale (0.5)	Number of financial employees (thousands of people)	China City database
		Financing services (0.5)	Total financing amount (CNY ten thousand) (0.5)	China City database
			Private financing amount (CNY ten thousand) (0.5)	

Note: Data from "2020 China 296 Cities Business Environment Report", "2020 Evaluation of Doing Business in Chinese Cities".

The dependent variable in this study is the level of high-quality urban innovation development. Patents are a crucial measure of knowledge creation and invention, reflecting the level of technological advancement and innovation within a country. Patent quality serves as an indicator of innovation capacity and industrial transformation, and it is a significant manifestation of high-quality economic development [37]. Consistent with the existing literature (Giffith et al. [38], Wang et al. [39]), this study selects the number of granted patents as an indicator to measure the level of high-quality urban innovation development. Compared to patent applications, granted patents undergo partial examination, making them a better reflection of the transformation of innovative achievements and their innovative value [40]. Although there are some limitations in using the number of granted patents to measure high-quality urban innovation development (e.g., many patents are not commercialized, and many innovative activities have not been patented), using granted patent data remains a scientifically reliable method for assessing the level of high-quality urban innovation development. Therefore, the number of granted patents is used as a key indicator of urban innovation development quality in this research. The patent grant data used in this study are sourced from the statistical yearbooks of each city. To account for temporal variations, the average number of granted patents for each city from the year 2019 to 2021 is calculated. The variable ranges of [9004, 223,043], with higher values indicating a higher level of urban innovation development quality.

Additionally, the average number of patent grants nationwide from 2019 to 2021 was 9887.958. Among the sample cities selected for this study, all cities, except Lanzhou, had an average number of patent grants above the national average, demonstrating a favorable urban innovation development model. Lanzhou, as a regional technological innovation hub approved by the State Council, can represent the high-quality innovation development of cities in western China. Therefore, it can be concluded that the entire set of cities selected in this study effectively represents the level of high-quality urban innovation development in China.

3.4. Variable Calibration

In the QCA method, the process of assigning sample cases to set memberships is referred to as variable calibration [41]. In this paper, variables are calibrated into fuzzy sets

using the direct method. Considering that the high-quality development level of urban innovation and the indices of various business environment elements are newly introduced measurement and evaluation indicators without theoretical support or sufficient empirical reference, we refer to previous research studies [29,42]. The calibration was performed using the data distribution software assignment method. Seven condition variables and the outcome variable (high-quality development level of urban innovation) were calibrated using the upper quartile (75%), median (50%), and lower quartile (25%) values from the descriptive statistics of the sample cases as the three calibration points: full membership, crossover point, and full non-membership, respectively. The calibrate function in fsQCA 3.0 software was used to calibrate the membership degrees of these variables between 0 and 1. The calibration of the non-high-quality development level of urban innovation was achieved by taking the complement of the high-quality development level of urban innovation. To address situations where the membership score is exactly 0.5, an adjustment was made by adding 0.001 to membership scores less than 1 [29]. The results of the variable calibration are detailed in Table 2.

Table 2. The fuzzy set calibration of variables.

Variable Name		Full Membership	Crossover Point	Full Non-Membership
Dependent variable	Urban innovation and high-quality development	59,988.33	38,084.33	19,741.33
Independent variables: Technology Condition	Infrastructure construction	0.22	0.16	0.13
	Innovation ecology	22.97	10.91	6.29
	Human resources	43.08	31.4	24.78
Independent variables: Organizational Condition	Government affairs service	38.56	29.79	24.93
	Legal service	59.47	51.99	46.9
Independent variables: Environmental Condition	Market size	31.31	22.8	15.82
	Financial service	18.3	10.91	7.32

4. Empirical Analysis

4.1. Necessary Condition Analysis

Before analyzing the configurations of conditions, each condition's "necessity" must be individually tested. Referring to existing studies, this study employs fsQCA 3.0 software to calculate the consistency and coverage of each indicator for necessary condition analysis. Consistency refers to the extent to which a causal condition is included in the result, while coverage represents the extent to which the antecedent condition explains the result. The calculation formulas for both are as follows, where min represents the smaller of the two values, *Xi* represents the membership value in the antecedent condition, and *Yi* represents the membership value in the result:

$$Consistency(X_i \leq Y_i) = \frac{\sum \min(X_i, Y_i)}{\sum X_i} \quad (5)$$

$$Coverage(X_i \leq Y_i) = \frac{\sum \min(X_i, Y_i)}{\sum Y_i} \quad (6)$$

A consistency threshold of 0.9 is used as the criterion for determining necessity. As shown in Table 3, the consistency of the innovation ecology is 0.930, indicating that when the innovation ecology is present, the resulting high-quality urban innovation development almost always occurs. The coverage is 0.902, indicating that the majority of instances of

high-quality urban innovation development can be attributed to the innovation ecology. Therefore, in the process of achieving high-quality urban innovation development, there exists a single necessary condition: the innovation ecology (consistency = 0.930 > 0.9). This demonstrates that during the process of high-quality urban innovation development, the continuous improvement of the relevant institutional environment makes the innovation ecology increasingly crucial, thereby actively promoting high-quality urban innovation development.

Table 3. Necessary condition analysis results.

Condition Variables	Urban Innovation and High-Quality Development		Non-Innovative High-Quality Development	
	Consistency	Degree of Coverage	Consistency	Degree of Coverage
Infrastructure construction	0.779	0.715	0.397	0.379
~Infrastructure construction	0.323	0.339	0.701	0.767
Innovation ecology	0.930	0.902	0.276	0.279
~Innovation ecology	0.256	0.254	0.903	0.930
Human resources	0.684	0.681	0.365	0.378
~Human resources	0.374	0.362	0.691	0.695
Government affairs service	0.847	0.852	0.250	0.262
~Government affairs service	0.267	0.255	0.859	0.854
Legal service	0.793	0.769	0.355	0.359
~Legal service	0.339	0.336	0.772	0.795
Market size	0.867	0.800	0.327	0.314
~Market size	0.257	0.268	0.793	0.861
Financial service	0.726	0.736	0.329	0.348
~Financial service	0.357	0.338	0.750	0.740

Note: "~" indicates the logical operation "not".

4.2. Configuration Analysis of Urban Innovation and High-Quality Development

This study refers to existing research to set the original consistency at 0.80, the PRI consistency at 0.70, and the case frequency threshold at 1. The intermediate and parsimonious solutions obtained through fsQCA 3.0 software were combined for analysis. The parsimonious solution focuses on the core conditions that significantly impact the outcome while maintaining a certain level of complexity. In contrast, the intermediate solution considers both the core conditions and the peripheral conditions that contribute to the outcome. By synthesizing the intermediate and parsimonious solutions, we can gain a deeper understanding of the key conditions for high-quality urban innovation development, thereby providing theoretical references to promote such development. Table 4 presents the configuration results for achieving high-quality urban innovation development. There are three configurations with consistencies of 0.890, 0.987, and 0.984, respectively, and an overall consistency of 0.963, all exceeding the 0.8 consistency threshold. Additionally, the overall coverage of the three configurations is 0.715, indicating that the condition configurations effectively explain high-quality urban innovation development.

Considering the necessary condition analysis, it was found that the "innovation ecology" is a necessary condition for high-quality urban innovation development. This led to the identification of three equivalent configurations driving high-quality urban innovation development, as shown in Table 4. By simplifying and merging using Boolean algebra, three pathways for high-quality urban innovation development were derived:

*High-quality urban innovation development = Innovation Ecology * Government Affairs Service * Market Size (Infrastructure construction * Human Resources * Financial Services + ~Human Resources * legal service * ~Financial Services + Infrastructure construction * Human Resources * legal service * Financial Services)* (7)

Table 4. Urban innovation high-quality development configuration results.

Antecedent Condition	Balanced Synergy S1	Organizational Synergy S2	Technology Synergy S3
Infrastructure construction	●		•
Innovation ecology	●	●	●
Human resources	●	◎	•
Government affairs service	●	●	●
Legal service	•	•	
Market size	●	●	●
Financial service	•	◎	•
Original coverage	0.521	0.159	0.593
Unique coverage	0.005	0.117	0.774
Consistency	0.984	0.890	0.987
Coverage case	Shanghai, Beijing, and Shenzhen	Dongguan, Foshan, and Wuxi	Hangzhou, Nanjing, and Suzhou
Overall coverage		0.715	
Overall consistency		0.963	

Note: (1) ● = core condition exists; (2) • = edge condition exists; (3) ◎ = the edge condition is missing.

From the textual expression, it is evident that the configuration paths for high-quality urban innovation development share the same core conditions: innovation ecology, government affairs service, and market size. This indicates that the innovation ecology plays a crucial role in the high-quality development of urban innovation. Simultaneously, efficient government affairs services are essential for ensuring this development, and market size is a necessary prerequisite. Based on the different auxiliary conditions present in each configuration path, the three paths are, respectively, named "Balanced Synergy", "Organizational Synergy", and "Technological Synergy". The "Balanced Synergy" configuration corresponds to Path S1, where the simultaneous presence of seven conditions—infrastructure construction, innovation ecology, human resources, government affairs service, legal service, market size, and financial services—leads to high-quality urban innovation development. This indicates that the balanced development of multiple factors contributes to achieving high-quality innovation development. Since all conditions are present, this path is named "Balanced Synergy". The "Organizational Synergy" configuration corresponds to Path S2, where the simultaneous presence of four conditions—innovation ecology, government affairs service, legal service, and market size—results in high-quality innovation development. This demonstrates that a well-structured organizational environment can also promote high-quality innovation development. Since only the government affairs service and legal service under the organizational dimension are present, while sub-conditions under other dimensions are missing, this path is named "Organizational Synergy". The "Technological Synergy" configuration corresponds to Path S3, where the simultaneous presence of six conditions—infrastructure construction, innovation ecology, human resource, government affairs service, market size, and financial service—leads to high-quality innovation development. This suggests that an innovative technological environment in a city can also drive high-quality innovation development. Since infrastructure construction, innovation ecology, and human resources are present under the technological dimension, and considering that the innovation ecology is a necessary condition for high-quality innovation development, this path is named "Technological Synergy".

Path 1: Balanced Synergy Pathway

Configuration S1 illustrates a pathway for high-quality urban innovation development driven by the coordinated development of organizational, technological, and environmental conditions. This configuration shows that under the core influence of a robust innovation ecology, efficient government affairs service, and a large market size, cities with well-developed infrastructure, abundant human resources, a sound legal system, and excellent financial services can achieve high-quality innovation development. This suggests that high-quality urban innovation development is a complex, collaborative process influenced and propelled by multiple interacting factors.

Typical cities following the balanced synergy development pathway include Shanghai, Beijing, and Shenzhen. On 10 April 2020, Shanghai issued the "Regulations on Optimizing the Business Environment in Shanghai", which have been continually revised to uphold principles of market orientation, rule of law, and service orientation. This approach fully mobilizes the city's creative potential and market vitality, strongly supports stable financial development, and allows the government, market, and enterprises to fully develop their respective roles within the business environment. This reflects a multifaceted, balanced synergy that promotes high-quality urban innovation development.

Path 2: Organizational Synergy Pathway

Configuration S2 illustrates that in the process of high-quality urban innovation development, a favorable organizational environment can mitigate the deficiencies in infrastructure construction, human resources, and financial services. Effective government affairs service and a robust legal environment provide essential support for high-quality urban innovation development, compensating for the lack of infrastructure and reducing the negative impacts of insufficient human resources and inadequate financial services.

Typical cities with this type of business environment include Dongguan, Foshan, and Wuxi. For example, Dongguan, located in the Pearl River Delta, is the third-largest city in this economically developed and well-connected region. Dongguan has continuously revised and implemented the "Regulations on Optimizing the Business Environment in Dongguan", which came into effect on 1 March 2024. These regulations aim to optimize the business environment by improving relevant laws from the perspectives of necessity, legality, and feasibility. Through an efficient government affairs service and a robust legal environment, Dongguan has addressed its shortcomings in infrastructure construction, human resources, and financial services, thereby promoting high-quality urban innovation development and exemplifying the organizational synergy pathway.

Path 3: Technological Synergy Pathway

Configuration S3 indicates that in the process of high-quality urban innovation development, advanced technological conditions are crucial. The coordinated development of robust infrastructure, an innovative ecosystem, and abundant human resources can mitigate the deficiencies arising from a slow-developing legal environment.

Cities that exemplify this business environment include Hangzhou, Nanjing, and Suzhou. For instance, Hangzhou has made substantial investments in local infrastructure, continually improving its infrastructure standards, and has revised its talent recruitment policies to enhance the talent introduction mechanism, attracting a significant number of professionals to the city. By enriching local human resources and continuously enhancing innovation ecology, Hangzhou accelerates its high-quality urban innovation development. Rapid technological innovation can temporarily offset the issues related to an imperfect legal environment, thereby reflecting the technological synergy pathway for high-quality urban innovation development.

4.3. Configuration Analysis of Non-Urban Innovation and High-Quality Development

This study also examined the configurations of business environments that hinder high-quality urban innovation development. Using the same analytical process as for high-quality innovation development, an original consistency threshold of 0.80 and a PRI consistency threshold of 0.70 were established, with a case frequency threshold set at 1. Intermediate and simplified solutions were combined using fsQCA 3.0 software.

Table 5 presents the configuration results for urban settings that do not achieve high-quality innovation development. Overall, seven configurations were identified, with consistencies of 0.998, 0.998, 0.967, 0.986, 0.950, 0.911, and 0.978, respectively. The overall consistency for these seven configurations is 0.974, all exceeding the consistency threshold of 0.8. Additionally, the overall coverage for the seven configurations is 0.726, indicating a good explanatory power of the condition configurations for urban settings that do not achieve high-quality innovation development.

Table 5. Urban non-innovative high-quality development configuration results.

Antecedent Condition	N1	N2	N3	N4	N5	N6	N7
Infrastructure construction	◎			◎		◎	•
Innovation ecology	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Human resources		•	◎	◎	⊗	⊗	◎
Government affairs service	⊗	⊗	⊗	⊗	•	•	⊗
Legal service	⊗	⊗	◎		●	●	
Market size	⊗	⊗	•	◎	◎		◎
Financial service			◎	◎	◎	◎	•
Original coverage	0.470	0.286	0.191	0.389	0.106	0.119	0.162
Unique coverage	0.064	0.025	0.075	0.041	0.010	0.018	0.021
Consistency	0.998	0.998	0.967	0.986	0.950	0.911	0.978
Coverage case	Baoding	Nanchang	Huizhou	Xuzhou	Jinhua	Zhuhai	Shenyang
Overall coverage				0.726			
Overall consistency				0.974			

Note: (1) ● = core condition exists; (2) ⊗ = absence of core condition; (3) • = edge condition exists; (4) ◎ = the edge condition is missing.

Table 5 presents seven business environment configurations that hinder high-quality urban innovation development, all of which share the core condition of a deficient innovation ecology. The absence of innovation ecology directly hinders the integration of urban technological resources and the collaboration among innovation entities, thereby weakening urban innovation vitality and directly impacting the achievement of high-quality urban innovation development.

Firstly, Configuration N1 shows that the absence of an innovation ecology, government affairs service, legal service, and market size, combined with severe infrastructure construction deficiencies, impedes high-quality innovation development in cities. The inadequacy of government affairs services and the legal environment indicates a lack of effective policy support and legal safeguards in the city, creating more obstacles for innovation entities within the institutional environment. Additionally, insufficient market size hinders the commercialization of innovative outcomes, further reducing the city's overall innovation output capacity. The lack of infrastructure construction exacerbates these issues. The typical case within this path was Baoding.

Configuration N2 indicates that even with abundant human resources, the lack of crucial technological and environmental conditions—such as innovation ecology, government affairs service, legal service, and market size—will still prevent cities from achieving high-quality innovation development. Abundant human resources may provide potential innovation momentum for a city, but the absence of a government affairs services and a robust legal environment can increase the uncertainty of innovation activities, thereby

weakening the city's attractiveness to talent. Moreover, an insufficient market size prevents human resources from being effectively converted into economic output, hindering the city's further high-quality innovation development. The typical case within this path was Nanchang.

Configuration N3 demonstrates that a large market size alone, without an adequate innovation ecology, government affairs service, and financial services, coupled with insufficient human resources and legal service, is insufficient for high-quality innovation development. The lack of government affairs services and financial services further weakens the city's ability to provide resource support to enterprises and research institutions. Meanwhile, insufficient human resources and an inadequate legal environment indicate a shortage of high-quality innovation entities and reliable institutional guarantees, making it difficult for market size to serve as a foundation for high-quality urban innovation development. The typical case within this path was Huizhou.

Configuration N4 reveals that the simultaneous absence of innovation ecology and government affairs service, along with deficiencies in infrastructure construction, human resources, market size, and financial services, will also hinder high-quality innovation development. The inadequacy of infrastructure construction, human resources, market size, and financial services indicates a lack of fundamental innovation conditions in the city, making it difficult to attract external resources or stimulate internal innovation vitality. The deficiency in government affairs services hampers the functioning of the city's innovation system, thereby hindering the achievement of high-quality urban innovation development. The typical case within this path was Xuzhou.

Furthermore, Configurations N5 and N6 show that, despite a well-functioning organizational environment due to effective government affairs service and legal service, significant deficiencies in innovation ecology and human resources—along with inadequate market size and financial services, or combined with insufficient infrastructure construction and financial services—will still impede high-quality innovation development. Although the improvement of government affairs services and the legal environment provides institutional support for high-quality urban innovation development, the absence of an innovation ecology, human resources, and financial services hinders the full realization of this advantage. Insufficient market size further exacerbates the city's inability to attract and retain innovation entities. In addition, inadequate infrastructure weakens the material foundation and resource support necessary for urban development. Therefore, isolated institutional support cannot compensate for the lack of other conditions. The combined effect of the innovation ecology and other factors is the key to driving high-quality urban innovation development. Typical cases within those paths were Jinhua and Zhuhai.

Lastly, Configuration N7 highlights that even with robust infrastructure construction and abundant financial services, the severe lack of an innovation ecology and government affairs service, compounded by inadequate human resources and market size, will similarly prevent cities from achieving high-quality innovation development. While the improvement of infrastructure construction and financial services provides material support for urban development, the lack of human resources and market size indicates an absence of innovation entities and insufficient space for the transformation of innovative outcomes. The absence of an innovation ecology prevents these resources from being efficiently allocated. Inadequate government affairs services weaken the implementation and attractiveness of urban innovation policies, making it impossible for the city to achieve high-quality innovation development. The enhancement of material resources must be integrated with an innovation ecology and institutional support to truly drive high-quality urban innovation development. The typical case within this path was Shenyang.

Additionally, the configurations of the business environment that support high-quality urban innovation development consistently include a strong innovation ecology. Conversely, configurations hindering such development invariably feature deficiencies in innovation ecology. This highlights the crucial role that innovation ecology plays in advancing high-quality innovation development in cities and confirms that the innovation ecology is the sole necessary condition for achieving high-quality urban innovation development.

4.4. Robustness Test

Based on the study by Meuer et al. [43], robustness testing was conducted by increasing the consistency threshold of the solution. Specifically, the original consistency threshold was adjusted from 0.80 to 0.85 [41], while other procedures remained unchanged. A reanalysis of the configurations for high-quality innovation development was performed, with the results presented in Tables 6 and 7. The analysis revealed a clear subset relationship between the configurations obtained under the two consistency thresholds, indicating that the conclusions of this study are robust.

Table 6. Robustness test of urban innovative high-quality development configuration.

Antecedent Condition	S1	S2	S3
Infrastructure construction		•	●
Innovation ecology	●	●	●
Human resources	◎	•	●
Government affairs service	●	●	●
Legal service	•		•
Market size	●	●	●
Financial service	◎	•	•
Original coverage	0.159	0.593	0.521
Unique coverage	0.117	0.774	0.005
Consistency	0.890	0.987	0.984
Coverage case		0.715	
Overall coverage		0.963	

Note: (1) ● = core condition exists; (2) • = edge condition exists; (3) ◎ = the edge condition is missing.

Table 7. Robustness test of urban non-innovative high-quality development configuration.

Antecedent Condition	N1	N2	N3	N4	N5	N6	N7
Infrastructure construction	◎			◎		◎	•
Innovation ecology	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Human resources		•	◎	◎	⊗	⊗	◎
Government affairs service	⊗	⊗	⊗	⊗	•	•	⊗
Legal service	⊗	⊗	◎		●	●	
Market size	⊗	⊗	•	◎	◎		◎
Financial service			◎	◎	◎	◎	•
Original coverage	0.470	0.286	0.191	0.389	0.106	0.119	0.162
Unique coverage	0.064	0.025	0.075	0.041	0.010	0.018	0.021
Consistency	0.998	0.998	0.967	0.986	0.950	0.911	0.978
Coverage case	Baoding	Nanchang	Huizhou	Xuzhou	Jinhua	Zhuhai	Shenyang
Overall coverage				0.726			
Overall consistency				0.974			

Note: (1) ● = core condition exists; (2) ⊗ = absence of core condition; (3) • = edge condition exists; (4) ◎ = the edge condition is missing.

5. Conclusions

Optimizing the business environment to achieve high-quality urban innovation development is a central focus of high-quality development research. Utilizing the Technology–Organization–Environment (T-O-E) theoretical framework, this study adopts the fsQCA method to explore the multiple concurrent factors and complex causal relationships driving

high-quality urban innovation development from a holistic perspective. The research findings are as follows:

(1) Innovation ecology is the sole necessary condition for high-quality urban innovation development. The absence of innovation ecology constrains a city's ability to achieve high-quality innovation development. This result echoes the findings of Deng [44] and Dai [45], emphasizing the necessity of the innovation ecology for high-quality urban development. Without innovation ecology as the core technical condition, even with well-developed organizational or abundant environmental conditions, it is difficult to achieve high-quality urban innovation development.

(2) Efficient financial services and sufficient market size are critical conditions for driving high-quality urban innovation development. This supports a configurational approach, as opposed to a net-effect perspective, in explaining complex phenomena [46]. It is consistent with the conclusions of Wang et al. [47], who highlighted the importance of integrated financial services for high-quality urban development. Particularly in the context of the digital economy, the enhancement of digital financial services plays a crucial role in addressing funding gaps and promoting the efficient allocation of resources, providing sustained support for high-quality urban development. Furthermore, efficient government affairs services are a crucial support for high-quality urban development. The effectiveness of government services can promote the flow of resources and the concentration of innovation elements, injecting vitality into high-quality urban innovation development.

(3) Our fsQCA results identify three pathways to achieving high-quality urban innovation development: the "Balanced Synergy" pathway represented by Shanghai, the "Organizational Synergy" pathway represented by Dongguan, and the "Technological Synergy" pathway represented by Hangzhou. The business environment of different cities may lead to high-quality urban innovation development. This suggests that the same outcome can be achieved through multiple deterministic configurations of TOE conditions [48].

Based on the research findings, the following recommendations are proposed:

First, cities should prioritize the role of the innovation ecology in high-quality urban innovation development. The innovation ecology is the sole necessary condition for achieving high-quality urban innovation development. A well-developed innovation ecology not only provides substantial financial support and stimulates innovation vitality, but also alleviates development challenges caused by deficiencies in other business environment factors, such as limited human resources, inadequate financial services, and an underdeveloped legal service. For instance, Dongguan, despite lacking robust human resources and comprehensive financial services, benefits from a strong innovation ecology that supports technological advancements and innovation, thereby driving high-quality urban development. Conversely, Jinan, while having abundant human resources and a good financial service mechanism, has struggled to achieve high-quality innovation development due to the absence of a stimulating innovation ecology.

Second, cities should recognize the necessity of financial services and market size for high-quality urban innovation development. An important aspect of high-quality urban innovation development is the city's economic development level. However, once a certain level of economic development is reached, further advancement in innovation requires supportive environmental conditions, such as financial services. Market size provides expansive market opportunities and resource allocation for high-quality innovation development. For instance, first-tier cities like Shanghai, Beijing, and Shenzhen exhibit significant advantages in financial services and market size. They possess well-developed multi-tiered financial markets that offer diverse financing channels, while inclusive price

discovery mechanisms ensure transparency and accuracy of market information, facilitating the precise and rational flow of funds. Additionally, these cities have robust risk control measures that effectively ensure the safety and stability of financial resources. Together, these factors create a comprehensive, specialized innovation development platform that strongly supports high-quality urban innovation development.

Third, cities should select appropriate pathways for high-quality urban innovation development based on their unique business environment characteristics. Over more than 40 years of reform and opening up, and with the deepening of economic reforms and the gradual improvement of the market economy system, cities across China have developed distinctive local business environments. Therefore, in advancing high-quality urban innovation development, cities should first assess their unique business environment elements and leverage their specific advantages. Each city possesses distinct business environment elements that offer unique advantages. Cities must adapt their strategies to their local conditions, focusing on the strengths they possess and continuously developing these advantages to drive high-quality innovation. Furthermore, cities should fully exploit the synergistic effects of different business environment factors. By deeply understanding their distinctive business environment combinations, cities can select the most suitable pathway for high-quality urban innovation development.

It is important to acknowledge the limitations and shortcomings of the configuration path analysis for high-quality urban innovation development based on the TOE theoretical framework. Firstly, the analysis does not fully account for the dynamic evolution mechanisms of technological, organizational, and environmental factors, which somewhat restricts the dynamic understanding of high-quality urban innovation development. Future research could address this by collecting longitudinal data to incorporate the temporal changes in these factors into studies, using time-series QCA methods to enhance the coverage and validity of the case configurations. Secondly, this study focuses solely on seven factors—infrastructure construction, innovation ecology, human resources, government affairs service, legal service, market size, and financial services—without considering other potential drivers of high-quality urban innovation development. Future research should include additional influencing factors in the research model to deepen the understanding of the collaborative development mechanisms driving high-quality urban innovation. Thirdly, this study considers all cities as a single dataset without accounting for the heterogeneity among different types of cities. Future research could address this limitation by introducing factors such as whether a city is designated as an innovation pilot city or by grouping cities into categories such as first-tier, second-tier, and emerging first-tier cities. This approach would enable a more nuanced exploration of the configuration pathways driving high-quality urban innovation development in varying urban contexts.

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References

1. Anttiroiko, A.-V. City-as-a-Platform: The Rise of Participatory Innovation Platforms in Finnish Cities. *Sustainability* **2016**, *8*, 922. [CrossRef]
2. Lauer, J.; Liefner, I. State-Led Innovation at the City Level: Policy Measures to Promote New Energy Vehicles in Shenzhen, China. *Geogr. Rev.* **2019**, *109*, 436–456. [CrossRef]
3. Popescu, A.I. Long-Term City Innovation Trajectories and Quality of Urban Life. *Sustainability* **2020**, *12*, 10587. [CrossRef]
4. Jiang, X.; Fu, W.; Li, G. Can the Improvement of Living Environment Stimulate Urban Innovation?—Analysis of High-Quality Innovative Talents and Foreign Direct Investment Spillover Effect Mechanism. *J. Clean. Prod.* **2020**, *255*, 120212. [CrossRef]
5. Zhou, Y.; Li, S. Can the Innovative-City-Pilot Policy Promote Urban Innovation? An Empirical Analysis from China. *J. Urban Aff.* **2023**, *45*, 1679–1697. [CrossRef]
6. Zhang, J.-X.; Cheng, J.-W.; Philbin, S.P.; Ballesteros-Perez, P.; Skitmore, M.; Wang, G. Influencing Factors of Urban Innovation and Development: A Grounded Theory Analysis. *Environ. Dev. Sustain.* **2023**, *25*, 2079–2104. [CrossRef] [PubMed]
7. Luo, Y.; Cui, H.; Zhong, H.; Wei, C. Business Environment and Enterprise Digital Transformation. *Financ. Res. Lett.* **2023**, *57*, 104250. [CrossRef]
8. Li, C.; Gao, X.; He, B.-J.; Wu, J.; Wu, K. Coupling Coordination Relationships between Urban-Industrial Land Use Efficiency and Accessibility of Highway Networks: Evidence from Beijing-Tianjin-Hebei Urban Agglomeration, China. *Sustainability* **2019**, *11*, 1446. [CrossRef]
9. Jiao, H.; Koo, C.K.; Cui, Y. Legal Environment, Government Effectiveness and Firms' Innovation in China: Examining the Moderating Influence of Government Ownership. *Technol. Forecast. Soc. Chang.* **2015**, *96*, 15–24. [CrossRef]
10. Gogokhia, T.; Berulava, G. Business Environment Reforms, Innovation and Firm Productivity in Transition Economies. *Eurasian Bus. Rev.* **2021**, *11*, 221–245. [CrossRef]
11. Yang, J.S. The Governance Environment and Innovative SMEs. *Small Bus. Econ.* **2017**, *48*, 525–541. [CrossRef]
12. Ignatov, A. Entrepreneurial Innovation: The European Union Perspective. *Rev. Econ. Perspect.* **2018**, *18*, 137–154. [CrossRef]
13. Lee, W.C.; Law, S.H. Roles of Formal Institutions and Social Capital in Innovation Activities: A Cross-Country Analysis. *Glob. Econ. Rev.* **2017**, *46*, 203–231. [CrossRef]
14. Zhong, Z.; Chen, Z. Business Environment, Technological Innovation and Government Intervention: Influences on High-Quality Economic Development. *Manag. Decis.* **2023**, *61*, 2413–2441. [CrossRef]
15. LIU, W. Key Points, Index Analysis and Enlightenment of Changes in the World Bank's Business Environment Assessment System. *China Bus. Mark.* **2023**, *37*, 80–91. [CrossRef]
16. "Research on Evaluation of Doing Business in Chinese Cities" Research Group; Li, Z.; Zhang, S.; Niu, Z.; Yuan, W.; Liu, Q. Theoretical logic, Comparative Analysis, and the Countermeasures of Doing Business Assessment in Chinese Cities. *J. Manag. World* **2021**, *37*, 98–112. [CrossRef]
17. Samara, E.; Georgiadis, P.; Bakouros, I. The Impact of Innovation Policies on the Performance of National Innovation Systems: A System Dynamics Analysis. *Technovation* **2012**, *32*, 624–638. [CrossRef]
18. Asheim, B.T.; Smith, H.L.; Oughton, C. Regional Innovation Systems: Theory, Empirics and Policy. *Reg. Stud.* **2011**, *45*, 875–891. [CrossRef]
19. Gutiérrez, C.; Roa, P.V.; Smith, J. The Chilean Sectoral Innovation Systems: An Approach from The National Innovation Survey. *J. Technol. Manag. Innov.* **2021**, *16*, 3–13. [CrossRef]
20. Li, M.; Chen, H.; Li, J.; Liu, X. How to Improve the Synergetic Development Capabilities of the Innovation Ecosystems of High-Tech Industries in China: An fsQCA Analysis Based on the TOE Framework. *Sustainability* **2023**, *15*, 12579. [CrossRef]
21. Tornatzky, L.G.; Fleischer, M. *The Processes of Technological Innovation*; Issues in Organization and Management Series; 4. Print. Lexington Books: Lexington, MA, USA, 1990; ISBN 978-0-669-20348-6.
22. Yu, Y.; Zhang, S. Urban Housing Prices, Purchase Restriction Policy and Technological Innovation. *China Ind. Econ.* **2017**, 98–116. [CrossRef]
23. Ma, R.; Zhang, J.; Wang, H. Do S&T Talents Contribute to High-quality Economic Development of China?—Empirical Test Based on Effect of S&T Talents on TFP. *Res. Econ. Manag.* **2019**, *40*, 3–12. [CrossRef]
24. Yang, B.; Wang, Y.; Li, X. The impact of multidimensional proximity on cooperative innovation. *Stud. Sci. Sci.* **2019**, *37*, 154–164. [CrossRef]
25. Ren, Z.; Yu, X.; Liu, S. Analysis of the Configuration Path of Business Environment Promoting the Development of Digital Economy. *Zhejiang Acad. J.* **2021**, 94–104. [CrossRef]

26. Ragin, C.C. *Redesigning Social Inquiry: Fuzzy Sets and Beyond*; University of Chicago Press: Chicago, IL, USA, 2009; ISBN 978-0-226-70279-7.
27. Stokke, O.S. Qualitative Comparative Analysis, Shaming, and International Regime Effectiveness. *J. Bus. Res.* **2007**, *60*, 501–511. [CrossRef]
28. Ganter, A.; Hecker, A. Configurational Paths to Organizational Innovation: Qualitative Comparative Analyses of Antecedents and Contingencies. *J. Bus. Res.* **2014**, *67*, 1285–1292. [CrossRef]
29. Fiss, P.C. Building Better Causal Theories: A Fuzzy Set Approach to Typologies in Organization Research. *AMJ* **2011**, *54*, 393–420. [CrossRef]
30. Li, Z. *2020·Evaluation of Doing Business in Chinese Cities*; China Development Press: Beijing, China, 2021.
31. Guo, C.; Liu, C.; Xie, Q.; Lin, X. Regional Entrepreneurship, Business Environment, and High-Quality Economic Development: An Empirical Analysis of Nine Urban Agglomerations in China. *Front. Psychol.* **2022**, *13*, 905590. [CrossRef]
32. Yu, L.; Tang, X.; Huang, X. Does the Business Environment Promote Entrepreneurship?—Evidence from the China Household Finance Survey. *China Econ. Rev.* **2023**, *79*, 101977. [CrossRef]
33. Du, Y.; Sun, N.; Liu, Q. Developing and Analyzing Complex Mediation Models Using Mixed Methods: An Illustration of Doing Business Promoting Innovation Vitality, Synergizing New Quality Productive Forces and Employment-First. *J. Manag. World* **2024**, *40*, 217–237. [CrossRef]
34. Li, M.; Liu, J.; Gong, N.; He, S. Unintended Environmental Gains: How Can a Favorable Business Environment Promote the Low-Carbon Transition? *J. Environ. Manag.* **2024**, *366*, 121892. [CrossRef] [PubMed]
35. Shang, J.; Wang, Z.; Li, L.; Chen, Y.; Li, P. A Study on the Correlation between Technology Innovation and the New-Type Urbanization in Shaanxi Province. *Technol. Forecast. Soc. Chang.* **2018**, *135*, 266–273. [CrossRef]
36. Li, W.; Zhang, J.; Guo, X.; Zhou, Y.; Yang, F.; Li, R. Digitally Driven Urban Governance: Framework and Evaluation in China. *Sustainability* **2024**, *16*, 9673. [CrossRef]
37. Meng, M.; Lei, J.; Jiao, J. Patent quality, intellectual property protection and high-quality economic development. *Sci. Res. Manag.* **2021**, *42*, 135–145. [CrossRef]
38. Griffith, R.; Harrison, R.; Van Reenen, J. How Special Is the Special Relationship? Using the Impact of U.S. R&D Spillovers on U.K. Firms as a Test of Technology Sourcing. *Am. Econ. Rev.* **2006**, *96*, 1859–1875. [CrossRef]
39. Wang, J.; Deng, K. Impact and Mechanism Analysis of Smart City Policy on Urban Innovation: Evidence from China. *Econ. Anal. Policy* **2022**, *73*, 574–587. [CrossRef]
40. Ma, C.; Tan, K.; He, J. The Impact of Opening a High-Speed Railway on Urban Innovation: A Comparative Perspective of Traditional Innovation and Green Innovation. *Land* **2023**, *12*, 1671. [CrossRef]
41. Schneider, C.Q.; Wagemann, C. *Set-Theoretic Methods for the Social Sciences: A Guide to Qualitative Comparative Analysis*, 1st ed.; Cambridge University Press: Cambridge, UK, 2012; ISBN 978-1-107-01352-0.
42. Greckhamer, T. CEO Compensation in Relation to Worker Compensation across Countries: The Configurational Impact of Country-level Institutions. *Strateg. Manag. J.* **2016**, *37*, 793–815. [CrossRef]
43. Meuer, J.; Rupietta, C.; Backes-Gellner, U. Layers of Co-Existing Innovation Systems. *Res. Policy* **2015**, *44*, 888–910. [CrossRef]
44. Deng, J.; Chen, T.; Zhang, Y. Effect of Collaborative Innovation on High-Quality Economic Development in Beijing–Tianjin–Hebei Urban Agglomeration—An Empirical Analysis Based on the Spatial Durbin Model. *Mathematics* **2023**, *11*, 1909. [CrossRef]
45. Dai, H.; Liu, Y.; Li, H.; Cao, A. Depth and Width of Collaborative Innovation Networks and High-Quality Development. *Sustainability* **2024**, *16*, 5909. [CrossRef]
46. Arthur, W.B. Complexity and the Economy. *Science* **1999**, *284*, 107–109. [CrossRef] [PubMed]
47. Wang, W.-X.; Peng, F.-L.; Ma, C.-X.; Dong, Y.-H. Identifying Implementation-Oriented Models of Urban Underground Space Development in China Based on Fuzzy-Set Qualitative Comparative Analysis (fsQCA). *Tunn. Undergr. Space Technol.* **2024**, *153*, 106007. [CrossRef]
48. Huang, Z.; Yang, Y.; Zhang, F. Configuration Analysis of Factors Influencing Port Competitiveness of Hinterland Cities under TOE Framework: Evidence from China. *JMSE* **2022**, *10*, 1558. [CrossRef]

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