Research Article

The Development Model of Shaanxi Free Trade Zone Based on Interpretive Structural Model and MATLAB Data Analysis

Bingjie Li (ID)

Economic Department, Xi'an University of Finance and Economics, Xi'an 710100, China

Correspondence should be addressed to Bingjie Li; leebjie@126.com

As an important hub of the "Belt and Road" initiative and a strategic frontier of opening to the west, the establishment of Shaanxi free trade zone plays an extremely important role in improving Shaanxi's opening to the outside world, integrating into the overall situation of world economic development, and creating a new economic cluster. Therefore, studying the development model of Shaanxi free trade zone and exploring the best development path are research tasks to be solved at present. Shaanxi free trade zone has effectively promoted the development of local economy and trade through various institutional innovations since its establishment. Based on the current development situation of Shaanxi free trade zone, this paper analyzes the main factors influencing its development from government, free trade zone, and enterprise levels, respectively, utilizes the interpretive structural model to sort out the impact factors that promote the development of Shaanxi free trade, also constructs a systematic model for its further development by combining the interactions among the impact factors, and finally proposes countermeasures to promote the development of Shaanxi free trade zone.

1. Introduction

Studies on the development model of free trade zones in China began in the 1980s and mainly focused on the exploration of construction patterns and regional layouts of free trade zones. Liu and Li argued that the construction of free trade zones should adopt different types of development models according to various industrial conditions, economic levels, cooperation targets, geographical locations, and other characteristics [1]. Sun and Tang explored the path of building free trade zones in inland coastal areas of China and argued that the construction of a new batch of free trade zones should be based on the different situations of each region, highlighting regional characteristics and formulating policies according to local conditions [2]. Yuan et al. analyzed the current situation and characteristics of regional layout regarding the construction of free trade zones in China, as well as the problems and difficulties faced in regional layout, and proposed that the concept of open and inclusive is mutually beneficial, and win-win cooperation should be adhered to for the construction of free trade zones [3].

China (Shaanxi) free trade pilot zone is the third batch of free trade pilot zones in China approved by the Party Central Committee and the State Council on August 31, 2016, and is the only free trade pilot zone in the northwest region of China. The establishment of Shaanxi free trade zone has in fact provided a welcome window for the development of the northwest region, allowing inland areas to enjoy the same convenience as coastal and border areas through policy reforms. Ever since its establishment, Shaanxi free trade zone has made great achievements in optimizing the business environment, enhancing the level of investment and trade liberalization and facilitation, deepening the opening up and innovation in financial fields, gathering special advantageous industries, strengthening economic cooperation and humanistic exchanges in countries along the "Belt and Road," and promoting regional synergistic development in many aspects. As of 2020, with less than 1/1700 of the land area of the whole province, Shaanxi free trade zone increased its new enterprises by 1/14 of all new enterprises in the province, contributed to 7/10 of the import and export transactions in Shaanxi Province, and attracted nearly 1/6 of

foreign-invested enterprises in Shaanxi, with its utilized foreign investment accounting for nearly 1/2 of the whole province, which has given wings to the economic development of Shaanxi.

There have been few research papers on free trade zones in Shaanxi Province. Song and Li revealed that the awareness of institutional innovation of free trade zones in Shaanxi province needs to be improved [4]. Li suggested that financial innovation and openness in Shaanxi free trade zone should further integrate the policy synergy formed by the "One Belt, One Road" initiative and adopt the integrated development of traditional finance and emerging finance [5]. Du stated that the cross-border e-commerce ecosystem should be improved to enhance the new dynamics of opening and development of inland free trade zones [6]. Zha indicated a differentiated path choice for the development of Shaanxi free trade zone under the new situation, that is, focusing on the development of modern logistics industry by leveraging the location characteristics and transportation hub advantages of Shaanxi [7].

To sum up, there are few studies focusing on the development model of Shaanxi free trade zone. This paper attempts to regard the Shaanxi free trade zone as a whole system, uses the interpretive structural model to construct the system development mode and path of the Shaanxi free trade zone, and also provides countermeasures and suggestions for promoting the faster and better development of the Shaanxi free trade zone [8–10].

2. Model Construction of Shaanxi Free Trade Zone Development System

2.1. Indicator Selection of Impact Factors. Interactions among government, park, and enterprises in Shaanxi free trade zone collectively influence the development of Shaanxi free trade zone. In view of the fact that the data of some impact factors cannot be accurately collected, in this paper, 12 most representative impact factors are screened as analysis indexes from government level, free trade zone level, and enterprise level, respectively, which are shown in Table 1. The data are mainly from statistical yearbooks over the years.

2.1.1. Government Level. Key government-level impact factors are national policies (S1), free trade zone competitions (S2), business environment (S3), and financial reforms (S4). National policies (S1) are policies enacted by the government to encourage the development of Shaanxi free trade zone. As the only free trade zone in Northwest China, Shaanxi free trade zone has undoubtedly its strategic position as a new highland for inland reform and opening up and an important pivot point for economic cooperation and humanistic exchanges along with the "Belt and Road" initiative [11]. Considerable preferential policies have been enacted by the central and local governments to promote the development of Shaanxi free trade zone. Free trade zone competitions (S2) refer to those between Shaanxi Province and other inland free trade zones. At present, there are eight inland free trade zones in China (Hubei, Henan, Chongqing,

Sichuan, Shaanxi, Beijing, Hunan, and Anhui). Due to similarities in geographic locations and socio-economic conditions, the strategic positioning of the eight inland free trade zones is somewhat similar, resulting in a competitive posture. The business environment (S3) is a combination of the governmental environment, market environment, legal environment, and other relevant external factors involved in the economic activities of various market players in Shaanxi free trade zone [12, 13]. Financial reform (S4) indicates a series of financial reform and innovation initiatives proposed by the central and local governments for Shaanxi free trade zone, including innovation of financial system, strengthening financial services, and establishing a sound financial risk prevention system.

2.1.2. Free Trade Zone Level. The main impact factors at the free trade zone level include location advantage (S5), innovation capacity (S6), infrastructure (S7), synergistic development (S8), and trade creation (S9). Location advantages (S5) represent the geopolitical and transportation advantages of Shaanxi free trade zone. Xi'an is located in the center of China's map, where many major transportation corridors intersect, and has obvious transportation location advantages, making it an important hub for the transit of manpower and materials in the western region of China [14, 15]. Innovation capacity (S6) refers to the innovation activities and achievements of enterprises in the Shaanxi free trade zone. Compared with other inland free trade zones, Shaanxi free trade zone exhibits higher innovation input and output and stronger support for emerging industries. Infrastructure (S7) denotes the construction of Shaanxi free trade zone in terms of transportation, communication, port, and other infrastructure. At present, Shaanxi Province has been productive in the construction of infrastructure, with the first national quality evaluation index of China-EU trains in 2020. Synergistic development (S8) indicates sound cooperation and linkage among the large zones in the Shaanxi free trade zone. Among them, the central zone contains parts of Xi'an high-tech zone, Xi'an economic development zone, and Xi'an new district, focusing on the development of strategic emerging industries and high-tech industries; the international port zone contains parts of Xi'an international port zone and Chanba ecological zone, focusing on the development of international trade and modern logistics industries; and the Yangling zone focuses on agricultural science and technology innovation and demonstration and promotion. Strengths between each zone are prominent with linked development. Trade creation (S9) indicates the promoting effect of Shaanxi free trade zone on the import and export trade of Shaanxi Province. Given the low dependence of Shaanxi's economy on import and export trade, whether Shaanxi free trade zone can deliver sufficient trade creation results is crucial to Shaanxi's economic development.

2.1.3. Enterprise Level. Impact factors at enterprise level include supporting industries (S10), human resources (S11), and behavioral needs (S12). Supporting industries (S10)

TABLE 1: Indexes of impact factors on the development of free trade zone in Shaanxi.

Level	No.	Item	Descriptive definitions
	S1	National policies	Policies promulgated by the state to encourage the development of Shaanxi free trade zone to facilitate the development of enterprises
Government	S2	Free trade zone competition	Competition between Shaanxi province and other inland free trade zones
	S3	Business environment	Combination of external factors such as governmental environment, market environment, legal environment, etc. Involved in the economic activities of various market players in the free trade zone
	S4	Financial reform	Innovative financial reform initiatives proposed by the government for the free trade zone
	S5	Location advantages	Geographical and transportation advantages of Shaanxi free trade zone
	S6	Innovation capacity	Innovative activities and achievements of enterprises in the Shaanxi free trade zone
Free trade zone	S7	Infrastructure	Infrastructure construction in Shaanxi free trade zone in terms of transportation, communication, port, etc.
	S8	Synergistic development	Sound cooperation and linkage among various areas of Shaanxi free trade zone
	S9	Trade creation	Promotional effect of Shaanxi free trade zone on import and export trade of Shaanxi province
	S10	Supporting industries	Services and upstream and downstream industries in Shaanxi free trade zone
Enterprise	S11	Human resources	Skilled technical workers, management and sales personnel, and other labor forces available to enterprises in the Shaanxi free trade zone
	S12	Behavioral needs	Needs and behaviors of enterprises which want to be stationed in Shaanxi free trade zone

include the various service industries and upstream and downstream industries in the Shaanxi free trade zone. Human resources (S11) refer to the various labor forces such as skilled technical workers and management and sales talents available to enterprises in Shaanxi free trade zone. Despite the fact that there are so many universities in Shaanxi Province and a certain foundation of human resource security, it lacks interdisciplinary talents with customs clearance, financial services, international trade, and foreign language skills. Behavioral needs (S12) mainly refer to the needs and behaviors of enterprises that would like to be stationed in the Shaanxi free trade zone.

2.2. Weights of Impact Factors. In determining the weights of the impact factors, the judgment matrix should be constructed first, and then, the feature vector E of the judgment matrix should be derived. The judgment matrix was constructed based on the results of expert evaluation and questionnaire survey, and the values were determined using the 1–9-digit scaling method.

$$E_i = \left(\prod_{j=1}^{n} b_{ij} \right)^{1/n} \quad i = 1, 2, \ldots\ldots n. \quad (1)$$

The feature vector $E = (E_1, E_2, \ldots\ldots, E_n)^T$ was then normalized; that is,

$$E_A = \sum_{i=1}^{n} E_i. \quad (2)$$

Finally, according to the formula

$$W_i = \frac{E_i}{E_A}. \quad (3)$$

W_i is the relative importance (i.e., weight) of A_i. The weight vector of each impact factor can be obtained separately, as shown in Table 2.

To ensure the validity of the evaluation analysis, the consistency test is required. The CR was calculated according to the CI.

$$CR = \frac{CI}{RI}, \quad (4)$$

$$CI = \frac{\lambda_{\max} - n}{n - 1}, \quad (5)$$

and $\lambda_{\max}$ is the maximum characteristic root of the judgment matrix.

RI is the mean random consistency index, and it can be found through the calculation that values of CR were all smaller than 0.100, which passed the consistency test, meaning that the consistency of the judgment matrix and the weight vector W can be accepted.

2.3. Construction of ISM-Based Development System for Shaanxi Free Trade Zone. In this paper, the interpretive structural model (ISM) is adopted to construct the development system of Shaanxi free trade zone. The interpretive structural model was proposed by John N. Warfield in 1973, which can be used to analyze the complex structural relationships among the elements in the system. In view of the complexity of the various impact factors within the Shaanxi free trade zone, using the ISM method for analysis can clearly sort out the system development path.

First of all, the 12 factor indicators affecting the development of Shaanxi free trade zone under the background of "One Belt, One Road" were evaluated by the Delphi method, deriving the adjacency matrix M1 and the reachability matrix M2, as shown in Table 3 and Table 4.

TABLE 2: Index weights of impact factors of Shaanxi free trade zone.

First-level index	Weight W	Second-level index		Weight W
Government	0.5890	National policies	S1	0.4879
		Free trade zone competition	S2	0.4020
		Business environment	S3	0.5036
		Financial reform	S4	0.3743
Free trade zone	0.6329	Location advantage	S5	0.3987
		Innovation capacity	S6	0.3320
		Infrastructure	S7	0.2654
		Synergistic development	S8	0.3749
			S9	0.2118
Enterprise	0.4160	Supporting industries	S10	0.3965
		Human resources	S11	0.3210
		Behavioral needs	S12	0.1145

TABLE 3: Adjacency matrix M1 of Shaanxi free trade zone development system.

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S0
S1	1	1		1									
S2		1	1										1
S3		1	1						1				1
S4				1							1		
S5						1			1		1		
S6						1	1			1			
S7							1	1			1		
S8								1		1			
S9									1				
S10								1		1		1	
S11		1			1						1		
S12												1	1
S0													1

Note: "1" indicates that the vertical row of factors directly affects the horizontal row of factors, and the blank represents having no direct effect. When S_i directly affects S_j, then $S_{ij} = 1$; when S_i has no direct effect on S_j, then $S_{ij} = $ space.

TABLE 4: Reachable matrix M2 of Shaanxi free trade zone development system.

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S0
S1	1	1	1	1								1	1
S2		1	1						1				1
S3		1	1						1				1
S4				1								1	1
S5						1			1		1	1	1
S6		1			1	1			1		1	1	
S7							1	1	1		1	1	1
S8								1	1		1		
S9									1				
S10								1	1		1	1	1
S11	1	1		1	1						1		1
S12												1	1
S0													1

Based on the above adjacency matrix, Matlab software was used to calculate the reachable matrix M2.

When S_i has a direct or indirect influence on S_j (i.e., S_i can reach S_j through several branches), then $S_{ij} = 1$; when S_i has no influence on S_j (i.e., S_i cannot reach S_j), then $S_{ij} = $ space.

Secondly, all the elements in the development system of Shaanxi free trade zone under the context of "One Belt, One Road" are divided into layers. S0 (development of free trade zone) is defined as the highest level element, that is, L1 element. The reachable matrix without the L1 level elements is shown in Table 5.

Thus, the elements contained in L2, $L2 = \{S4, S8, S9, S12\}$, can be obtained, which is shown in Table 6. By analogy, the elements of L3 and L4 can be obtained, respectively, which is shown in Table 7, and finally, the skeleton matrix of Shaanxi free trade zone development system can be obtained, which is shown in Table 8.

The structural model of Shaanxi free trade zone development system is drawn according to the above skeleton matrix M4 (see Figure 1).

2.4. Analysis of Shaanxi Free Trade Zone Development System.

As can be seen in Figure 1, the relationships among the impact factors are intricate. Financial reform, synergistic development, trade creation, and behavioral needs are government-level, FTA-level, and enterprise-level impact factors, respectively. By further sorting out the relationships among the impact factors and organizing them to form Figure 2, it can be seen that the 12 impact factors form different levels of the promotion system around the development of Shaanxi free trade zone. Among them, impact factors at the free trade zone level (S5–S9) and impact factors at the enterprise level (S10–S12) are more closely linked, so they can be regarded as one system and defined as subsystem I; impact factors at the government-level (S1–S4) are defined as subsystem II.

2.4.1. Analysis of Subsystem I.

Impact path 1: infrastructure $\longrightarrow$ supporting industries $\longrightarrow$ synergistic development $\longrightarrow$ behavioral needs $\longrightarrow$ free trade zone development. The perfect infrastructure of the free trade zone, including hardware facilities such as transportation, communication, and logistics, as well as software facilities such as convenient customs clearance and good business environment, will help attract more high-quality enterprises from different industries to the free trade zone, which will in turn form a complete supporting industrial chain and supply

TABLE 5: Reachable matrix M3 of Shaanxi free trade zone development system (excluding L1 layer).

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12
S1	1	1	1	1								1
S2		1	1						1			
S3		1	1						1			
S4				1								1
S5					1				1			1
S6		1			1	1			1		1	1
S7							1	1		1		1
S8								1		1		1
S9									1			
S10								1		1		1
S11		1	1		1	1					1	
S12												1

TABLE 6: L2 element extraction.

Element	Reachable set R(S_i)	Antecedent set A(S_i)	Common set C(S_i)	Belong to L2 layer
S1	S1, S2, S3, S4, S12	S1	S1	
S2	S2, S3, S9	S1–S3, S6, S11	S2, S3	
S3	S2, S3, S9	S1–S3, S11	S2, S3	
S4	S4	S1, S4	S4	√
S5	S5, S9, S12	S5, S6, S11	S5	
S6	S2, S5, S6, S9, S11, S12	S6, S11	S6, S11	
S7	S7, S8, S10, S12	S7	S7	
S8	S8, S10	S7, S8, S10	S8, S10	√
S9	S9	S2, S3, S5, S6, S9	S9	√
S10	S8, S10, S12	S7, S8, S10	S8, S10	
S11	S2, S3, S5, S6, S11	S6, S11	S6, S11	
S12	S12	S1, S4–S8, S10, S12	S12	√

TABLE 7: Hierarchy of impact factors in Shaanxi free trade zone.

Layer	ISM node
L1	S0
L2	S4, S8, S9, S12
L3	S2, S3, S5, S10
L4	S1, S6, S7, S11

TABLE 8: Skeleton matrix of Shaanxi free trade zone development system M4.

	S0	S4	S8	S9	S12	S2	S3	S5	S10	S1	S6	S7	S11
S0													
S4	1			1									
S8				1		1							
S9													
S12	1												
S2	1			1				1					
S3				1		1							
S5				1	1								
S10			1		1								
S1		1				1	1						
S6						1		1					1
S7									1				
S11									1				

chain. On this basis, Shaanxi free trade zone can reasonably lay out their key industries and enterprises according to the different functions carried by each large area, so that each large area can be complemented and developed synergistically. The promising trend of the development of the free trade zone can change the demand of enterprise behavior, which is to enhance the willingness of Chinese and foreign enterprises to be stationed in Shaanxi free trade zone, ultimately promoting the development of Shaanxi free trade zone.

Impact path 2: human resources + innovation capacity ⟶ location advantages ⟶ behavioral needs ⟶ free trade zone development. Human resources and innovation capacity mutually complement each other. The improvement of innovation capacity cannot be achieved without the full gathering and effective use of talents, which will also attract more high-quality talents, thus further enhancing the location advantage of the free trade zone, thereby attracting more enterprises, that is, changing the behavioral demand of enterprises, and finally driving the development of Shaanxi free trade zone.

Impact path 3: human resources + innovation capacity ⟶ location advantages or free trade zone competition ⟶ trade creation. The mutual influence and promotion of human resources and innovation capacity contribute to enhance the locational advantages of Shaanxi
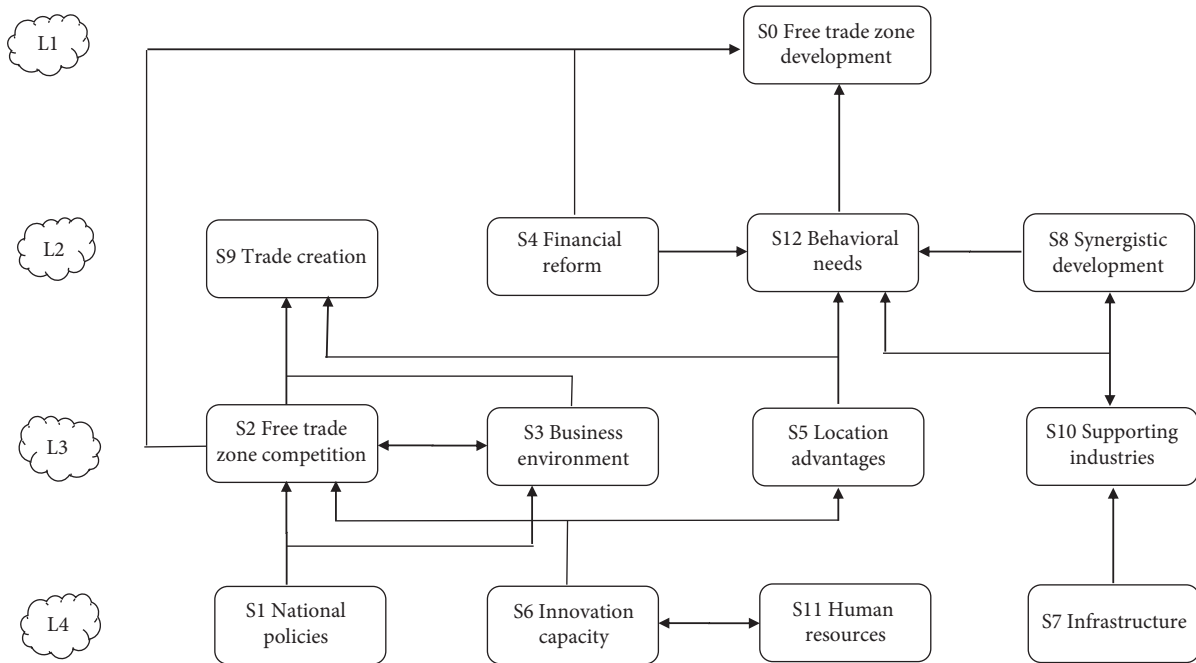
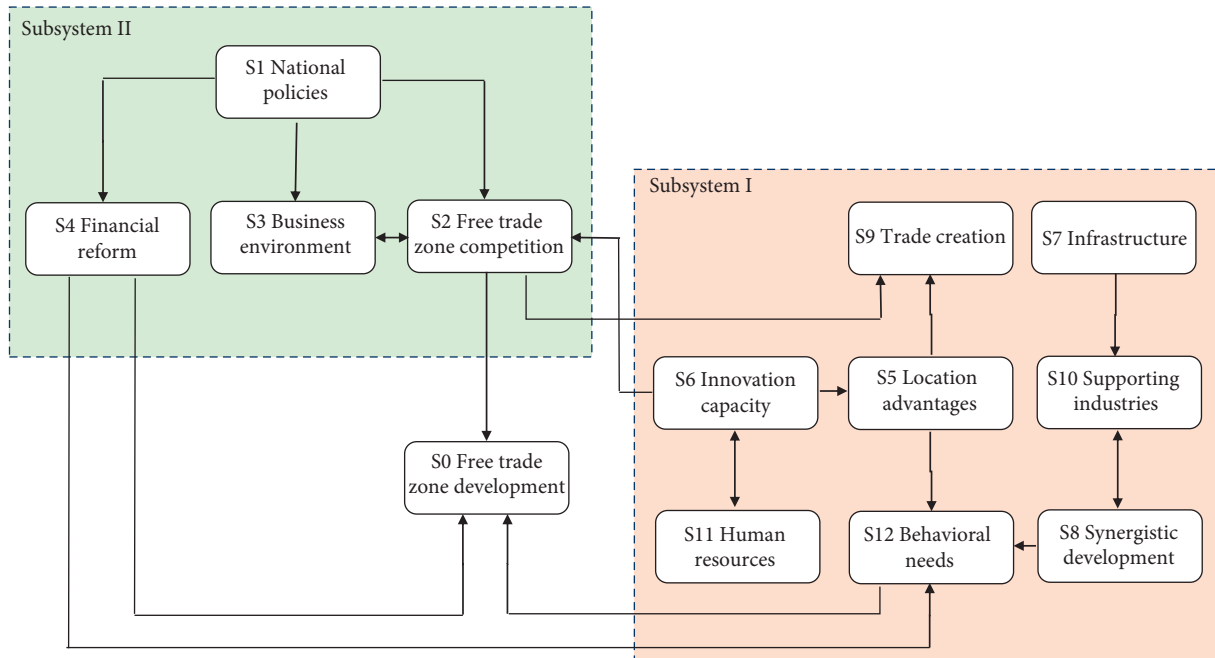FIGURE 1: Structural model of Shaanxi free trade zone development system.

FIGURE 2: Structural model of Shaanxi free trade zone development subsystem.

free trade zone and further improve the competitiveness of Shaanxi free trade zone, thus promoting the development of import and export trade in Shaanxi and driving the economy of Shaanxi.

Overall, impact path 1 and impact path 2 both influence the development of Shaanxi free trade zone through behavioral needs of enterprises, reflecting the important position of enterprises in the free trade zone; the end point of impact path 3 is trade creation, which is the most basic function of the free trade zone and an important reflection of the development level of the free trade zone. In addition, the starting points of both impact path 2 and impact path 3 are human resources and innovation capacity, reflecting the importance of these 2 elements. Among the first batch of

replicable reform and innovation results achieved in the free trade zone in Shaanxi Province, many of them are related to the introduction of talents or the cultivation of innovation capacities, including the "one-stop" service platform for international high-level talents, entrepreneurship and innovation of professional farmers, and the creation of a "cloud-based free trade zone." The future enhancement of the competitiveness of Shaanxi free trade zone will still depend on the continuous introduction of high-quality talents and the continuous improvement of innovation capacity.

2.4.2. Analysis of Subsystem II. Overall impact path: national policies $\longrightarrow$ free trade zone competition + business environment + financial reform $\longrightarrow$ free trade zone development. The central government coordinates the overall situation and determines the establishment and strategic positioning of the free trade zone, and local governments implement different policies in the free trade zone according to local conditions, which directly determines the development direction and competitiveness of the free trade zone. In addition, both the central and Shaanxi provincial governments have played a leading role in improving the business environment and financial reform, and many of the achievements of the current Shaanxi free trade zone are related to the government's improvement of the business environment and financial reform. Shaanxi Province Regulations on Optimizing the Business Environment, which came into effect on January 1, 2021, will guide the government to continue optimizing the business environment in various aspects such as protection of market subjects, market environment, government services, supervision and enforcement, and rule of law protection. At the same time, the Shaanxi free trade zone actively explores the management of local and foreign currency accounts in the Pilot free trade zone, builds an export credit platform for enterprises, implements innovative financial models such as technology-finance investment and loan linkages, and domestic guarantees for overseas loans, and vigorously develops new financial businesses, such as financial leasing, technology Finance, cultural finance, and logistics finance. Various financial reforms and innovative initiatives will help improve the service level of financial intermediaries and broaden the financing channels of enterprises, thus improving the efficiency of resource allocation and ultimately promoting the sustainable and healthy development of Shaanxi free trade zone.

3. Suggestion and Discussion

3.1. Accelerate the Reform Process of Shaanxi Free Trade Zone by Focusing on the Needs of Enterprises. The behavioral needs of enterprises are governed by three basic factors: interest relations, rights, and information. Behaviors of enterprises are motivated by certain interests, and different ownership structures of enterprises can lead to differences in interest structures and influence the direction of enterprise goals. Therefore, the government should regulate the internal structure of enterprise ownership, with clear rights and responsibilities and consistent goals. In addition, efforts should be made to interconnect information among local enterprises, foreign capital, and the government, accelerate the construction of information platforms, and reduce the loss of efficiency and revenue brought by information asymmetry to each enterprise.

Secondly, relying on the large number of local colleges and universities, a batch of innovative and practical talents can be channeled to the enterprises. Shaanxi free trade zone can specialize in training according to the characteristics of the incoming industries, encourage scientific research and innovation through cooperation with provincial colleges and universities, set up a research fund, and evaluate the number and scale of professional and technical talents required by the enterprises, so as to cultivate a batch of professional and technical talents.

The last is to promote supporting industry clustering. Shaanxi free trade zone currently attracts a large number of enterprises, most of which possess intellectual property rights or technological advantages in a certain part of the industrial chain. To promote the benign development of the industry, the corresponding local supporting industries in Shaanxi Province should be transformed and docked to form a complete industrial chain, to better play the agglomeration effect of the industry, so that more effectively related industries can join the industrial chain, thus improving the overall economic benefits of the free trade zone.

3.2. Improve Infrastructure to Ensure Stable Development of Shaanxi Free Trade Zone. In recent years, Shaanxi Province opened 1,000 kilometers of new traffic, forming "two circles, three columns, seven horizons, and six radiations" of the highway network, basically implementing the highway passing through counties. In addition, it also continues to promote the construction of Xianyang Airport Phase III, Xinzhu Railway Integrated Logistics Center, and the "Mi"-type high-speed rail network. But there is still a lot of room for progress in the development of air transport; thus, it is necessary to accelerate the cultivation of various types of air cargo enterprises, so as to make up for the shortcomings of air logistics. On this basis, Shaanxi free trade zone should speed up the negotiation with the countries along the "Belt and Road" to set up the transport network, construct a three-dimensional channel for opening up to the outside world through the international port area, Chanba ecological zone, Weibei industrial logistics zone, aviation logistics zone, and set up the transport network from port to port and air to air to lay the foundation for Shaanxi free trade zone to realize the silk road international trade and logistics center and foreign cooperation and exchange center.

3.3. Promote Policy Reform to Seize the Development Direction of Shaanxi Free Trade Zone. First, the business environment of the free trade zone should be continuously improved. In the past few years, the business environment of Shaanxi free trade zone has been optimized, and the Xi'an region has taken the lead in building the province's first unattended

intelligent government service station. Subsequently, the government should focus on strengthening the marketization, rule of law, and internationalization of the business environment to form a good environment conducive to expanding foreign cooperation and undertaking the external industrial transfer.

Secondly, it is important to actively expand the financing channels for enterprises. Since the establishment of Shaanxi free trade zone, various innovative financial services have been established to reduce financing costs for enterprises. However, in the face of strong market demand, financial institutions still need to continue to innovate financial products under the guidance of the government, broaden financing channels, form an effective capital market, and provide diversified and convenient financial services for enterprises.

Finally, the competitiveness of Shaanxi free trade zone should be improved vigorously. Although Shaanxi free trade zone features unique geographical advantages and resource endowments, it still has disadvantages compared with other free trade zones in China: low level of regional development, underdeveloped private economy, and insufficient import and export trade advantages, and so on. Therefore, the government should actively enhance the hub function of Shaanxi free trade zone, promote the free flow of factors, give full play to the advantages of location, science and education, culture and resources, enhance the competitiveness of Shaanxi free trade zone, play the leading role of the pilot free trade zone, and promote economic development.

4. Conclusion

This paper analyzes the main impact factors from government, free trade zone, and enterprise levels, respectively, and utilizes the interpretive structural model to construct the development system of Shaanxi free trade zone. It is believed that the development path of Shaanxi free trade zone mainly revolves around two subsystems. Expand:

(1) Subsystem I, which focuses on the development of free trade zones and enterprises, has three main development paths, namely,

Infrastructure $\longrightarrow$ supporting industries $\longrightarrow$ synergistic development $\longrightarrow$ behavioral needs $\longrightarrow$ free trade zone development;

Human resources + innovation capacity $\longrightarrow$ location advantages $\longrightarrow$ behavioral needs $\longrightarrow$ free trade zone development;

Human resources + innovation capacity $\longrightarrow$ location advantages or free trade zone competition $\longrightarrow$ trade creation.

(2) Subsystem II, which is dominated by the government, has the main development path, namely: national policies $\longrightarrow$ free trade zone competition + business environment + financial reform $\longrightarrow$ free trade zone development.

The shortcoming of this paper is that the extraction of impact factors of Shaanxi free trade zone and the evaluation

and scoring of experts are subject to certain subjectivity, which will affect the accuracy of model construction. This is also a problem that needs to be solved in future research.

Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

References

[1] J. Liu and Z. P. Li, "Prospects for the development of free trade zone between China and the GCC and trends in economic and trade cooperation," *International Petroleum Economics*, vol. 24, no. 12, pp. 38–43, 2016.

[2] J. W. Sun and Z. D. Tang, "Path of building free trade zone in China's inland border areas," *Shanghai Journal of Economics*, vol. 9, no. 10, pp. 100–107, 2016.

[3] B. Yuan, Z. Y. Song, G. Y. Bai, Q. Quanliang, and J. Y. Liu, "Reflections and suggestions on the regional layout of China's current free trade zone construction," *International trade*, vol. 5, no. 7, pp. 7–10, 2017.

[4] Q. Y. Song and Q. G. Li, "Comparison of reform and development of pilot free trade zone and implications for Shaanxi," *Chinese Commerce*, vol. 3, no. 1, pp. 3–5, 2021.

[5] W. L. Li, "Reflections on the supply and demand logic of financial innovation and opening in China (Shaanxi) free trade zone," *Journal of Chang'an University (Natural Science Edition)*, vol. 22, no. 5, pp. 11–19, 2020.

[6] Y. H. Du, "A Study on the countermeasures of industrial aggregation in inland free trade zones--based on "one belt, one road" cross-border e-commerce," *Journal of Technical Economics & Management*, vol. 6, no. 8, pp. 123–128, 2020.

[7] F. Zha, X. H. Yu, and J. Xu, "Differentiated path selection for the development of shaanxi free trade zone under the new situation," *Economic Outlook around Bohai Sea*, vol. 2, no. 5, pp. 74-75, 2019.

[8] H. Bai and D. Q. Tan, "Study on the economic development path of inland national central cities-based on the perspective of inland free trade zone," *Inquiry into Economic Issues*, vol. 7, no. 10, pp. 163–162, 2018.

[9] B. F. Tian and W. Li, "Study on the establishment and evaluation of inland free trade Zone - a case study of Wuhan," *International Business Research*, vol. 36, no. 4, pp. 47–55, 2015.

[10] Q. Chen, Y. Ding, and S. Dun, "Study on the influencing factors of urban business environment based on interpretive structural model," *Reform of Economic System*, vol. 8, no. 1, pp. 193–200, 2021.

[11] Y. W. Zhang, "The Strategic connotation and theoretical significance of free trade zone experimentation," *World Economy Studies*, vol. 11, no. 7, pp. 3–12, 2016.

[12] F. Meng, W. Cheng, and J. Wang, "Semi-supervised software defect prediction model based on tri-training," *Ksii Transactions on Internet and Information Systems*, vol. 15, no. 11, pp. 4028–4042, 2021.

[13] H. Wang and Q. Luo, "Can a colonial legacy explain the pollution haven hypothesis? A city-level panel analysis," *Structural Change and Economic Dynamics*, vol. 60, pp. 482–495, 2022.

[14] L. Yang, Z. Xiong, G. Liu, Y. Hu, X. Zhang, and M. Qiu, "An analytical model of page dissemination for efficient big data transmission of C-ITS," *IEEE Transactions on Intelligent Transportation Systems*, pp. 1–10, 2021.

[15] Z. Xiong, F. Mo, X. Zhao, F. Xu, X. Zhang, and Y. Wu, "Dynamic texture classification based on 3D ICA-Learned filters and Fisher vector encoding in big data environment," *Journal of Signal Processing Systems*, 2022.