

Influencing Factors and Path Analysis of the Siphon Effect of New First Tier Cities on Human Capital

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Abstract

As China's economy enters the transformation and upgrading stage of high-quality development, some new first tier cities, led by Wuhan, Changsha, Chongqing and Zhengzhou, seize the dividend of development and continue to emerge, showing a relatively unique "siphon effect of China's new first tier cities". These new first tier cities have become the new competitive subjects of China's urbanization development. Under this background, this paper constructs the latent variables and observation variables that affect the life satisfaction of high-quality human capital in the new first tier cities from the four aspects of economic factors, social factors, personal factors and cultural identity. This paper uses structural equation model to explore the influencing factors and paths of young high-quality labor groups' life satisfaction in the new first tier cities, and draws relevant conclusions.

Keywords

New First Tier Cities; Structural Equation Model; Siphon Effect.

1. Introduction

Since the reform and opening up, some cities, such as Beijing, Shanghai and Shenzhen, have been in the forefront of China's urbanization along with the tide of economic development. Relying on their respective geographical advantages and policy support, they have continuously realized economic accumulation, showing "siphon effect of cities" in terms of geographical space, investment orientation and talent attraction, becoming the first batch of megacities in China. Therefore, these mega cities also have the characteristics of rapid economic growth, high-quality labor concentration, high enthusiasm for innovation and entrepreneurship and strong central radiation ability. [1]

However, with China's economic and social development changing from high-speed growth stage to high-quality development, the urbanization process is also changing from the simple expression of the increase of people's GDP and the expansion of space area to the coordinated development of the new smart city group. Some new first tier cities, led by Wuhan, Changsha, Chongqing and Zhengzhou, are catching the dividend of development and constantly emerging, It shows a unique "siphon effect of China's new first tier cities", and these new first tier cities have become the new competitive subjects of China's urbanization development.

China's new first tier cities are based on the latest year's more than 100 brand business data, user behavior data of a number of Internet companies and urban big data of data institutions by the first Research Institute of Finance and economics The comprehensive ranking of 337 cities above prefecture level in China is obtained by principal component analysis from five perspectives of lifestyle diversity and future plasticity. The research started in 2016 and has been tracked and updated every year. In recent years, it has been widely concerned and discussed by the society. At present, according to the newly released "2021 city commercial charm list", the 15 cities entering the new list are Chengdu, Hangzhou, Chongqing, Xi'an, Suzhou,

Wuhan, Nanjing, Tianjin, Zhengzhou, Changsha, Dongguan, Foshan, Ningbo, Qingdao and Shenyang. The concept of new first tier cities is in line with the development orientation of high-quality economic development and relieving the function and population of big cities in China. It also practices the new development pattern that China takes the domestic big cycle as the main body and the domestic and foreign double cycles promote each other. It can be predicted that the new first tier cities will become important participants and contributors of China's economic big cycle in the near future. Therefore, the research on the new first tier cities is of great significance to China's economic and social development.

2. Literature Review

At present, the research on the new first tier cities in China mainly focuses on the analysis and comparison of the economic development status and reasons of the new first tier cities, as well as the population flow of the new first tier cities and the attraction of policies to high-quality talents. Among them, with the rapid development of new first tier cities, the potential of real estate investment in cities has become the focus of investors' attention. By constructing secondary indicators from macroeconomic environment, residents' living standards, infrastructure construction, market size and health status, this paper uses principal component analysis and clustering method to rank the real estate investment potential of new first tier cities[2] (Zhao Bin Zhou Yanyu, 2020); Compared with megacities, new first tier cities still have more room for development in terms of talent and industrial structure. Therefore, major cities have introduced "talent grabbing policies" to provide different preferential policies for university talents [3] (Yang Di et al., 2019). Talent's thinking on city selection is based on multiple dimensions such as urban development economic potential, living conditions and relevant preferential policies, Through the method of factor analysis, we can comprehensively evaluate and compare the advantages and disadvantages of each new first tier city in the development process[4] (Miao Jing, 2019).

On this basis, combined with the samples of 15 new first tier cities aged between 20 and 35 with bachelor's degree or above from the newly released "2021 city commercial charm ranking", this paper publishes a questionnaire about the life satisfaction of these groups in their respective cities, and uses structural equation model to process and analyze the questionnaire results, To explore the influencing factors and paths of young high-quality labor groups' life satisfaction in the new first tier cities, and draw relevant conclusions.

3. Index Analysis and Model Construction

Structural equation model (SEM) is a multivariate statistical model, which is used to analyze multivariate data and establish and test causality. It can quantify the abstract and unmeasurable data. Structural equation model includes measurement model and structural model. The variables that constitute the measurement model are divided into explicit variables and latent variables. Explicit variables can be obtained directly through measurement and questionnaire survey, while latent variables are comprehensive evaluation based on measurable explicit variables. The structural model is mainly used to explore the causal relationship between latent variables and form the corresponding influence path.[5]

According to the literature and questionnaire interview, the willingness of high-quality labor groups to retain new first tier cities can be summarized as economic factors, social factors, personal factors and cultural identity. Therefore, this paper takes these as the four first level indicators of satisfaction. In terms of the construction of secondary indicators, it refers to the city commercial charm ranking released by the new first tier cities Research Institute and the secondary evaluation indicators selected by the high-quality development report of Chinese

cities, which together constitute the observed variables and potential variables of the structural equation. The following table is the definition of variables.

Table 1. Variable measures

variable	number	Measurement items
economic factors	A1	Urban economic development environment
	A2	Concentration of business resources
	A3	Urban hub
	A4	Employment opportunities and Prospects
	A5	Satisfaction of disposable income
	A6	Consumption activity
	A7	Urban future plasticity
	A8	Innovation and entrepreneurship atmosphere
social factors	B1	Social welfare policy
	B2	Housing price burden
	B3	Urban location
	B4	Talent introduction policy
	B5	Traffic accessibility
	B6	Potential of education development
	B7	Scientific and technological strength and development potential
	B8	Air and environmental quality
Personal factors	C1	Distance from home
	C2	Work and life pressure
	C3	Satisfaction with living conditions
cultural identity	D1	Lifestyle diversity
	D2	Consumption diversity
	D3	Leisure and entertainment places
	D4	Social satisfaction
	D5	Local cultural attraction

Since this paper sets up the latent variables that affect the young high-quality labor group's life satisfaction in their city from the four dimensions of economic factors, social factors, personal factors and cultural identity, we need to put forward relevant hypotheses before setting up the structural equation model.

Table 2. Research hypotheses

Hypothetical number	Hypothetical content
H1	Economic factors have a positive direct impact on the retention satisfaction of high-quality groups in the new first tier cities
H2	Social factors have a positive direct impact on the retention satisfaction of high-quality groups in the new first tier cities
H3	Cultural identity factors have a positive direct impact on the retention satisfaction of high-quality groups in the new first tier cities
H4	Economic factors, social factors and cultural identity factors have positive direct impact on individual factors

In order to make the model more clear, A1-A8, B1-B8, C1-C5, D1-D3 are used to name the rectangular observation variables in the model, the ellipse is used to represent the latent

variables, the unidirectional arrow is used to represent the influence path, and the bidirectional arrow is used to represent the influence relationship.

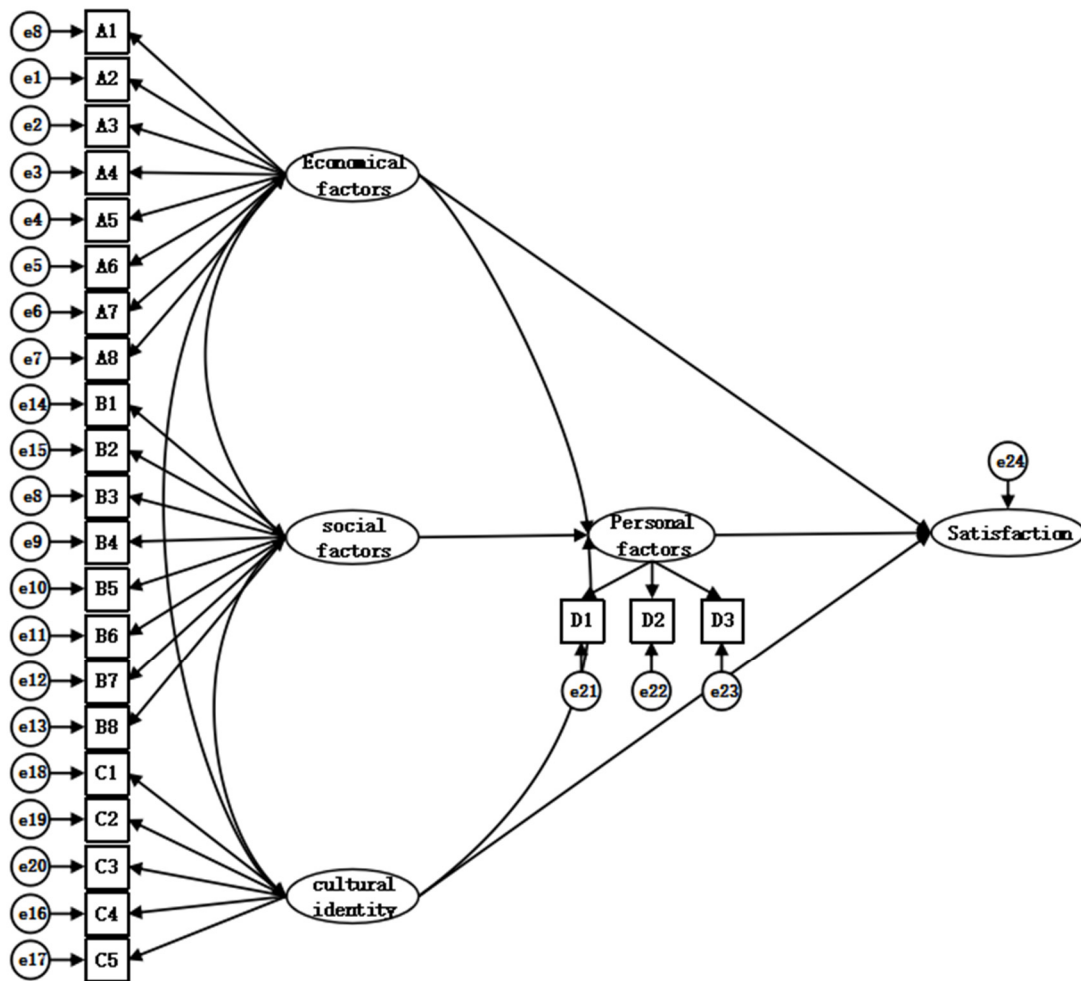


Figure 1. Initial structural equation model

4. Empirical Analysis

4.1. Convergence Validity and Goodness of Fit

Confirmatory factor analysis was used to test the reliability and validity of the formal questionnaire. The calculation results of factor load coefficient of each variable are shown in Table 3. Convergent validity is used to test whether a measurement item can effectively reflect the potential construct it wants to measure. Generally speaking, ave greater than 0.5 and Cr greater than 0.7 indicate good convergent validity. The results show that the factor load of each latent variable measurement item is greater than or close to 0.6, and the average extraction of variance (AVE) is greater than 0.5, indicating that the model has high aggregate validity. The reliability and validity of the model have reached a high level, and the model interpretation ability is good.

Therefore, from the various items of this measurement, the convergence effect of family factors, social factors and personal factors is better, and the convergence effect of cultural identity is relatively general. On the whole, the convergence validity has passed the test. In this test, the square root of ave is larger than the correlation between latent variables, so the discriminant validity of this test is better.

Table 3. Convergence validity test

dimension	Measurement items	Normalized factor load	AVE	CR
economic factors	A1	0.505	0.7948	0.9835
	A2	0.576		
	A3	0.569		
	A4	0.768		
	A5	0.023		
	A6	0.745		
	A7	0.755		
	A8	0.502		
social factors	B1	0.591	0.7571	0.8606
	B2	0.618		
	B3	0.635		
	B4	0.69		
	B5	0.619		
	B6	0.666		
	B7	0.761		
	B8	0.606		
Personal factors	D1	0.094	0.7914	0.8157
	D2	0.085		
	D3	0.013		
Cultural identity	C1	0.53	0.5055	0.7812
	C2	0.567		
	C3	0.691		
	C4	0.667		
	C5	0.675		

Table 4. Discriminant validity

	economic factors	social factors	Personal factors	Cultural identity
economic factors	0.542955			
social factors	-0.271	0.597578		
Personal factors	0.085	0.379	0.437493	
Cultural identity	0.473	0.004	0.208	0.636789

Table 5. Model fit

evaluating indicator	χ^2/df	RMSEA	IFI	CFI	GFI	NFI
Standard value	<3.00	<0.05	>0.90	>0.90	>0.90	>0.90
actual value	2.172	0.030	0.955	0.951	0.973	0.921

The chi square degree of freedom ratio C_{min} / DF is the test index of absolute fitting effect. The criterion of good fitting effect of the model is that the value is less than 3; The relative fitting index NFI, RFI, IFI and TLI should be greater than 0.9, and the alternative index CFI should be greater than 0.9; RMSEA (approximate root mean square error) 0 ~ 0.05 is very good. According to the measured data, it can be found that the comprehensive fitting effect of the model is good.

4.2. Analysis of Influence and Path

After the model begins to output results, the path coefficient and correlation coefficient between the latent variables can be used to express the influence relationship of latent variables. When p value is less than 0.05, it means that the latent variables pass the significance test and have significant influence. Otherwise, it means that there is no significant influence relationship between the latent variables. The results of standardized influence coefficient of each path are shown in the table below:

Table 6. Standardized regression coefficient of each path

route	dependent variable		independent variable	Standardized influence coefficient	Standard error	T value	P value
1	Satisfaction	<---	economic factors	0.744	0.082	0.484	0.046
2	Satisfaction	<---	social factors	0.541	0.035	0.025	0.035
3	Satisfaction	<---	Personal factors	0.661	0.061	0.022	0.043
4	Satisfaction	<---	cultural identity	0.525	0.042	0.038	0.025
5	Personal factors	<---	economic factors	0.632	0.023	0.014	0.012
6	Personal factors	<---	social factors	0.491			0.032
7	Personal factors	<---	cultural identity	0.413			0.027

According to the above results, economic factors have a positive impact on satisfaction, social factors have a positive impact on satisfaction, personal factors have a positive impact on satisfaction, and cultural identity has a positive impact on satisfaction. Finally, bootstrap method is used to examine the mediating effect. 2000 repeated samples are taken to obtain 95% confidence interval. If there is mediating effect in the model, the confidence interval includes zero, otherwise there is no mediating effect.

Table 7. Standardized regression coefficient and bootstrap confidence interval of each path

route	Outcome variables	Predictive variables	β	t	Boot CL lower limit	Boot CL upper limit
1	Satisfaction	economic factors	0.285	3.655	0.573	0.081
2	Satisfaction	social factors	0.614	1.396	0.019	0.234
3	Satisfaction	Personal factors	0.208	3.119	0.084	0.516
4	Satisfaction	cultural identity	0.474	1.371	1.271	23.689
5	Personal factors	economic factors	0.237	2.618	0.036	0.547
6	Personal factors	social factors	0.263	1.472	0.045	0.057
7	Personal factors	cultural identity	0.372	2.645	0.436	0.577

According to the above table, economic factors have a positive impact on satisfaction, because bootcl upper and lower limits do not include 0, so path 1 is significant; Social factors have a positive impact on satisfaction, because bootcl upper and lower limits do not include 0, so path 2 is significant; Personal factors have a significant positive impact on satisfaction. The upper and lower limits of factor bootcl do not include 0, so path 3 is significant; Cultural identity has a positive effect on satisfaction, because bootcl does not include 0, so path 4 is significant; Economic factors have a positive impact on personal factors, because bootcl upper and lower limits do not include 0, so path 5 is significant; Social factors have a positive impact on personal factors, because bootcl upper and lower limits do not include 0, so path 6 is significant; Cultural

identity has a positive impact on personal factors, because bootcl upper and lower limits do not include 0, so path 7 is significant.

Because path 1, path 2, path 3, path 4, path 5, path 6 and path 7 are significant, personal factors are independent variables, satisfaction is dependent variables, economic factors, social factors and cultural identity factors are mediating variables in the mediating model, and the mediating effect is significant. [6]

5. Summary

With China's economy gradually entering the fast lane of transformation and upgrading and high-quality development, the development of new first tier cities has become a key issue of social concern. In the future, each new first tier city will gradually show its important economic status on the basis of domestic economic internal circulation. Therefore, the new first tier cities should seize the current fast lane of transformation and development, attract high-quality talents, enhance the innovation and entrepreneurship atmosphere and vitality of the city, and make the best use of talents to play the role of high-quality talents in the construction of various fields of the city. At the same time, we should also pay attention to the use of preferential policies and the city's economic development potential and cultural identity, reasonably deal with the problem of urban talent retention, and inject new vitality into the development and construction of the city.

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