Using the Balanced Scorecard to Analyze the Employment Location Choices of College Graduates in First-Tier Cities

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Abstract. With the popularization of higher education, an increasing number of college graduates choose to work in first-tier cities. This paper takes four first-tier cities in China as examples, based on the expectations and demands of college graduates for employment and living, with reference to the dimensions of the balanced scorecard, scores were assigned in four dimensions, namely income level, living security, urban management, and sustainable development. The study analyzed the advantages and disadvantages of Beijing, Shanghai, Guangzhou and Shenzhen under current urban development situations, as well as their adaptability to college graduates with different preferences and backgrounds. The study provides reliable data support for college graduates' employment choices in first-tier cities, as well as policy recommendations for optimizing future development strategies, addressing development shortcomings, and further attracting high-quality talent to cities.

Keywords: balanced scorecard · first-tier cities · college graduates · employment location choices

1 Introduction

With the rapid development of higher education, global talent competition is becoming increasingly fierce. In this context, the choice of employment location for college graduates, has become a hot issue of concern for many experts and scholars. Many cities have introduced relevant policies and measures to attract college graduates to work. As a populous country, China has a large number of college graduates, with first-tier cities being their main destination of choice. Therefore, the choice of employment location for college graduates in these cities has attracted more attention. For decades, first-tier cities have been one of the ideal places of employment for college graduates. The rapid development and opportunities of these cities have attracted a large number of graduates. Therefore, how to choose the employment location for college graduates is a topic that requires in-depth research.

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2 Literature Review

In 1992, Kaplan and Norton (1996) introduced the balanced scorecard in the Harvard Business Review [1]. They argued that traditional performance evaluation models could only measure past events and could not predict future development. To address these limitations, they proposed four evaluation indicators in the balanced scorecard framework: financial, customer, internal operation and learning & growth. The research result was widely implemented in many American companies and quickly expanded globally, causing a strong influence. Many managers applied it in company management practices and achieved ideal results. With the development of the balanced scorecard indicator system, it has been increasingly applied to areas beyond corporate management. Brown (2012) applied the balanced scorecard indicator system to evaluate higher education institutions [2]. Niven (2008) applied the balanced scorecard framework to evaluate public and non-profit organizations [3]. De La Mano, Marta, and Claire Creaser (2016) applied the balanced scorecard framework to evaluate the operational effectiveness of national libraries [4]. Tsai, Zhou, et al. (2010) applied the balanced scorecard framework to evaluate the operational performance of national parks [5]. Therefore, the balanced scorecard can not only be used for evaluating company operations, but also can be widely applied to other social fields for evaluation and selection. The main advantage of the balanced scorecard is dynamic perspective, providing comprehensive and complete evidence support for decision-makers from a long-term view. In addition, the balanced scorecard breaks the traditional management method that only focuses on financial indicators, short-term indicators and internal indicators, achieving a balance between financial and non-financial indicators, short-term and long-term indicators, internal and external management indicators.

In terms of using the balanced scorecard to evaluate the effectiveness of urban management, scholars have conducted some relevant research. Zhang, Ling, et al. (2016) used the balanced scorecard to evaluate the sustainable development capacity of cities [6]. Rasoolimanesh, S. Mostafa, et al. (2015) used the balanced scorecard to evaluate the effectiveness of city development strategy implementation [7]. Phillips (2004) used the balanced scorecard to evaluate the operational effectiveness of public transportation systems in cities [8]. However, the above literature only analyzes from macro or micro perspective of cities, but not from the perspective of citizens, as different citizens have different demands and expectations to the city. Therefore, analyzing from the perspective of a specific group of citizens will make the indicator system more specific and targeted. This article selects a major group of citizens in current society - university graduates - as the research object. From the perspective of the demands and expectations of university graduates for an ideal city, this article uses the dimension design method of the balanced scorecard to evaluate the strengths and weaknesses of first-tier cities in four dimensions: income level, living security, urban management, and sustainable development.

3 Balanced Scorecard Model

3.1 Index System Setting

The classic balanced scorecard model designed by Kaplan and Norton consists of four dimensions, financial, customer, internal operations and learning & growth. The financial dimension is usually related to a company's profit or revenue indicators, reflecting the company's profitability. This article refers to the design method of the financial dimension and sets the income level dimension, with the "average wage per capita", "GDP per capita" and "Engel coefficient" as three indicators to measure the income level of university graduates in first-tier cities. The customer dimension usually includes indicators such as customer satisfaction and customer retention rate. This article refers to the design method of the customer dimension and sets the living security dimension, with the "unemployment rate per capita ", "hospital beds numbers" and "housing price per square meter" as three indicators to measure the degree of living security that university graduates in first-tier cities receive. The internal operations focus on critical stages or nodes in company operations and analyze internal issues that business managers are most concerned about. This article refers to the design method of the internal operations dimension and sets the city management dimension, with the "green coverage rate", "air pollution index" and "crime rate index" as three indicators to measure the effectiveness of city health and safety management. The learning & growth dimension analyzes the future development direction of the enterprise and the difference between the current situation and future expectations. This article refers to the design method of the learning & growth dimension and sets the sustainable development dimension, with the "library collection per capita", "education funding per capita" and "scientific & technical personnel" as three indicators to measure the sustainable development capabilities of cities in terms of educational and technological resources. The specific variable definitions are shown in Table 1.

The four dimensions designed based on the balanced scorecard method include topics that are highly relevant to college graduates, such as employment and income, healthcare and housing, environment and safety, education and technology.

3.2 Data Resource

The above data mainly comes from the 2021 China Statistical Yearbook. Some of the data comes from official websites of local statistical bureaus, human resources and social security bureaus, cultural and tourism bureaus, and the official website of the Ministry of Public Security.

3.3 Scoring Method

This article uses the relative value method to score for each city. For positive indicators (such as average wage per capita, GDP per capita, hospital beds numbers, green coverage rate, library collection per capita, education funding per capita, and scientific & technical personnel), formula (1) is used for calculation. For negative indicators (such as Engel

Table 1. Index Definitions

Dimensions	Index	Index Definitions
Income Level	average wage per capita	The average income level of urban residents (yuan)
	GDP per capita	The total value of urban GDP divided by the total urban population (yuan)
	Engel coefficient	The proportion of food purchase expenditure in the total household expenditure in urban household consumption expenditure (%)
Living Security	unemployment rate per capita	Total urban unemployed divided by total urban labor force (%)
	hospital beds numbers	The sum of the number of beds in all hospitals in the city (unit)
	house price per square meter	The total value of urban housing divided by the total urban housing area (yuan/per square meter)
Urban Management	green coverage rate	The ratio of urban green area to the total urban area (%)
	air pollution index	The annual average concentration of inhalable fine particulate matter in cities (micrograms/per cubic meter)
	crime rate index	The ratio of the number of various crimes in the city to the total population of the city (per million people)
Sustainable Development	library collection per capita	The total number of books owned by various libraries in the city divided by the total population of the city (book per person)
	education funding per capita	Total urban government education investment divided by total urban population (yuan per person)
	scientific & technical personnel	The total number of people engaged in scientific and technological research and technological innovation in the city (unit)

coefficient, unemployment rate per capita, housing price per square meter, air pollution index, and crime rate index), formula (2) is used for calculation.

$$\text{Index score} = \text{index value of the city/maximum index value of all cities} * 10 \quad (1)$$

$$\text{Index score} = \text{minimum index value of all cities/index value of the city} * 10 \quad (2)$$

4 Analysis Result

4.1 Income Level Dimension

Based on the results of the income level dimension in Table 2, there is not much differences among the four cities, Beijing has the highest score and Guangzhou has the lowest. Beijing performs the best among the four first-tier cities in terms of both average wage per capita and Engel coefficient, while Shenzhen has the highest score in GDP per capita. Therefore, for university graduates who pursue high income and high salaries, Beijing is the optimal choice among the four cities.

4.2 Living Security Dimension

Based on the results of Table 3 on the dimension of living security, Guangzhou has the highest score, while Shenzhen has the lowest. Among the four cities, Guangzhou has the lowest unemployment rate per capita and the lowest housing price per square meter. Shanghai has the highest number of hospital beds and relatively abundant medical resources. Therefore, for university graduates pursuing a stable life and having a strong demand for home ownership, Guangzhou is the optimal choice among the four cities.

4.3 Urban Management Dimension

Based on the results of Table 4 on the dimension of urban management, Shenzhen has the highest score while Guangzhou has the lowest. Shenzhen performs the best in

Table 2. Income Level Dimension

City	Income Level Dimension			
	average wage per capita	GDP per capita	Engel coefficient	Total
Beijing	10.00	8.07	10.00	28.07
Shanghai	9.25	7.73	9.67	26.65
Guangzhou	7.13	7.69	9.96	24.78
Shenzhen	7.38	10.00	9.49	26.87

Table 3. Living Security Dimension

City	Living Security Dimension			
	unemployment rate per capita	hospital beds numbers	house price per square meter	Total
Beijing	5.00	8.75	3.68	17.43
Shanghai	5.95	10.00	3.65	19.60
Guangzhou	10.00	6.65	10.00	26.65
Shenzhen	7.86	3.47	3.87	15.20

Table 4. Urban Management Dimension

City	Urban Management Dimension			
	green coverage rate	air pollution index	crime rate index	Total
Beijing	10.00	5.71	2.90	18.61
Shanghai	8.19	6.86	6.57	21.61
Guangzhou	9.38	8.00	3.91	21.29
Shenzhen	8.95	10.00	10.00	28.95

Table 5. Sustainable Development Dimension

City	Sustainable Development Dimension			
	library collection per capita	education funding per capita	scientific & technical personnel	Total
Beijing	10.00	8.80	10.00	28.80
Shanghai	5.99	10.00	5.25	21.24
Guangzhou	4.33	6.26	2.50	13.09
Shenzhen	6.73	7.74	2.05	16.52

air pollution control and crime rate management, while Beijing has the highest green coverage. In summary, for university graduates pursuing a high quality of life and a focus on safety, Shenzhen is the optimal choice among the four cities.

4.4 Sustainable Development

Based on the results of the sustainable development dimension in Table 5, Beijing has the highest score, while Guangzhou has the lowest. Beijing has the best performance in terms of library collection per capita and scientific & technical personnel, and is second only to Shanghai in terms of education funding per capita. Therefore, for university graduates who value urban education and scientific research resources, Beijing is the optimal choice among the four cities.

5 Conclusion

Combing the analysis results above, we can conclude that each first-tier city has its unique characteristic. Beijing is famous for high wage and sustainable development potentiality, Guangzhou is the most optimal place for home ownership, Shenzhen has the most mature and comprehensive urban management experience. The total scores for Beijing, Shanghai, Guangzhou and Shenzhen are 92.91, 89.10, 85.82 and 87.54. If we consider all the dimensions above, Beijing has the most comprehensive competitiveness.

Based on the analysis of the four dimensions, we can provide reliable data support and suggestions for college graduates to choose their employment destination in first-tier cities according to their different preferences. Meanwhile, it has important policy reference value for first-tier cities to optimize their future urban development strategies, fill development gaps, to attract more high-quality talents.

References

1. Kaplan, Robert S., and David P. Norton. "Using the balanced scorecard as a strategic management system." (1996): 75–85.
2. Brown, Cindy. "Application of the balanced scorecard in higher education: Opportunities and challenges." *Planning for Higher Education* 40.4 (2012): 40.
3. Niven, Paul R. Balanced scorecard: Step-by-step for government and nonprofit agencies. *John Wiley & Sons*, 2008.
4. De La Mano, Marta, and Claire Creaser. "The impact of the Balanced Scorecard in libraries: From performance measurement to strategic management." *Journal of librarianship and information science* 48.2 (2016): 191-208.
5. Tsai, Wen-Hsien, Wen-Chin Chou, and Chien-Wen Lai. "An effective evaluation model and improvement analysis for national park websites: A case study of Taiwan." *Tourism Management* 31.6 (2010): 936-952.
6. Zhang, Ling, et al. "City sustainability evaluation using multi-criteria decision making with objective weights of interdependent criteria." *Journal of Cleaner Production* 131 (2016): 491-499.
7. Rasoolimanesh, S. Mostafa, et al. "Investigating a framework to facilitate the implementation of city development strategy using balanced scorecard." *Habitat International* 46 (2015): 156-165.
8. Phillips, Jason Keith. "An application of the balanced scorecard to public transit system performance assessment." *Transportation Journal* (2004): 26-55.