

# Optimize Entrepreneurial Environment of Small and Medium-sized Enterprises Based on GEM Framework

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**Keywords:** GEM Framework Entrepreneurship; Infrastructure; Cluster Analysis (CA)

**Abstract.** The economic development of SMEs is an important growth pole for the steady development of the province's economy. Therefore, a scientific and appropriate method is used to comprehensively evaluate and scientifically classify the entrepreneurial environment of small and medium-sized enterprises in Guangzhou, so as to take appropriate and effective measures to change the silent situation of regional entrepreneurial activities, optimize the entrepreneurial environment, and promote the development of entrepreneurial economy, Is an urgent problem to be solved. According to the previous review of the research on the GEM framework, the comprehensive evaluation of the entrepreneurial environment using the GEM framework has been recognized and adopted by most scholars. Many scholars in the field of entrepreneurship at home and abroad have used the GEM framework to analyze entrepreneurial related theories. The GEM framework has a Very high application rate. It can be seen that the division of the nine dimensions of the entrepreneurial environment in the GEM framework is a scientific division method that has been considered and verified by many parties, and has high authority and practical value.

## Introduction

But through a series of studies, Busenitz found that with the passage of time and the increasing research on entrepreneurship, its focus no longer focuses on a single individual, but has expanded, it is not limited to the entrepreneurial environment and entrepreneurs[1]. , Organizations and other individuals, but began to study the relationship between each entity and the overall and their mutual influence, such as the role of the environment and the entrepreneur, the opportunity to identify the relationship between the entrepreneur and so on. In 2003they proposed a framework that included many major factors for entrepreneurship research, including entrepreneurship, opportunity or entrepreneurial organization activities, and entrepreneurial teams [2],.

They believe that in order to better understand and explain the process and essence of entrepreneurship, it is necessary to thoroughly study the relationship and role of various aspects. They also put forward the view that entrepreneurial activities can also be seen as a combination of individuals, teams [3], and opportunities in a large environment. Suddle (2008) conducted a study of companies in 40 regions of the Netherlands from 1988 to 2002. The results show that the creation of new companies has a significant positive effect on employment growth and economic growth in a region. Mandelman's research on entrepreneurship in 2009 showed that the unique economic conditions or environment within a country or region can have a positive impact on the entrepreneurial enthusiasm of the region[4]. Glukhanyuk (2011) studied the relationship between entrepreneurial behavior and entrepreneurial ability in the labor market, aiming to develop the entrepreneurial potential of contemporary youth[5].

## Research Method

Quantitative analysis is the process of solving problems using a scientific method based on a large number of documents and data. According to the previous analysis results and the 9 dimensions in the GEM structural framework, this article uses quantitative analysis to analyze and evaluate the entrepreneurial environment of small and medium-sized enterprises in various regions of Guangzhou. This article asks to use the following two statistics

Using cluster analysis (Cluster Analysis) to classify the activity level of the entrepreneurial growth environment of small and medium-sized enterprises in various regions of Guangzhou, determine the entrepreneurial active zone, entrepreneurial medium active zone, and entrepreneurial quiet zone. And the results of cluster analysis and principal component analysis are mutually checked, making the results of this paper more convincing.

### **Help to protect the legitimate rights and interests of small, medium and micro enterprises**

In practice, there are still many small and medium-sized enterprises whose legitimate rights and interests cannot be effectively maintained. First, there are many types of inspections and appraisals from administrative agencies, the administrative approval process is cumbersome, and there are arbitrary charges and apportionments that interfere with the normal production and operation of the enterprise and increase the burden on the enterprise [6]. Second, some large enterprises have abused their dominant market position, and have long owed large amounts of funds to small, medium, and micro enterprises, making it difficult for small and medium-sized enterprises to repay their sales. The division of categories and categories aims to use scientific methods to understand the deficiencies of the entrepreneurial environment of small and medium-sized enterprises in various regions of Guangzhou. Based on the results obtained in the foregoing, from the perspective of the overall and GEM framework, it provides reference suggestions for Guangzhou to improve the entrepreneurial environment of small and medium-sized enterprises in various regions of the county.

### **Find growth points for development in various regions**

The economy of the Tianhe District is the foundation of Guangzhou's economic development, and small and medium-sized enterprises are an important force driving economic development the amount. However, there is also an imbalance in the development of small and medium-sized enterprises in various regions of Guangzhou. Through the research in this article, the activity levels of the entrepreneurial environment in the 11 regions surveyed can be ranked and classified, thereby helping to recognize the shortcomings of the entrepreneurial environment, Contribute to the promotion of regional economic development [7].

### **Enhancing the law-abiding awareness of small and medium-sized enterprises**

Law-abiding is a fundamental way to implement the law. If the legal system for small, medium-sized and micro-enterprise entrepreneurship truly produces good social effects, it is necessary for the society to consciously abide by the law. The concept of law-abiding by the whole people must be strengthened. It is necessary to intensify the work of popularizing the law and continue to promote the work of popularizing the law so that the rule of law is deeply rooted in the hearts of the people [8].

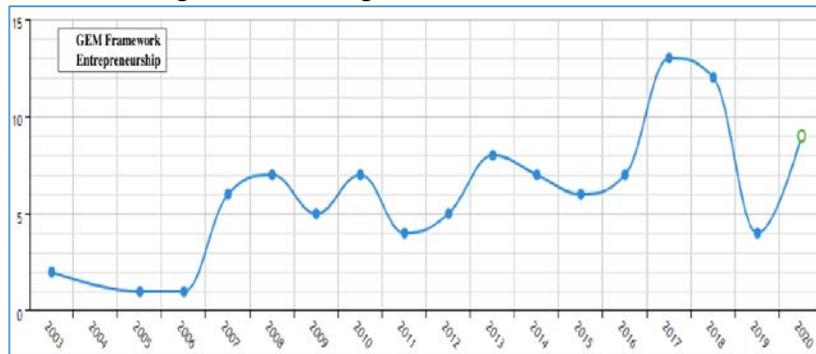
Strengthen the construction of the rule of law culture, and further improve and optimize the working mechanism for SME promotion. Promote service and management innovation, focus on building a new type of "pro" and "clear" political and business relations, enhance responsibility and service awareness, improve the communication mechanism between government and enterprises, and provide legal and policy consultation and other public services for SMEs. Guide small and medium-sized enterprises to give full play to their own advantages, identify the market positioning, adapt to the

requirements of high-quality development, and strive to implement transformation and upgrading; guide enterprises to improve their governance structure, operate in accordance with laws and regulations, and fulfill their social responsibilities [9].

The Guangzhou Bureau of Industry and Information Technology should learn from this practice and regulate The regulations of enterprises and their interpretation is published through the website so that Guangzhou SMEs can learn and implement the new laws and new policies[10].

### Research and development trend of the GEM framework model

Since the Global Entrepreneurship Observation GEM framework was only proposed in 2001, domestic research on the GEM framework is relatively scarce. By searching databases such as CNKI, Wanfang, Weipu, etc., enter the two keywords "GEM" + "entrepreneurship" in the "title" column, a total of 34 papers were searched, including master's and dissertation, conference papers, and journals, Newspapers, etc. As shown in Figure 1., although the number is small, the overall trend is still rising.



**Figure 1.** GEM Framework Entrepreneurship Environment Evaluation Domestic

Data standard system includes data coding standard, data standard, data code standard and other relevant standards, which is an indispensable basic support to ensure the construction of school data standardization, data exchange and sharing, and the value of data resources.

### Market openness

Guangzhou is an important central city of the country, an important gathering place for high-end industries and innovative factor resources across the country and even the world, and a supporter, embodiment and representative of the comprehensive competitiveness of the national economy. Data coding is to facilitate the storage, retrieval and use of information. When processing information, it gives information elements code. Scientific and comprehensive information coding specification is an important part of information standard system, the premise of information sharing and sharing, and the indispensable basic support to ensure data sharing and exchange, and play the value of data resources. According to the main data types of the core business of colleges and universities, it can be divided into 12 categories of coding rules, including organization code, staff work number code, student student number code, temporary staff code, major code, course code, class code, campus code, project code, asset code, building code, Book Journal code, etc.

Similarly, if Guangzhou seizes the "outline" of the construction of the Guangdong-Hong Kong-Macao Greater Bay Area, in the process of implementing the "Planning Outline", it will benchmark international first-class bay areas and world-class innovation centers to enhance its technological innovation capabilities and activate various production Factors. Clusters, vigorously develop strategic emerging industries, promote the industry to the high end of the global value chain, and improve the comprehensive urban function, urban cultural comprehensive strength, modern service industry level,

create a modern international business environment, and improve people's well-being will also be a pole Big promotion.

## **Infrastructure**

According to information released by the Guangzhou Municipal Government, Guangzhou 's "stable investment" achieved fruitful results in the first half of this year, with a fixed asset investment of 303.363 billion yuan, a year-on-year increase of 24.8%. The growth rate hit a 6-year high, and the scale and growth rate ranked first in the province. The growth rate of infrastructure investment is nearly 35%. The relevant person in charge of the Guangzhou Municipal Development and Reform Commission said that Guangzhou investment has shown a good trend of faster speed, better structure, more balanced power, and more obvious results. It is to stabilize economic growth, enhance development stamina, and boost Development confidence has played a positive role. The structure is better. Guangzhou stepped up efforts to make up for shortcomings in infrastructure such as subways and high-speed roads. Infrastructure investment accounted for 29.7% of fixed asset investment, an increase of 2.2 percentage points year-on-year, with a growth rate of 34.6%; high-tech manufacturing investment accounted for industrial investment 48.2%. More motivation. Infrastructure investment, industrial investment, and real estate investment all increased by more than 20%, while state-owned investment and private investment increased by more than 40%.

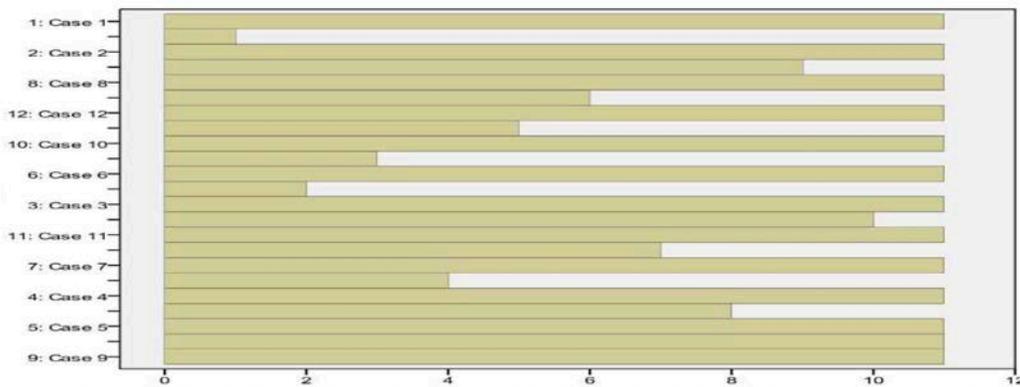
Today, Guangzhou's emerging industries continue to grow, and new formats and new models are gaining momentum. According to data from the Guangzhou Municipal Development and Reform Commission, the value-added of the eight emerging industries in the first half of the year increased by 6.7%, which was 3 percentage points higher than the industrial value-added of the regulation. Among them, intelligent equipment and robots increased by 15.6%, and rail transit increased by 8.1%. GAC's new energy vehicle project went into operation, driving GAC Group's new energy vehicle sales to increase by 135%.

## **Cluster analysis (CA) method and the operation result**

After using the principal component analysis to evaluate the entrepreneurial environment of small and medium-sized enterprises in various regions of Guangzhou, this paper uses big data platform must first adhere to the principle of practicality, and consider advanced and forward-looking on the basis of practicality, so as to meet the practical needs of big data application , as shown in fig2.

**Table 1.** Absolute value squared Euclidean distance

CaseNo	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10	Case 11	Case 12
Case 1	0.10	13.01	20.32	23.72	20.72	13.33	22.33	16.44	23.84	14.78	20.2355	16.70
Case 2	13.10	0.00	2.28	5.412	3.772	4.83	4.12	1.31	4.98	3.34	3.2154	2.37
Case 3	20.13	2.81	0.20	1.924	2.528	5.33	1.33	1.54	2.74	4.36	1.0857	3.17
Case 4	23.17	5.41	1.29	0.002	1.325	8.13	2.39	3.07	1.48	6.95	2.3531	6.73
Case 5	20.17	3.77	2.25	1.352	0.020	7.43	3.32	1.81	.945	5.95	2.7641	5.65
Case 6	13.23	4.84	5.23	8.152	7.428	0.03	6.36	5.074	7.94	3.58	4.6564	5.67
Case 7	22.13	4.12	1.28	2.921	3.222	6.63	0.30	1.87	3.50	4.57	2.1660	5.57
Case 8	16.14	1.31	1.52	3.027	1.821	5.03	1.38	0.00	2.58	2.75	1.6611	2.27
Case 9	23.18	4.98	2.72	1.241	.962	7.93	3.53	2.58	0.04	6.17	2.4639	6.47
Case 10	14.17	3.34	4.32	6.929	5.927	3.87	4.23	2.79	6.40	0.00	3.6964	3.17
Case 11	20.12	3.22	1.02	2.233	2.734	4.63	2.16	1.31	2.39	3.69	0.0600	2.97
Case 12	16.10	2.23	3.15	6.273	5.653	5.64	5.53	2.79	6.45	3.15	2.9636	0.07



**Figure 2.** Scattering factor load after factor rotation

Entrepreneurship culture plays a driving role in the development of an entrepreneurial economy in a region.

China's small and micro enterprises have a lot of data, which is an important pillar of the national economy and a solid foundation for sustained and stable economic growth. It is a basic force for easing employment pressure, maintaining social stability, and a major driving force for deepening reform. However, the successive global financial crisis. The big data platform support system follows the relevant requirements of the school information security system, and adopts relevant security mechanisms and technical means to ensure the application security, data security, server security, network security and physical security of the system.

The difficulty of starting small and medium-sized enterprises in Guangzhou is mainly due to the lack of influential entrepreneurship. The specific performance is as follows:

1. Big data platform must be a centralized storage platform for all kinds of data and information of the whole university, providing a solid foundation for the comprehensive application and analysis of data.
2. The construction of big data platform related data must have a set of data standard system in line with the actual situation as a unified guidance standard.

3.The technical framework of big data platform should have the ability to deal with traditional shared data and unstructured data, as well as a set of perfect and practical data management service standards to support its management, operation and maintenance.

During the construction and operation of university big data platform, the security protection should be carried out in user authentication, data storage, data access and other aspects.

## Summary

This research includes two aspects. The first aspect is an overview of the overall situation of SMEs in various regions of Guangzhou, it introduces the overall status of the regional economy in Guangzhou; then, it introduces the overall entrepreneurial environment in Guangzhou. In the second aspect, based on the 9 dimensions of the GEM framework, the current status of small and medium-sized enterprises in various regions of Guangzhou is analyzed from these 9 aspects, and the foundation for the establishment of the following entrepreneurial environment indicator system is prepared.

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