

Article

Research on Policies Promoting Youth Innovation and Entrepreneurship in the Greater Bay Area of Guangdong, Hong Kong, China and Macau, China: A Qualitative Analysis of Policies in Guangzhou, Shenzhen, and Zhuhai

Haiyan Ye ^{1,2,*}¹ Faculty of Humanities and Social Sciences, Macao Polytechnic University, Macao, China² Software Engineering Institute of Guangzhou, Guangzhou, Guangdong, China

* Correspondence: Haiyan Ye, Faculty of Humanities and Social Sciences, Macao Polytechnic University, Macao, China; Software Engineering Institute of Guangzhou, Guangzhou, Guangdong, China

Abstract: Background: In order to identify the relationship between the dimensions of innovation and entrepreneurship policies and their effectiveness, and to assist policymakers in formulating relevant policies and measures tailored to the needs of young people, this study focuses on promoting the development of the Greater Bay Area of Guangdong, Hong Kong, China, and Macau, China. Subjects and Methods: Based on policy text analysis and employing NVivo qualitative analysis software, this study selects the youth entrepreneurship and innovation policies of Guangzhou, Shenzhen, and Zhuhai in the Greater Bay Area as research samples. Five policy-supporting dimensions were identified from the policy texts of the three cities: material capital support, human capital support, technical consulting support, social capital support, and public service support. By comparing these dimensions across the three cities, the study aims to determine the focal points and differences within each policy dimension among different regions. Through NVivo qualitative analysis, it further compares the differences in keywords and themes among the three projects to better understand the similarities and divergences in policy expression. Results and Conclusions: The research findings reveal that Guangzhou presents the most comprehensive policy coverage; Shenzhen's emphasis on technological capital notably influences youth employment and entrepreneurship; and Zhuhai's policies show a tendency to support young people from Macau, China. In conclusion, this paper highlights the importance of formulating innovation and entrepreneurship policies based on local characteristics and achieving a balanced approach across cities.

Keywords: Greater Bay Area of Guangdong, Hong Kong, China, and Macau, China; youth innovation and entrepreneurship; policy support; qualitative analysis

Published: 24 June 2025



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1. Introduction

In July 2017, the Chinese government signed the Framework Agreement on Deepening Guangdong-Hong Kong-Macao Cooperation and Promoting the Development of the Greater Bay Area in Hong Kong, China, marking a new phase in the development of the Greater Bay Area. The agreement aims to strengthen the construction of entrepreneurship and employment bases for youth from Hong Kong, China, and Macau, China, by establishing cooperation platforms such as Guangzhou Nansha, Zhuhai Hengqin, and Shenzhen Qianhai. It seeks to facilitate the effective integration of policies, talents, and capital to promote the economic and social development of the Guangdong-Hong Kong-Macao region. This will provide a more conducive environment and richer resources for innovation and entrepreneurship among young people from Hong Kong, China, and Macau, China.

In order to promote sustainable development in the Greater Bay Area, enhance Guangdong-Hong Kong-Macau cooperation, and actively explore and implement policies and measures that facilitate the development of young people from Hong Kong, China, and Macau, China, in the Chinese mainland, a win-win situation is being pursued. In 2019, the Chinese government issued the Outline Development Plan for the Greater Bay Area to strengthen exchanges and cooperation among young people from Hong Kong, China, Macau, China, and the Chinese mainland. This plan aims to provide them with more opportunities for innovation, employment, internships, and voluntary service, encouraging their active participation in the country's overall development. It reflects the central government's proactive stance toward the integration and mutual development of Hong Kong, China, Macau, China, and the Chinese mainland, aiming to achieve resonance and synergy within the Guangdong-Hong Kong-Macau region and the broader national framework.

To facilitate the integration of Hong Kong, China, and Macau, China, into the overall development of the motherland and to enable them to share in national development opportunities, the Chinese government attaches great importance to supporting the youth from these two Special Administrative Regions. Both the central and local governments have successively introduced a range of policies to encourage youth innovation and entrepreneurship, providing strong policy guarantees for young people from Hong Kong, China, and Macau, China, to carry out such activities in the Chinese mainland.

The establishment of the Free Trade Zones in Guangdong Province aims to promote the deep integration of the Greater Bay Area. In response to national strategy, the government has built dedicated platforms for innovation and entrepreneurship for youth from Hong Kong, China, and Macau, China, within the three Free Trade Zones of Nansha (Guangzhou), Hengqin (Zhuhai), and Qianhai (Shenzhen). The goal is to strengthen economic and social ties among these three regions. These policy measures offer more entrepreneurial opportunities and resources to young people from Hong Kong, China, and Macau, China, injecting new vitality and momentum into the Greater Bay Area's development.

The Guangdong Provincial Government and relevant local governments, guided by the strategic positioning of the Greater Bay Area, have responded accordingly by issuing numerous policy measures and implementation guidelines. These aim to establish a leading hub for innovative talent in the Greater Bay Area, create a favorable "soft environment" for talent attraction, and support the innovation and entrepreneurship initiatives of young people from Hong Kong, China, and Macau, China [1]. These efforts further implement the spirit of the development outline plan. As the future of Hong Kong, China, and Macau, China, and as a driving force in national development, the innovation and entrepreneurship activities of these young people are vital both for realizing personal values and for advancing the construction of the Greater Bay Area.

2. Literature Review

Since the conception of the Greater Bay Area, scholars from the Chinese mainland as well as from Hong Kong, China, and Macau, China, have conducted extensive research on promoting the personal development of young people from Hong Kong, China, and Macau, China, and exploring their opportunities within the Greater Bay Area.

2.1. Policy Analysis — Researching the Policy Background and Its Influence

Li argued that youth policies serve as an important foundation for promoting the development of young people in a nation, based on a historical study of youth policy evolution [2]. Zhuo analyzed the texts of youth entrepreneurship and innovation policies in the Greater Bay Area over the past three years and found that policy protections have been continuously strengthened, with local governments actively contributing to a collab-

orative governance model [3]. However, the analysis also revealed areas needing improvement, such as policy fragmentation and overlapping responsibilities among implementation agencies [3].

Using knowledge graphs, Wu examined the literature on youth entrepreneurship and innovation policies in the Greater Bay Area over the past decade. The analysis revealed that the key topics — development and construction of the Greater Bay Area, youth innovation and entrepreneurship strategies, and youth development — have been increasingly emphasized, indicating a growing focus on the integration of young people from Hong Kong, China, Macau, China, and the Chinese mainland [4].

Yu and Lau asserted that, from the strategic perspective of the Greater Bay Area, the construction of youth development experimental demonstration zones reflects the institutional strengths and forward-looking top-level design of the strategy. This reveals the important role of interactions between youth talent aggregation and the broader construction goals of the Greater Bay Area [5,6].

Lo conducted a content analysis of policy texts concerning the cross-border development of young people from Hong Kong, China, and Macau, China, and emphasized the need for a context-sensitive decision-making approach. He argued that policy tools must evolve in tandem with the times [7].

Luo analyzed policy effectiveness through the lens of policy tools, categorizing policy texts as demand-oriented, supply-oriented, or environment-oriented. He emphasized the need to verify the effectiveness of these tools, optimize implementation pathways, and dynamically adjust the policy system to better encourage young people from Hong Kong, China, and Macau, China, to participate in innovation and entrepreneurship within the Greater Bay Area [8].

Qian suggested that entrepreneurship talent policies play a key role in attracting entrepreneurial talent and promoting innovation and entrepreneurship activities in a region [9].

2.2. Analysis of Innovation and Entrepreneurship Opportunities — Exploring the Innovation and Entrepreneurship Opportunities Available to Young People in the Guangdong-Hong Kong-Macao Greater Bay Area

Wei Lixin examined the development of the Macau, China Youth Start-up Incubation Center under the framework of the Greater Bay Area strategy. He suggested optimizing the incubation system by promoting talent exchange and introduction, deepening institutional reforms to drive innovation and entrepreneurship in Macau, China, and envisioning a bright future for young entrepreneurs from Macau, China [10]. Yan pointed out that the entrepreneurial enthusiasm of young people from Macau, China, may be influenced by multiple factors. The study recommended improving the policy system, particularly in terms of policy support, institutional coordination, and livelihood security, to better support Macau's integration into the broader national development agenda [11]. Li analyzed the entrepreneurial policy texts from four major cities in the Chinese mainland and found that local governments focused their attention on three key areas: fiscal funding, achievement transformation, and platform construction [12].

2.3. Resource Integration and Fusion — Investigating How to Connect and Integrate Resources from Different Regions Effectively, and Transform These Resources into Drivers for Innovation and Entrepreneurship

He, through an analysis of 48 interview transcripts with young entrepreneurs from Hong Kong, China, and Macau, China, identified several factors influencing youth innovation and entrepreneurship practices. These included entrepreneurial benefits, the personal qualities of entrepreneurs, and regional development opportunities [13]. The study proposed suggestions such as establishing an entrepreneurial service system, improving

infrastructure, and providing financial support to create a favorable environment for innovation and entrepreneurship, thereby promoting entrepreneurial activities among young people from Hong Kong, China, and Macau, China [13].

Zeng, through analysis of policy texts related to entrepreneurial incubators, summarized three advantages of such incubators: comprehensive service functions, diverse formats, and regional complementarity among cities in the Greater Bay Area [14]. The study suggested that these advantages contribute to establishing interactive relationships among cities, incubators, and young people from Hong Kong, China, and Macau, China, which have positive implications for their integration into the Greater Bay Area [14].

Berlie, through a comparative analysis of policy texts from Guangzhou, Shenzhen, and Zhuhai, proposed measures such as establishing a regional coordination mechanism, enhancing humanistic care, and involving diverse social entities to support the employment and entrepreneurship of young people from Hong Kong, China, and Macau, China, within the Greater Bay Area [15]. Yu analyzed innovation and entrepreneurship policies in Guangzhou and Shenzhen and found that the two cities differ in functional positioning, resulting in inconsistencies in resource allocation and energy investment for innovation and entrepreneurship. The study suggested that the design of entrepreneurial policies should be based on each city's resource endowment and industrial characteristics, leveraging complementary advantages across cities to achieve coordinated regional development [16].

2.4. Empirical Research on Youth Innovation and Entrepreneurship — Investigating the Characteristics of Young Innovators and Entrepreneurs, and How These Characteristics Influence Their Innovation and Entrepreneurship Activities

Lo analyzed 22 typical cases of enterprise development and entrepreneurial stories from Hong Kong, China, and Macau, China, finding that contemporary young entrepreneurs in these regions exhibit many new characteristics in their entrepreneurial practices. The study deeply examined patterns of innovation and entrepreneurship, capital operations, and thoroughly explored the driving factors and pathways to their successful independent innovation [17].

Mok conducted a questionnaire survey among young people in the Greater Bay Area and proposed that the construction of entrepreneurial platforms requires collaboration and communication among multiple parties. Building platforms for young entrepreneurial talents can facilitate their independent entrepreneurship and inject new impetus into the Greater Bay Area [18].

Liu, based on Smith's model, empirically analyzed the supportive effects of entrepreneurial policies, highlighting issues across all four levels of the current implementation process of these policies. Liu proposed recommendations such as improving the systemic nature of policies and application criteria, enhancing policy inclusiveness, and strengthening policy promotion [19].

This study aims to provide a basis for clarifying policies on youth innovation and entrepreneurship by examining the literature mentioned above. However, there remains room for comparative analysis of case studies. Therefore, this study focuses on the cities of Guangzhou, Shenzhen, and Zhuhai as analytical cases. Through qualitative analysis, it attempts to identify similarities, differences, and characteristics of youth entrepreneurship policies in these cities. By analyzing policy texts from multiple dimensions and perspectives, the study aims to uncover the strengths and weaknesses of these policies. This analysis will assist policymakers and decision-makers in understanding the current status and characteristics of policies in different cities, providing valuable references and insights for future policy development.

3. Analysis Ideas and Case Selection

To realize the vision of the Greater Bay Area, with its goal of building a world-class city cluster and enriching the practice of "One Country, Two Systems", it is crucial to strengthen the exchange and cooperation between Hong Kong, China, Macau, China, and the Chinese mainland. This endeavor relies heavily on the leadership and development of youth. This study focuses on three cities within the Greater Bay Area — namely Guangzhou, Shenzhen, and Zhuhai — to examine the development of policies that promote youth employment and entrepreneurship. Specifically, policy documents from Guangzhou (12 documents from 2019 to 2023), Shenzhen (7 documents), and Zhuhai (12 documents) were selected for qualitative analysis using NVivo 11 software. Through coding analysis, the study classifies the policies enacted in these three cities in recent years into five categories: material capital support, human capital support, technological capital support, social capital support, and public service capital support. The analysis reveals that the highest number of coding nodes and policy coverage lie within the realm of material capital support. This suggests that the governments of Guangzhou, Shenzhen, and Zhuhai prioritize leveraging material resources to promote youth employment and entrepreneurship in the Greater Bay Area. Various subsidies and access to entrepreneurial spaces are identified as primary influencing factors in attracting young entrepreneurs.

The selection of research objects aligns with the choice of policy texts. Guangzhou, Zhuhai, and Shenzhen were chosen as focal cities for policy text analysis due to their significance as important hubs for youth innovation and entrepreneurship, possessing abundant resources and policy support in this area. The reasons for selecting these cities are as follows:

Firstly, Guangzhou serves as a national central and comprehensive gateway city and plays a vital role as a transportation hub. According to Hui et al., Guangzhou, as the core city of the Greater Bay Area, has been continuously optimizing and promoting urban reform and innovation. They also highlight the rising development trend of industries such as science and technology innovation and culture, which are crucial for the development and construction of the Greater Bay Area [20,21].

Secondly, as one of the special economic zones, Zhuhai is adjacent to Hong Kong, China, and Macau, China, enjoying a superior geographical location as a core city on the western bank of the Pearl River. Pang Qiancong, based on the interaction between Zhuhai and the Greater Bay Area, suggested that it aids in the coordinated development among the cities in the Greater Bay Area and leverages the advantages of resource endowment to promote the integration of the Greater Bay Area [22].

Thirdly, Shenzhen, with its vibrant role as an economic special zone, a national economic center, and an influential innovation-oriented city, has become an important pillar for regional development in the Greater Bay Area. The innovation-driven forces propelled by Shenzhen will serve as a significant driving force for the future development of the Greater Bay Area. Yitao Tao and Xu Peiyuan pointed out that building a first-class science and technology innovation center strengthens Shenzhen's position in the innovation network. It also helps construct an innovation network centered around the Greater Bay Area, providing support for the regional economy [23,24].

Due to the unique characteristics and diversity of cities in the Greater Bay Area, particularly reflecting the institutional differences between the Chinese mainland and Hong Kong, China/Macau, China, ensuring the uniformity and comparability of policy texts is vital. Therefore, this study focuses on Guangzhou, Shenzhen, and Zhuhai as research objects to maintain consistency and comparability in the policy texts.

Lastly, the comparability of government departments, innovation and entrepreneurship bases or centers, and other executing institutions involved in the implementation process of youth innovation and entrepreneurship policies is crucial. It facilitates in-depth case studies and the collection of a substantial amount of primary documents, data, and interviews, providing reliable data support and empirical evidence for the research. By

examining the current status of youth innovation and entrepreneurship policy implementation in these cities, valuable references and insights can be provided for the formulation of such policies in other regions, thereby promoting innovation and entrepreneurship development nationwide.

4. Research Design

4.1. Methodology

In the context of the Greater Bay Area, policy text analysis serves as a valuable analytical tool for studying the youth innovation and entrepreneurship policies in Guangzhou, Shenzhen, and Zhuhai. There are two types of policy text analysis: Quantitative analysis: This involves statistically analyzing the frequency of thematic keywords and other relevant metrics in the policy documents of the three cities separately. Qualitative analysis: This approach involves comparing and interpreting the policy documents of the three cities from a specific perspective. In this study, a comprehensive analysis combining qualitative and quantitative approaches was employed to examine the policy text content related to youth entrepreneurship and employment in the three cities. The primary focus was on qualitative analysis, supplemented by quantitative analysis.

4.2. Selection of Policy Documents

For this study, policy documents related to youth innovation and entrepreneurship in the Greater Bay Area were collected from Guangzhou, Shenzhen, and Zhuhai for the period from 2019 to 2023. To ensure the relevance of the policy documents to the research theme, the researchers applied the principle of relevance and conducted a screening process. This involved examining the overall content or specific sections of the policy documents pertaining to youth entrepreneurship and employment. Ultimately, 11 policy documents from Guangzhou, 7 from Shenzhen, and 12 from Zhuhai were selected (see Table 1).

Table 1. Selection of Innovation and Entrepreneurship Talent Policies in Sample Cities from 2019 to 2023.

Policies in Guangzhou	
Implementation Plan for the Construction of the Guangzhou Demonstration Base for Youth Innovation and Entrepreneurship in the Greater Bay Area (2019-2021)	The Communist Party of Guangzhou Municipal Committee and Guangzhou Municipal People's Government
Notice on the Issuance of the Guangzhou Entrepreneurship Subsidy Measures	Guangzhou Municipal Bureau of Human Resources and Social Security Guangzhou Nansha Economic and Technological Development Zone Office for Hong Kong, China, and Macau, China Cooperation Affairs;
Notice on the Issuance of Detailed Implementation Rules for Encouraging and Supporting Youth Entrepreneurship and Employment from Hong Kong, China, and Macau, China in the Nansha New Area (Free Trade Zone) of Guangzhou	Guangzhou Nansha District Human Resources and Social Security Bureau; The Communist Party of Guangzhou Nansha District Committee United Front Work Department; Guangzhou Municipal Communist Youth League Nansha District Committee

Guangzhou Entrepreneurship Subsidy Measures	The Communist Party of Guangzhou Municipal Committee and Guangzhou Municipal People's Government
Notice on the Issuance of the Management Measures for the Identification and Administration of Innovation and Entrepreneurship (Incubation) Demonstration Bases in the Haizhu District	Guangzhou Haizhu District Human Resources and Social Security Bureau
Notice on the Issuance of Several Measures (Trial) to Support Youth Innovation and Entrepreneurship from Hong Kong, China; Macau, China; and Taiwan, China in the Huadu District	Guangzhou Huadu District People's Government Office
Notice on the Issuance of the Implementation Measures for the Talent Agglomeration Engineering in the Huangpu District, Guangzhou Development Zone, and Guangzhou High-tech Zone for Innovation and Entrepreneurship (1)	Guangzhou Huangpu District Science and Technology Bureau; Guangzhou Development Zone Science and Technology Innovation Bureau
Notice on the Issuance of Measures to Promote the High-Quality Development of Innovation and Entrepreneurship Incubators in the Huangpu District, Guangzhou Development Zone, and Guangzhou High-tech Zone	Guangzhou Huangpu District People's Government; Guangzhou Development Zone Administration Committee
Notice on the Issuance of Detailed Implementation Rules for the Implementation of Several Policies and Regulations to Encourage Entrepreneurship Investment and Promote Innovation and Entrepreneurial Development in Guangzhou	Guangzhou Municipal Science and Technology Bureau;
Notice on the Issuance of the Management Measures for Entrepreneurship Incubation Bases in Guangzhou (1)	Guangzhou Municipal Bureau of Human Resources and Social Security; Guangzhou Municipal Finance Bureau
Opinion on Accelerating the Agglomeration of Industry Leading Talents	The Communist Party of Guangzhou Municipal Committee and Guangzhou Municipal People's Government
Policies in Shenzhen	
The Implementation of the "Combined Port for the Greater Bay Area" Shows Promising Results	Shenzhen Municipal Transportation Bureau
Longhua Building Platform to Facilitate Employment and Entrepreneurship for Disabled Youth from Guangdong, Hong Kong, China, and Macau, China	Longhua Government
Luohu Introduces a Policy "Gift Pack" to Support Entrepreneurship and Employment for Youth from Hong Kong, China, and Macau, China	Luohu District Bureau of Industry and Information Technology
"Setting Sail Plan" Enhances Skill Levels to Promote Employment and Entrepreneurship for Registered Youth in Futian District	Ministry of Human Resources and Social Security, Central Committee of the Communist Youth League
Measures to Further Facilitate the Development of Residents from Hong Kong, China, and Macau, China in Shenzhen	Office of the Communist Party of Shenzhen Municipal Committee and Office of Shenzhen Municipal People's Government

Issuance of the Notice on Promoting the High-Quality Development of Innovation and Entrepreneurship Bases for Youth from Hong Kong, China, and Macau, China	Shenzhen Municipal Bureau of Human Resources and Social Security
Notice on the Issuance of the Work Plan to Strengthen the Construction of Innovation and Entrepreneurship Bases for Youth from Hong Kong, China, and Macau, China	Shenzhen Municipal People's Government
Policies in Zhuhai	
Notice on the Issuance of the Implementation Measures for Entrepreneurship Subsidies in Zhuhai City	Zhuhai Municipal Bureau of Human Resources and Social Security
Notice on the Issuance of Subsidy Measures to Support Employment (Entrepreneurship) and Skills Training for Youth from Hong Kong, China, and Macau, China in Zhuhai City	Zhuhai Municipal Bureau of Human Resources and Social Security
Regulations for the Development and Promotion of the Hengqin Guangdong-Macao Deep Cooperation Zone	Standing Committee of the Guangdong Provincial People's Congress
Regulations for the Promotion of Talent Development in Zhuhai Economic Special Zone	Standing Committee of the Zhuhai Municipal People's Congress
Notice on the Issuance of the Operational Management Measures for Guangdong Zhuhai Public Entrepreneurship Incubation (Training) Bases	Zhuhai Municipal Bureau of Human Resources and Social Security
Notice on the Issuance of the Management Measures for Funding of Zhuhai Talent Entrepreneurship Projects	Zhuhai Municipal Bureau of Human Resources and Social Security
Release of the "Top Ten Action Plans for Employment and Entrepreneurship of Graduates in Zhuhai City in 2022", providing talent support for the battle of industrial development	Zhuhai Municipal People's Government
Notice on the Issuance of Measures for the Standardization and Optimization of the Management and Use of Employment and Entrepreneurship Subsidy Funds	Zhuhai Municipal Bureau of Human Resources and Social Security, Zhuhai Municipal Finance Bureau
Notice on the Issuance of Several Policy Measures to Further Stabilize and Expand Employment in Zhuhai City	Zhuhai Municipal People's Government
Notice on the Issuance of Several Policy Measures to Further Stabilize and Expand Employment in Zhuhai City	Zhuhai Municipal People's Government
60 Measures to Facilitate the Development of Residents from Hong Kong, China, and Macau, China in Zhuhai	Zhuhai Municipal People's Government
Service Guide for the Development of Youth from Hong Kong, China, and Macau, China in Zhuhai	Zhuhai Municipal People's Government

4.3. Research Tool

NVivo software, developed by QSR International, is a computer-aided qualitative data analysis tool that is suitable for organizing and processing complex policy texts. In

this study, NVivo software was utilized to analyze policy documents related to youth innovation and entrepreneurship in the Greater Bay Area that were issued by the government over the past five years. Through frequency analysis and word cloud visualization obtained from NVivo, the study aims to identify key areas of focus in the policies of the three regions. This was achieved by systematically coding the policy texts to explore the prominent themes addressed in the policies of the three regions.

4.4. Coding Process for Policy Texts

The process of coding policy texts involved studying the policy documents and systematically analyzing their textual content. The main focus was on extracting key features related to the support of material capital, human capital, technological capital, social capital, and public service capital. These aspects were considered as the initial free nodes. Next, the free nodes were integrated to form a series of sub-nodes in the first round of coding. The relationships of class membership among the sub-nodes were analyzed, summarized, and categorized to create parent nodes in the second round of coding. Given that the analysis of policy texts is predetermined from the perspectives of Guangzhou, Shenzhen, and Zhuhai, the various categories were assigned to their respective analysis perspectives, thus forming a node coding system in the third round of coding.

4.5. Research Findings and Analysis

4.5.1. Word Frequency Features

The frequency query function of NVivo 11 software was used to calculate the occurrence frequency of relevant vocabulary in the policy texts. A total of 11 policy documents from Guangzhou, 7 from Shenzhen, and 12 from Zhuhai were imported into NVivo software. "Word frequency" statistics and "word cloud" visualization (Top 30 word frequencies shown in Figure 1) were conducted on the youth innovation and entrepreneurship policies of the three cities.



Figure 1. Word Frequency Statistics and Word Cloud Visualization of Youth Entrepreneurship and Employment Policies in Guangzhou, Shenzhen, and Zhuhai.

In Table 2 and Figure 1, larger font sizes indicate words that are more central and appear more frequently in the policy texts, while smaller font sizes correspond to lower frequencies of occurrence. From Figure 1, it can be observed that words such as entrepreneurship, employment, enterprises, youth, talent, innovation, incubation, services, Hong Kong, China, and Macau, China, cooperation, rewards, and others appear with the highest frequency.

Table 2. Top 10 "Word Frequency" Rankings in Policies of Guangzhou, Shenzhen, and Zhuhai.

SN	Guangzhou	Shenzhen	Zhuhai	Comprehensive
1	Entrepreneurship	Youth	Entrepreneurship	Venture
2	Enterprise	Entrepreneurship	Talents	Youth

3	Incubation center	Incubation center	Collaboration	Incubation center
4	Youth	Talents	Projects	Enterprise
5	Subsidies	Innovation	Administration	Talents
6	Hong Kong, China and Macau, China	Enterprise	Services	Administration
7	Application	Development	Institutions	Projects
8	Incubation	Employment	Work	Collaboration
9	Nansha	Support	Incubation center	Services
10	Services	Conditions	Youth	Innovation

This suggests that the policies implemented in the three cities place significant emphasis on these aspects. Specifically, the policy focus lies in project incubation for employment and entrepreneurship, enterprise investment and exchange, project funding, cooperation with Hong Kong, China, and Macau, China, as well as talent cooperation and aggregation.

The table shown in Figure 1 presents the top 10-word frequencies in the youth innovation and entrepreneurship policies of Guangzhou, Shenzhen, and Zhuhai. From Figure 1, it can be observed that the term "subsidy" is unique to Guangzhou, followed by the appearance of terms like "application". This indicates that Guangzhou's youth innovation and entrepreneurship policy provides relatively more material support. Analyzing the top 10 terms in Shenzhen, the most notable difference compared to the other two cities is that "youth" ranks first. This reflects the emphasis of Shenzhen's innovation and entrepreneurship policy on attracting young individuals. In Zhuhai, the term "cooperation" ranks third, followed closely by "projects". Additionally, the term "Macau" appears at the 29th position, with a weighted frequency percentage of 0.31% (out of 1000-word frequencies). This suggests that Zhuhai's innovation and entrepreneurship policy focuses on cooperation with Macau.

4.5.2. Node Analysis

Guangzhou, Shenzhen, and Zhuhai were analyzed based on five main dimensions: material capital support, human capital support, technological capital support, social capital support, and public service capital support. These dimensions served as independent nodes. Subsequently, an integration of the independent nodes was performed to identify the policy emphasis and inclination of each city towards these five dimensions. The purpose of this analysis is to determine which dimension received greater policy attention and support in Guangzhou, Shenzhen, and Zhuhai.

Based on the coding reference points (refer to Table 3), it can be concluded that the policies implemented by Guangzhou city encompassed all five dimensions: material capital support, human capital support, technological capital support, social capital support, and public service capital support. In comparison to Shenzhen and Zhuhai, Guangzhou city has comprehensive policies in place for youth innovation and entrepreneurship in the Greater Bay Area. The main focus lies in material capital support and human capital support. Regarding material capital support, Guangzhou city's policies include 21 coding reference points related to project funding, accounting for approximately 10.99% of the total nodes, and 18 coding reference points related to base subsidies, accounting for approximately 9.42% of the total nodes. The government of Guangzhou city aims to address the startup costs for young entrepreneurs in the Greater Bay Area, providing them with financial resources and base facilities to stimulate their entrepreneurial enthusiasm and generate more employment opportunities. In terms of human capital support, talent exchanges and talent alliances play a significant role. The government of Guangzhou city organizes events such as the Guangdong-Hong Kong-Macao Youth Entrepreneurship and Employment Exchange, facilitates exchange programs between universities in the university town, and promotes collaboration among research institutions. They also establish talent exchange platforms in various districts, emphasizing talent attraction and fostering

internal motivation for entrepreneurship. However, there are areas that require improvement. The policies related to technological capital support, social capital support, and public service capital support are relatively limited. It is essential for the government to enhance the implementation of policies in these three dimensions.

Table 3. Structural Diagram of Youth Innovation and Entrepreneurship Node System in Guangzhou, Shenzhen, and Zhuhai.

Guangzhou			
First level nodes	Second level nodes	Sources of data	Reference points
Public service capital support	Business and commercial services	9	15
	Green channel	9	11
Technological capital support	Project incubation	6	16
	Resource demand matching	12	17
Human capital support	Talent exchange	9	12
	Talent alliance	10	15
	Talent recruitment	6	9
Social capital support	Connecting enterprises	9	10
	Promotional campaigns	9	15
Material capital support	Base subsidies	12	18
	Employment subsidies	3	13
	Internship and training subsidies	3	5
	Project funding	10	21
	Rent subsidies	12	14
Shenzhen			
First level nodes	Second level nodes	Sources of data	Reference points
Public service capital support	Talent prioritization	1	1
	Industrial support	3	5
Technological capital support	Technological platforms	2	4
	Shenzhen-Hong Kong cooperation	3	4
Social capital support	Maker exchange	2	3
	Startup fund	2	2
	Maker space	3	6
Material capital support	Financial support for financing	3	5
	Project funding	2	4
Zhuhai			
First level nodes	Second level nodes	Sources of data	Reference points
Technological capital support	Project incubation	6	12
	Cooperation among Shenzhen, Hong Kong, China, and Macau, China	9	19
	Platform establishment	8	10
Social capital support	Entrepreneurship base	10	15
	Financial support for funding	9	18
Human capital support	Talent collaboration	9	12
	Talent introduction	6	6

As a hub for innovation and entrepreneurship, Shenzhen attracts a large number of talents in high-tech and modern service industries. The government of Shenzhen has also introduced policies to support youth innovation and entrepreneurship in the Greater Bay

Area. Based on the coding reference points, it can be observed that the policies of Shenzhen city are primarily concentrated on material capital support and technological capital support. Material capital support in Shenzhen focuses on the development of maker spaces and financial assistance. The government supports the establishment of various institutions with low-cost, convenient, all-inclusive, and open maker spaces, providing entrepreneurs with innovative and entrepreneurial environments. They also improve the financing support system for entrepreneurial talents, enhance market financing assistance, and promote the introduction and outbound investment in entrepreneurial ventures, thereby boosting youth entrepreneurship and employment. Technological capital support in Shenzhen emphasizes the improvement of industry support systems. It aims to provide comprehensive industry support services for youth entrepreneurship and optimize the integration and utilization of resources. The government needs to enhance support in talent capital, as well as public service capital support and social capital support, by increasing policy incentives in these three dimensions.

Due to its geographic proximity to Macau, China, Zhuhai primarily favors policies that cater to youth from Macau, China. However, in general, Zhuhai's initiatives for youth innovation and entrepreneurship in the Greater Bay Area are not as comprehensive as those of Guangzhou and Shenzhen. The specific measures and directions of these policies lack clarity when evaluated based on coding reference points.

Zhuhai's policy framework mainly focuses on providing support in terms of material capital and technological capital. Material capital support primarily entails financial assistance, particularly loan subsidies for young entrepreneurs from the three regions — Guangdong, Hong Kong, China, and Macau, China. Additionally, support and subsidies are offered for the operation and incubation of entrepreneurial bases.

Technological capital support mainly includes project incubation and cooperation with Shenzhen, Hong Kong, China, and Macau, China. Zhuhai provides relevant support for incubating youth entrepreneurial projects and helps alleviate financial pressures, offering essential safeguards to enhance the success of these projects. Cooperation with Shenzhen, Hong Kong, China, and Macau, China involves policy support enabling young individuals from these regions to come to Guangdong. This includes establishing cross-border talent cooperation mechanisms, promoting exchange and collaboration between Hong Kong, Macau, and Guangdong, and providing services to attract young entrepreneurs from Hong Kong and Macau to Zhuhai, fostering their entrepreneurial activities and employment opportunities in the city.

5. Conclusions

Guangzhou, as a national central city and a comprehensive gateway city in the Greater Bay Area, plays a leading role. The policies promulgated by the Guangzhou Municipal Government cover five areas: material capital support, human capital support, technological capital support, social capital support, and public service capital support. These policies are comprehensive and synergistic, providing strong support for youth entrepreneurship across Guangdong, Hong Kong, China, and Macau, China. Their breadth and specificity are key reasons why Guangzhou attracts young people from these regions for employment and entrepreneurship. Other city governments can learn from and promote this approach.

Shenzhen, as an innovation and creativity hub in the Greater Bay Area and one of China's four central cities, significantly impacts youth employment and entrepreneurship through technological capital support. It provides essential services and infrastructure for youth entrepreneurship and employment, offering a solid technological foundation for youth project development. However, there is room for improvement in human capital support, as fostering talent exchange, cooperation, and development is crucial to unleashing a city's vitality and driving force.

Zhuhai, as a pivotal city in the Greater Bay Area and a comprehensive national transport hub, has transformed from a small fishing village into an economic special zone. With its advantageous geographic location, Zhuhai attracts young people from Hong Kong, China, and Macau, China for inland employment and entrepreneurship. The government's policies in Zhuhai primarily focus on technological capital support, project incubation, and cooperation with Shenzhen, Hong Kong, China, and Macau, China. While this focus is beneficial, policy formulation should become more comprehensive and holistic to promote deeper integration within the Greater Bay Area and inject new vitality and momentum into urban development.

Funding: Supported by the Planning Research Project of Chinese Private Education Association "Study on the Innovative Entrepreneurship Talent Cultivation Model for Private University Students in the Guangdong-Hong Kong-Macao Greater Bay Area" (CANFZG23318) and the research project "Research on Policies Promoting Youth Innovation and Entrepreneurship in the Guangdong-Hong Kong-Macao Greater Bay Area: A Qualitative Analysis of Policies in Guangzhou, Shenzhen, and Zhuhai" (KY202328) conducted by Software Engineering Institute of Guangzhou.

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