

# Research on influence factors and countermeasures of higher education development in the Greater Bay Area (GBA)

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**Abstract:** Under the background of economic globalization and the rapid development of science and technology, the development of higher education (HE) has undergone profound changes. Nowadays, in order to increase the international competitiveness, training international talents has become the primary task of universities and HE institutions. Therefore, taking Shenzhen as an example, the research takes quantitative method to study how the educational resources in the society affect the school from a macro perspective, and the micro perspective of students, teachers and schools, studying the impact on the development of universities. Through in-depth analysis of the integration of educational resources, the results show that multilingual library resource, and other three factors followed, are critical factors in the development of HE. And then, this study puts forward corresponding countermeasures and suggestions after discussion, aiming to provide strategic insights to enhance the quality and international competitiveness of HE in the GBA, especially in the construction of multilingual library resources (MLR), international exchange platform (IEP), sufficient and diverse laboratory facilities (SDLF), and rich academic resources (RAR). Thus, the research narrows the gap in this field to some extent.

**Keywords:** higher education; GBA; influence factor; development and countermeasures

## 1. Introduction

With the development of globalization, the international demand for talents is increasing and the competition for talents in various countries is becoming more and more fierce. While many definitions of different types of HE has been adopted, this paper will use the definition suggested by Guo et al. (2019) mentioned that HE in China normally refers to the programme for three-year college, bachelors, postgraduates and doctoral students (Guo et al., 2019). In the historical development process of HE, in addition to professional knowledge, critical thinking, problem-solving ability, communication and expression skills of individuals have played a crucial role. The skills that individuals learn in HE can be more competitive in their future career development and can continue to grow, so that individuals have the ability of lifelong learning. From a macro point of view, there are many learning resources in HE institutions, which provide learning opportunities for people of different classes and help to enhance social mobility and reduce social inequality. These resources can also enable people of different cultures and countries to better communicate and cooperate, promote cultural inheritance and innovation, and promote the development of globalization. However, the development of HE has been profoundly influenced by multiculturalism, economic competition, and technological innovation. Especially in the Guangdong-Hong Kong-Macao GBA, a

dynamic region, the development of HE is not only about the transfer and innovation of knowledge, but also a key force in promoting regional economic and social development. The resources of HE exists not only in the school but also in the society.

In addition, there are many factors affecting HE, such as the society, government policies, school institutions and resources. Many scholars have made remarkable achievements in the field of HE, but many scholars focus on the development of HE and put the research focus on macro economy and government policies. However, the author believes that more important is the subtle aspects of teachers, school institutions and learning resources. Especially in the context of globalization, multilingual learning resources are still scarce, so it is important to overcome this difficulty. This paper will use quantitative research methods for data analysis, mainly for reliability and validity analysis, descriptive statistical analysis, correlation analysis and other aspects. The current research is based on practical investigation. Although it cannot provide comprehensive conclusions, we focus on the important but easily neglected aspect of learning resources. This research is conducive to further exploring the influencing factors of HE from the micro level, further improving the quality of HE, promoting cultural exchanges and cooperation, and thus accelerating the process of globalization. HE institutions can promote the transformation of scientific and technological achievements through the cultivation of talents. Therefore, this study hopes to further enhance the country's innovation ability and core competitiveness by improving the quality of teachers and learning resources of HE institutions, and to more accurately predict the future development direction of education and provide a reasonable basis for the allocation of resources.

## **2. Literature review**

Since the 18th National Congress of the Communist Party of China, as the CPC Central Committee and the State Council have attached great importance to the high-quality development of HE, many scholars in China have made many explorations on the development of HE in China.

From the perspective of the development of HE in China, in 2021, the Chinese Academy of Education Sciences conducted the third round of the National HE Satisfaction Survey, and found that the national satisfaction with HE has steadily improved, but it has performed poorly in issues such as the cultivation of innovation ability and quality in universities, students' professional identity, the attractiveness of teachers' teaching methods, and the consistency between practical teaching and theoretical teaching (Ma et al., 2023). In the 2022, National Education Work Conference, the education system of Guangdong Province shared the work experience of optimizing the layout of HE in the province and promoting the coordinated development of HE in the province played an important role in promoting the construction of the GBA international education demonstration Zone (Cao, 2022). According to the report on the cooperation and exchange of HE in the GBA released on 29 May 2024, there are 15,000 Hong Kong and Macao students studying in Guangdong universities, and Guangdong universities have achieved remarkable results in the three major areas of cooperation in running schools,

technological innovation, and exchange and integration (Nanfang Daily online, 2024).

How to achieve high-quality development of HE needs to be explored on the basis of analyzing the theory of economic development stage and supply-side structural reform (Fang and Zhong, 2022). The development of HE depends on many factors. From a national perspective, the level of economic development is the leading factor affecting the development of HE (Pan et al., 2020). However, with the change of the school-age population of the HE population shows an “inverted N-shape” change, and the demand for educational resources for teachers and school buildings also shows a “inverted N-shaped” development trend (Wang and Rong, 2022). It is worth mentioning that university libraries are defined as platforms and tools for the organization, retrieval and use of digital educational resources in HE resources (Liu and Wan, 2007) which lacks its position and role in promoting the development of HE.

HE, also known as tertiary education, originated from the European Convention on Human Rights, which was drafted in 1950, and is a concept of educational level. Many scholars in the world started their research in this field earlier and formed a relatively complete theoretical system. The researches directions mainly focus on the development status and influencing factors. Simon thinks HE is a knowledge-based, international and open sector that has become the heart of change in emerging countries and plays an important role in the global economy, culture and life (Marginson and Wende, 2007). With the development of The Times, people need to learn at different times. HE not only embodies formal learning forms but also includes informal learning forms, so Tolochko put forward the idea of lifelong learning, and thinks HE should be developed vertically and horizontally, and then puts forward the concept of lifelong learning. People from different countries and different ages should keep the habit of lifelong learning. HE and lifelong learning are mutually reinforcing. When individuals seek outside knowledge that they cannot learn in school, they will find other ways to learn, but this theoretical view is still not implemented. Specific methods should be identified to speed up the transformation of theory into practice (Tolochko et al., 2021).

Mok and Qian (2018) find that the Chinese government, in an effort to improve its global competitiveness, has established a number of private colleges and partnered with HE institutions in other parts of the world to develop international study-abroad programs. After the epidemic, many enterprises have closed down, and the economy has been greatly affected. With the fierce competition in the global labor market, the number of international students has soared. Therefore, Mok and Yu (2014) believe that globalization is an important factor affecting the development of HE.

In history, many scholars have studied the influencing factors of depression in HE, but most of them focus on economy, social culture, schools and so on. Only a few scholars focus their research on teachers, students and the resources that students use to obtain learning information. In the research. Merhi pointed out that online learning resources such as podcasts are more practical and have a better student experience. Technical factors also have a certain impact on HE. Schools can adopt the form of electronic library to allow students to freely search for knowledge. This

personalized way can greatly improve students' academic performance and enhance their learning motivation (Merhi, 2015). Jos mentioned that library educational resources are an important means for graduate students to obtain information. This study mainly focused on the libraries of traditional universities of the Federal Government of Nigeria, and pointed out that the lack of library electronic resources makes it difficult for students to search during research, so this is also an area that should be optimized (Bashorun et al., 2016).

In general, the development of HE is complicated and diversified, and the quality of HE is influenced by the level of economic development, the change of school-age population, the allocation of educational resources, the innovation of teaching methods and the construction of library resources. In addition, the shortcomings of HE in the cultivation of innovative ability, students' professional identity, and the underestimation of the role of library resources in promoting the development of HE need to be solved by the joint efforts of governments, schools, society and individuals.

The purpose of this study is to explore the most significant influencing factors on the development of HE in Shenzhen from the dimension of educational resources, and to propose corresponding countermeasures. The specific research questions are as follows: Which dimensions of educational resources have the greatest impact on the international competitiveness of Shenzhen's HE institutions? With limited available resources, which dimensions of educational resources should be prioritized and invested? How to evaluate and ensure the true contribution of the internationalization of educational resources to the effectiveness of their talent training? By answering these questions, this study hopes to provide strategic guidance to HE institutions to help them develop more competitive talent in the face of global competition.

### **3. Methodology**

#### **3.1. Research design**

To explore the influencing factors and countermeasures for HE in Shenzhen, the study selected students with HE educational backgrounds, including three-year college, bachelor's, postgraduate, and doctoral students. Adopting a quantitative method and based on the questionnaires, namely Distance HE Service Quality (DIHESQ) (Araya-Castillo et al., 2022) and Student Evaluation of Educational Quality (SEEQ) (Marsh, 1982), a questionnaire in the research, named Influence Factors and Countermeasures Affecting the HE Development (IFCAHED) in Shenzhen, was modified and designed through the Wenjuanxing platform. The DIHESQ and SEEQ are respectively divided into 7 and 10 dimensions by scholars. However, both questionnaires are integrated into the 5 dimensions of this questionnaire in the research, and each dimensions have 10 items, totally 50 items. The corresponding dimensions of the 3 questionnaires are shown in **Table 1**. Then, the questionnaire was distributed via WeChat. It took 4 days from the issuance to the completion of the questionnaire.

In the research, reliability and validity analysis, descriptive statistical analysis, correlation analysis, and multiple linear regression analysis are employed to

respectively examine the reliability and validity (where the main test here is structural validity) of the questionnaire, the data trend of central tendency and dispersion, the correlation between different items, and the influence of independent variables on dependent variables through SPSS. It should be noted that this report only makes a detailed demonstration of the dimensions of educational resources. And the ten items in this dimension are shown in **Table 2** below.

**Table 1.** The source and dimension of questionnaire design.

	<b>DIHESQ</b>	<b>SEEQ</b>	<b>IFCAHED</b>
1st Dimension	Courses and materials	None	Students' Development (students)
2nd Dimension	Professors and teaching	None	Educational resource (Teachers and schools)
	Functional platform	None	
3rd Dimension	Evaluation and feedback	Learning, Enthusiasm, Organization, Group Interaction, Individual Rapport, Breadth, Examinations, Assignments, Overall, Student and Course Characteristics	Teaching quality (From the both)
4th Dimension	Administration and organization	None	Educational investment (Schools, government and NGOs)
	Agency support		
	Social and labor		
5th Dimension	Emotional platform	None	Regional cooperation

**Table 2.** Ten items in educational resources.

<b>Educational Resources</b>	
Teachers	Teachers with excellent educational background (TEEB)
	Teachers with various collaborative research project (TVCRP)
	Strong academic atmosphere (SAA) (Teachers involve in students' learning process)
	Cognition of academic resources (CAR) (Teachers have a full understanding of the cutting-edge curriculum and development thinking)
Schools	Rich academic resources (RAR) (Courses, programs, and etc. could meet the demand of talents' cultivation)
	Multilingual library resources (MLR)
	International exchange platform (IEP)
	Sufficient and diverse laboratory facilities (SDLF) (It covers different needs of courses, program, and research)
	Basic facilities (BF) (Virtual platform, resources sharing, online forum, and teacher-student interactive platform)
Teachers and Schools	Online educational resources (OER) (teachers' teaching and schools' support)

### 3.2. Data analysis

A total of 697 participants were involved in the questionnaire survey. Approximately 98% of the questionnaires were from Shenzhen, and correspondingly, 92% of the participants resided in Shenzhen. Regarding gender distribution, 45.5%

were male and 54.5% were female. More than 35% of the participants held a master’s degree, followed by 24.5% with junior college education. The proportions of those with doctoral degrees and bachelor’s degrees were around 25% respectively. The age of the majority of participants was mainly concentrated in the 18–34 age group, with few being over 45. Consequently, their occupations were mainly students, teachers, and administrators in HE and related institutions, while only 27.5% were engaged in other careers

### 3.2.1. Reliability and validity analysis

Excluding the basic information in the questionnaire, the reliability analysis of all the items of five-point Likert scale was carried out, and the Cronbach’s alpha = 0.982, which shows the questionnaire has high reliability. Then, according to the category, this dimension is analyzed separately for reliability. By comparing the standardized Cronbach’s alpha, the post-deletion Cronbach’s alpha shows that the data is relatively stable. The results of both Cronbach’s alpha are shown in **Table 3**.

**Table 3.** The results of both Cronbach’s alpha.

	Standardized Cronbach’s $\alpha$	Post-deletion Cronbach’s $\alpha$
Overall questionnaire	0.982	
1st dimension	0.886	
TEEB		0.873
TVCRP		0.874
SAA		0.875
CAR		0.877
RAR		0.876
MLR		0.876
IEP		0.873
SDLF		0.874
BF		0.874
OER		0.875

The overall KMO of the questionnaire is 0.987. The KMO of the dimension of educational resources is 0.931, which shows that data can be efficiently extracted for information. And the **Table 4** shows the commonality value corresponding to all research items is higher than 0.4, indicating that the information of research items can be effectively extracted. Besides, the variance explanation rate (before rotation) was 67.217%, and the cumulative variance explanation rate (after rotation) was 67.217% > 50%. This factor can explain 67.217% of the variation of the original variable, and the explanation strength is high.

**Table 4.** The validity of the questionnaire’s dimension of educational resources.

Item	Factor loadings	
	Factor 1	Communalities
RAR	0.820	0.672
MLR	0.829	0.688
SDLF	0.832	0.692
TEEB	0.819	0.671
IEP	0.832	0.692
SAA	0.846	0.716
TVCRP	0.751	0.564
BF	0.806	0.650
OER	0.813	0.662
CAR	0.846	0.717
Eigenroot $\lambda$ (before rotation)	6.722	
variance explanation rate % (before rotation)	67.217%	
cumulative variance explanation rate % (before rotation)	67.217%	
Eigenroot $\lambda$ (after rotation)	6.722	
variance explanation rate % (after rotation)	67.217%	
cumulative variance explanation rate % (After rotation)	67.217%	
KMO	0.931	
Bartlett	744.305	
df	45	
<i>p</i>	0.000	

To sum up, the questionnaire performs well in terms of reliability and validity. It provides strong data support for subsequent research and can effectively reflect information related to research questions

### 3.2.2. Descriptive statistical analysis

First of all, in terms of the analysis of essential features, the minimum value of all variables is 1 and the maximum value is 5, which indicates that the data range is fixed and falls within the value range of the five-point Likert scale.

**Table 5.** The descriptive statistic of the dimension of educational resources.

	RAR	MLR	SDLF	TEEB	IEP	SAA	TVCRP	BF	OER	CAR
Central tendency										
MEAN	3.92	3.87	3.91	3.93	3.95	3.84	3.89	3.93	3.90	3.89
MEDIAN	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
MODE	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Tendency of dispersion										
SD	1.129	1.197	1.142	1.095	1.109	1.175	1.121	1.132	1.136	1.108
Variance	1.274	1.434	1.305	1.198	1.230	1.380	1.256	1.280	1.291	1.228
Range	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00

**Table 5.** (Continued).

	RAR	MLR	SDLF	TEEB	IEP	SAA	TVCRP	BF	OER	CAR
Essential feature										
Number	694	694	694	694	694	694	694	694	694	694
Minimum	1	1	1	1	1	1	1	1	1	1
Maximum	5	5	5	5	5	5	5	5	5	5
Distribution pattern										
Skewness	-0.924	-0.905	-0.932	-0.942	-10.043	-0.868	-0.857	-0.970	-0.937	-0.882
Kurtosis	0.171	-0.025	0.184	0.355	0.579	-0.009	0.018	0.270	0.241	0.167

What’s more, as **Table 5** presented, regarding the analysis of central tendency, the means of all variables lie between 3.84 and 3.93, being relatively close to each other. This suggests that the overall data is relatively consistent at the average level. Among them, the mean of some variables is close to 3.9, implying that the overall evaluation is at a moderately high level. As for the median and mode, both are 4.00 and 5.00 respectively for the variables, indicating that the data has a relatively concentrated trend at a relatively high level and there exists a certain tendency of positive evaluation.

Moreover, in the analysis of dispersion tendency, the standard deviation (SD) is between 1.095 and 1.197, with relatively close values. This shows that the dispersion tendency of data for each variable is relatively consistent. Relatively speaking, although the fluctuation of data is not particularly large, there is still a certain degree of dispersion. Additionally, the variance is between 1.198 and 1.434, which is in line with the analysis result of the standard deviation, reflecting that the dispersion tendency of data is relatively stable. The range of all variables is 4.00, indicating that the data range is relatively narrow and the overall data is relatively concentrated.

Finally, with respect to the distribution pattern, the skewness values are all negative and relatively close to each other, indicating that the data distribution exhibits a slight left skewness, meaning there is a slightly longer tail on the lower value side. And the kurtosis value is relatively small and has both positive and negative values, indicating that the data distribution is relatively flat. Compared with the normal distribution, there is no obvious peak feature.

In conclusion, the data shows a relatively high-level concentration tendency in central tendency, the dispersion degree is relatively consistent, the data range is fixed, and the distribution presents a slight left skewness and flat feature. This may suggest that when evaluating these variables, the overall evaluation is relatively positive, but there are also certain differences and dispersions.

### 3.2.3. Correlation analysis

The results of the P-P plot indicate that the data conforms to a normal distribution (as shown in **Figure 1**). And the Pearson (P) correlation is employed to examine the correlations among various variables. The results are presented in **Table 6**. Consequently, through significance analysis (Sig shown in **Table 7**), it is concluded that only four variables, namely RAR, MLR, SDLF, and IEP, have significant correlations with Satisfaction. Therefore, Pearson correlation analysis of



these five factors reveals that there are positive correlations of varying degrees among the variables. Most of the  $P > 0.4$ , it indicates that these variables have a certain degree of correlation. MLR has the most significant impact on Satisfaction, followed by IEP. In addition, the MLR and RAR's  $P = 0.385$ , it indicates that there is a certain correlation. The remaining variables'  $P > 0.4$ , it shows a strong positive correlation.

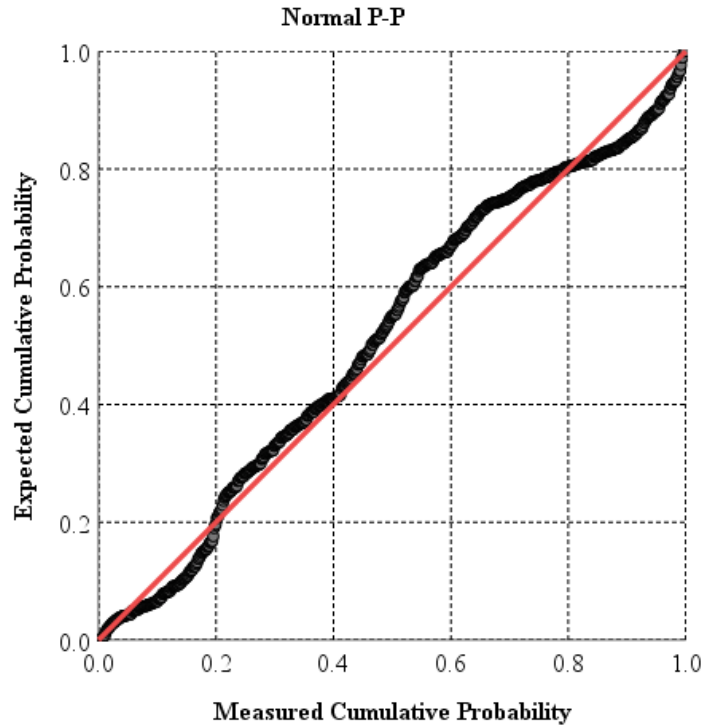


Figure 1. P-P plot of normal distribution.

Table 6. The result of pearson correlation among variables.

Pearson correlation					
	Satisfaction	RAR	MLR	SDLF	IEP
Satisfaction	1				
RAR	0.408**	1			
MLR	0.479**	0.385**	1		
SDLF	0.436**	0.436**	0.486**	1	
IEP	0.462**	0.411**	0.456**	0.453**	1

\*\* . At level 0.01 (two-tailed), the correlation was significant.

### 3.2.4. Multiple linear regression analysis

The data above conforms to a normal distribution. The variables are independent of each other and there is no multicollinearity. Therefore, multiple linear regression analysis can be performed on the data (the results are shown in Table 7). The DW of this dimension in Table 7 is  $1.924 < 2$ . And the value range of DW statistic is between 0 and 4 (Durbin and Watson, 1992, pp. 237–259), indicating that the variables are independent of each other. And the interval of VIF of each sub-item is between 1.52 and 1.73. According to Hair et al. (1995) suggest that a VIF of less

than 10 are indicative of inconsequential collinearity (Hair et al., 2009; O'brien, 2007). Thus, all are less than 5, indicating that there is no multicollinearity among the variables.

Secondly, comparing the others four dimensions, the  $R^2$  of the four are 35.1%, 34.8%, 36.5% and 35.6% respectively. The first can be known the  $R^2 = 0.366$  (36.6%), and it is the most influential. The ten items of educational resources can explain 36.6% of the change in Satisfaction. In other words, 36.6% of the change in Satisfaction is caused by these ten items. Lastly, it is not difficult to see from the Unstandardized Coefficient (B) that the ten items all have a positive impact on Satisfaction, and MLR is the most influential item. At the same time, the formula of each item for Satisfaction is obtained through B (the Equation also in **Table 7**).

**Table 7.** The result of multiple linear regression analysis.

Item	DW	VIF	R	R <sup>2</sup>	Sig	B	Equation
Overall (dimension)							
1	1.924		0.605	0.366	0.000030	0.722	
2	1.968		0.593	0.351	0.000396	0.636	
3	2.014		0.590	0.348	0.000069	0.705	
4	1.935		0.604	0.365	0.000603	0.604	
5	1.969		0.597	0.356	0.000125	0.682	
Sub-item							
RAR		1.611			0.016	0.093	$Y = 0.4102 \times X + 2.299$
MLR		1.618			0.000	0.185	$Y = 0.5103 \times X + 1.851$
SDLF		1.723			0.014	0.097	$Y = 0.4428 \times X + 2.154$
TEEB		1.728			0.082	0.072	$Y = 0.4103 \times X + 2.303$
IEP		1.707			0.000	0.156	$Y = 0.4556 \times X + 2.147$
SAA		1.605			0.382	0.032	$Y = 0.3984 \times X + 2.264$
TVCRP		1.663			0.983	0.001	$Y = 0.3669 \times X + 2.440$
BF		1.683			0.123	0.061	$Y = 0.4137 \times X + 2.288$
OER		1.659			0.109	0.062	$Y = 0.4060 \times X + 2.292$
CAR		1.521			0.071	0.069	$Y = 0.3784 \times X + 2.396$

#### 4. Results

First of all, in accordance with the Sig., educational resources stand as the most crucial elements that have a profound impact on the satisfaction of the universities where students have studied. Evidently, the  $R^2$  value also clearly demonstrates that educational resources play an essential role in promoting the development of HE. Moreover, within this dimension, there is a significant item known as multilingual library resources. This implies that if one desires to improve the situation of, HE universities or institutions, it is advisable to start with multilingual library resources (MLR), followed by international educational programs (IEP).

What's more, the questionnaire titled IFCAHED in this research has been

meticulously modified and designed on the basis of DIHESQ and SEEQ. From the initial two analyses of data analysis, it exhibits high reliability and validity, and can thus be initially employed to gain an understanding of the situation of HE development. However, in order to conduct more accurate exploration of variables, a scale that is both accurate and suitable for exploring a specific given question is required.

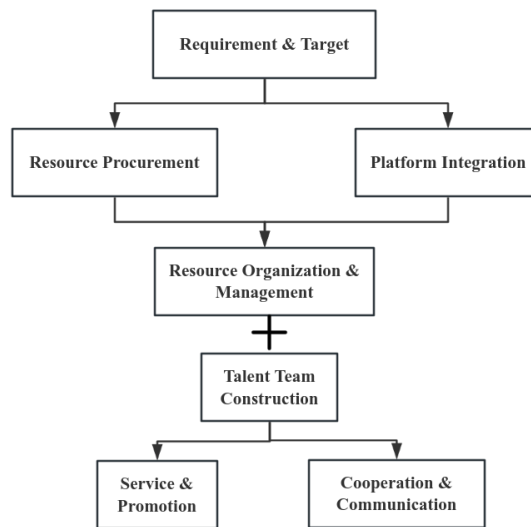
## **5. Discussion**

Debates on various factors that have affected the development HE within the context of increasingly globalization remain a major public subject East Asia and globally. The establishment of international academic exchange platforms is identified as a crucial element. It is recommended that governments in coastal cities, such as Shenzhen, actively foster collaborations that enhance the sharing of HE resources among regional players, including other international cities and the Hong Kong and Macao Special Administrative Regions. This strategy not only facilitates knowledge exchange but also strengthens the overall educational ecosystem, promoting a more interconnected and globally competent HE framework. Thus, the role of government policy and institutional cooperation emerges as vital for fostering a robust and responsive HE landscapes suited to contemporary global challenges (Li and Xue, 2022).

On the one hand, for HE institutions, inter-institutional cooperation facilitates the integration of academic resources among participating schools, encompassing a wide array of assets such as library collections, laboratory equipment, and access to academic databases, thereby fostering an environment conducive to resource sharing and collaborative learning (Joughin et al., 2022). This collaborative framework not only enhances the educational offerings of individual institutions but also promotes innovation and interdisciplinary research initiatives that may not be feasible in isolation. Furthermore, by employ partnerships with international academic organizations and scientific research institutions, these HE institutions can engage prominent scholars and experts from the whole world to partake in platform activities, thereby significantly enriching the academic discourse and enhancing the global visibility and influence of the participating institutions (de Sousa, 2021, pp.1176–1184). This strategic engagement with external resources ultimately contributes to the advancement of knowledge and the cultivation of a robust academic community that transcends geographical boundaries.

On the other hand, what is surprising is that multilingual library resources maybe the most influential factors in this survey and there is not much relative survey evidence before. This unexpected finding should be taken into account then considering to starting with MLR, followed by IEP to improve the HE universities or institutions' multilingual library resources (He and Wu, 2012, pp. 291–313). This article may explore a new way for HE institutions to enhance students' satisfaction. Thus, according to findings, project proposals are listed and flow chart is designed. For governments, opening policies are critical, supporting regional cooperation, especially those international cities in eastern coast. Besides, allocating funding to maintain conferences, platforms operation and talents exchange to break academic

gap and limitation, HE institutions can achieve academic sharing with the lowest expenditure. For HE institution, school-school integrates academic resources, including laboratory equipment, database, and international renowned scholars and experts. For social organizations, the exchange and cooperation between schools and enterprises is also a kind of academic exchange (Song et al., 2024). Besides, NGOs make research investment for HE's development, not only scholarships, but programme can be transferred to HE institution (Chankseliani et al., 2021). The **Figure 2** shows the progress of enriching MLR. Similar model has been applied for a translate company and universities to cultivate translators and interpreters.



**Figure 2.** The progress of enriching MLR.

## 6. Conclusion

### 6.1. Limitation

This paper explored the influencing factors and potential countermeasures for HE in Shenzhen, employing a quantitative methodology and based on the survey data collected from students with HE educational backgrounds. The findings underscore the pivotal role of educational resource in shaping HE development, revealing that four critical elements significantly impact this evolution. Specifically, the availability and quality of educational resources not only drive HE advancement but also markedly affect student satisfaction across universities. There are several limitations to this research. The questionnaire participants were from different educational backgrounds, age groups, and occupations, with educational backgrounds ranging from three-year college to doctoral degrees, and age groups ranging from 18 years to 45 years and above. Therefore, this questionnaire is not limited by the educational level of the participants, the mode of study of the respondents and their age as there are various cognitive and psychological factors intervening in the correlation. When the questionnaire participants fill in the questionnaire, they have self-subjective thoughts that have a greater impact on the results.

Another limiting factor that should be considered is the problem of linguistic differences in the region. With the existing linguistic diversity (English and

Portuguese, Mandarin, Cantonese and Guangzhou dialects), it is extremely difficult to coordinate the program and content of education, as well as to unify educational services throughout the GBA. This complexity can have a significant impact on the implementation and effectiveness of international HE initiatives.

On the other hand, some measures are only applicable to developed cities. The main research of this questionnaire is about the existing problems in international HE in the GBA, which may not be applicable to the central and western regions, but it can be used as a reference template for application. According to the results of data analysis, there is mainly a shortage of MLR in the development of international HE. Regions can develop international HE by increasing the introduction of MLR resources. But for another influencing factor, international academic exchange platform. Although the central and western regions have abundant land resources and sufficient supply of resources, the GBA is a coastal area with advantageous geographical location, developed international shipping routes, and convenient transportation. Compared to the central and western regions, the difficulty of increasing international exchange platforms is relatively small.

## **6.2. Future**

This research offers several new avenues for the development of international HE in the GBA. Looking ahead, when conducting similar surveys in the future, the identity and other details of the participants should be more strictly restricted. This would enable the exploration of group cognition at different levels, ages, teaching modes, and professions. By narrowing down the participant pool in this way, researchers can gain a more focused understanding of the specific perspectives and needs of various subgroups within the international HE context. Further refinement and hierarchical analysis are essential to gain a more in-depth understanding. This could involve breaking down the data by specific characteristics such as educational attainment levels, age brackets, and types of teaching methods employed. Each subgroup can then be analyzed separately to identify unique trends and challenges.

Furthermore, the issue of employment opportunities within the region for both local and foreign graduates of various fields should be considered. The availability of suitable job opportunities is a crucial factor that can influence the attractiveness of international HE programs. For local graduates, it determines whether they can effectively utilize their international education within the local job market. For foreign graduates, it affects their decision to study in the region and potentially stay for employment. Understanding the current and projected employment landscapes can help in tailoring international HE curriculums to better meet the market demands and enhance the overall value proposition of these programs.

Moreover, it is important to note that according to China's policy development, the goal by 2035 is to upgrade one hundred undergraduate schools in the central and western regions and establish a number of high-level institutions (Xinhua News Agency, 2021). Researchers need to thoroughly understand the development differences between the GBA and the central and western regions. The GBA, with its advanced economic development and strategic location, has certain advantages in terms of international HE resources and infrastructure. In contrast, the central and

western regions face different challenges and opportunities. When constructing MLR in the central and western regions, they can consider attempting to transplant the model from the GBA. However, a careful analysis of the development characteristics is necessary. The central and western regions have their own unique cultural, economic, and educational landscapes, and any transplantation of models must be adapted to these local circumstances. Revisions should be made based on the actual situation in the central and western regions. By doing so, the central and western regions can vigorously develop international HE in the right direction, leveraging their own strengths and addressing their specific challenges to create a more vibrant and inclusive international HE ecosystem.

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